



February 23, 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

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 155-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) antennas, adding six (6) remote-radio heads (“RRHs”) and one DC/Fiber Squid. 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 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 155-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 January 19, 2015).

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

Sincerely,

Sarah Snell  
Site Acquisition Specialist

cc: Gary Brumback, Town Manager, Southington CT  
American Tower Corporation

**PROJECT INFORMATION**

SCOPE OF WORK:

- AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR, FOR A TOTAL (3) NEW ANTENNAS. (2) EXISTING ANTENNAS PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (6) EXISTING ANTENNAS TO REMAIN. (1) EXISTING ANTENNA PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
- AT&T RRUS: (1) NEW RRUS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUS; (2) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (6) EXISTING RRUS.
- AT&T SQUID: (1) NEW DC6 SURGE, FOR A TOTAL OF (1) NEW SQUID, (1) EXISTING DC-6 SURGE PROTECTOR, FOR A TOTAL OF (1) EXISTING SQUID TO REMAIN.

SITE ADDRESS: 80 SHUTTLE MEADOW ROAD  
SOUTHINGTON, CT 06489

LATITUDE: 41.6385750 41° 38' 18.87"N  
LONGITUDE: -72.841136 -72° 50' 28.09"W

USID: 59332

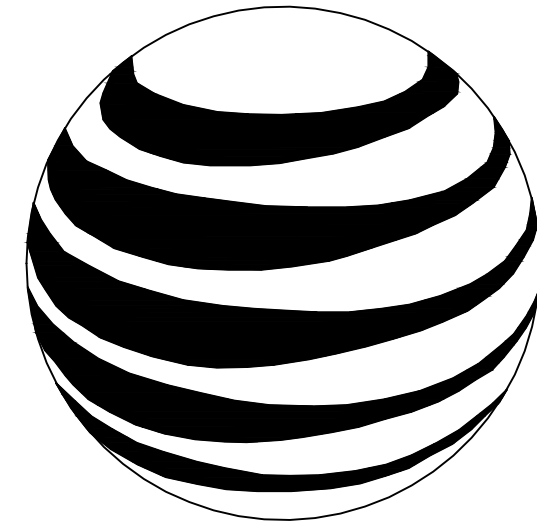
TOWER OWNER: AMERICAN TOWER CORPORATION  
10 PRESIDENTIAL WAY  
WOBURN, MA 01801

TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 155'-0"±  
RAD CENTER: 153'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



**at&t**  
**MOBILITY**

**FA CODE: 10034967**  
**SITE NUMBER: CT1004**  
**SITE NAME: SOUTHINGTON**

**PROJECT TEAM**

**CLIENT REPRESENTATIVE**

COMPANY: EMPIRE TELECOM  
ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
CONTACT: DAVID COOPER  
PHONE: 617-639-4908  
EMAIL: dcooper@empiretelecomm.com

**SITE ACQUISITION:**

COMPANY: EMPIRE TELECOM  
ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
CONTACT: DAVID COOPER  
PHONE: 617-639-4908  
EMAIL: dcooper@empiretelecomm.com

COMPANY: EMPIRE TELECOM  
ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
CONTACT: DAVID COOPER  
PHONE: 617-639-4908  
EMAIL: dcooper@empiretelecomm.com

COMPANY: COM-EX CONSULTANTS, LLC  
ADDRESS: 4 SECOND AVENUE  
SUITE 204  
DENVER, NJ 07834  
CONTACT: NICHOLAS D. BARILE, P.E.  
PHONE: 862-209-4300  
EMAIL: nbarile@comexconsultants.com

**RF ENGINEER:**

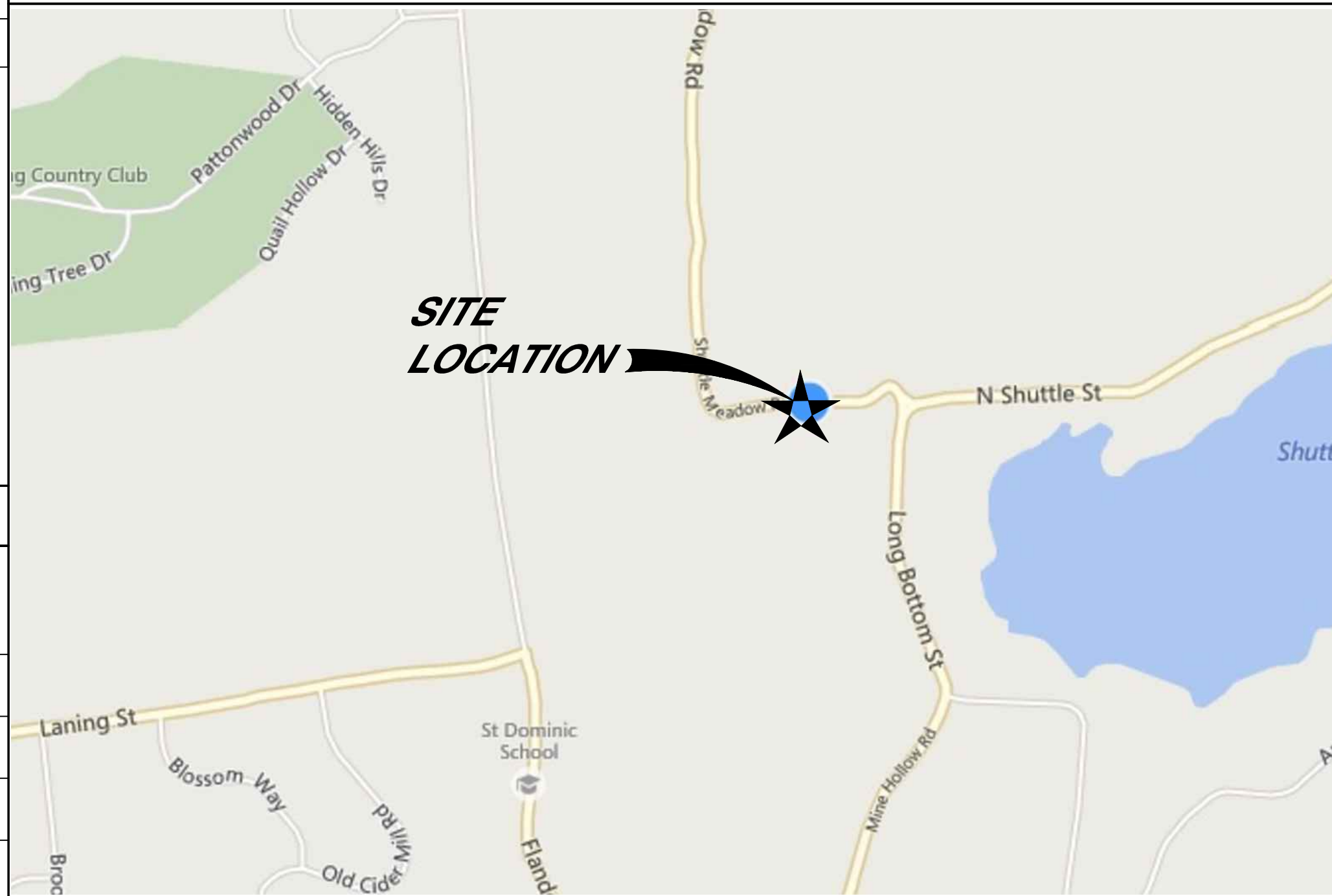
COMPANY: AT&T MOBILITY – NEW ENGLAND  
ADDRESS: 550 COCHITUATE ROAD  
SUITE 550 13 & 14  
FRAMINGHAM, MA 01701  
CONTACT: CAMERON SYME  
PHONE: 508-596-7146  
EMAIL: cs6970@att.com

**CONSTRUCTION MANAGEMENT:**

COMPANY: EMPIRE TELECOM  
ADDRESS: 16 ESQUIRE ROAD  
BILLERICA, MA 01821  
CONTACT: GRZEGORZ "GREG" DORMAN  
PHONE: 484-683-1750  
EMAIL: gdorman@empiretelecomm.com

**VICINITY MAP**

1. HEAD WEST ON COCHITUATE RD TOWARD BURR STREET (0.3 MI). 2. TAKE THE RAMP TO I-90 W/TOWARD WORCESTER/SPRINGFIELD (38.9 MI) AT EXIT 9, TAKE RAMP RIGHT FOR I-84 TOWARD NEW YORK CITY/ HARTFORD (55.7 MI) 3.) AT EXIT 35, TAKE RAMP LEFT FOR CT-72 EAST TOWARD NEW BRITAIN/MIDDLETOWN (1.1 MI) 4.) AT EXIT 7, TAKE RAMP RIGHT AND FOLLOW SIGNS FOR CT-374 (0.2 MI) 5.) BEAR RIGHT ONTO CT-372/CORBIN AVENUE (0.3 MI) 6.) TURN RIGHT ONTO STEELE STREET (0.2 MI) 7.) TURN LEFT ONTO VICTORIA ROAD (0.4 MI) 8.) TURN RIGHT ONTO RESERVOIR ROAD (1.0 MI) 9.) ROAD NAME CHANGES TO NORTH SHUTTLE STREET (1.1 MI) TURN RIGHT ONTO SHUTTLE MEADOW ROAD (0.1 MI) ARRIVE AT 80 SHUTTLE MEADOW ROAD ON THE LEFT.



**GENERAL NOTES**

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

**DRAWING INDEX**

		REV.
T-1	TITLE SHEET	A
GN-1	GROUNDING & GENERAL NOTES	A
A-1	COMPOUND LAYOUT	A
A-2	EQUIPMENT LAYOUTS	A
A-3	ANTENNA LAYOUTS & ELEVATIONS	A
A-4	DETAILS	A
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	A

**APPROVALS**

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:
SITE ACQUISITION:	
CONSTRUCTION MANAGER:	
AT&T PROJECT MANAGER:	



**SITE NUMBER: CTV1004**  
**SITE NAME: SOUTHINGTON**  
80 SHUTTLE MEADOW ROAD  
SOUTHINGTON, CT 06489  
HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/29/15	INITIAL SUBMISSION	NJM	CJT	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

AT&T		
DRAWING TITLE:		
TITLE SHEET		
JOB NUMBER	DRAWING NUMBER	REV
15174-EMP	T-1	A



**GROUNDING NOTES:**

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

**GENERAL NOTES:**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR – EMPIRE TELECOM  
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER – AT&T MOBILITY  
 OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR (EMPIRE TELECOM).
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
  - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
  - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
  - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
  - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
  - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
  - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
  - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
  - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.
22. 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 AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY HUDSON DESIGN GROUP FOR A RECENT UPGRADE DATED 04/17/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

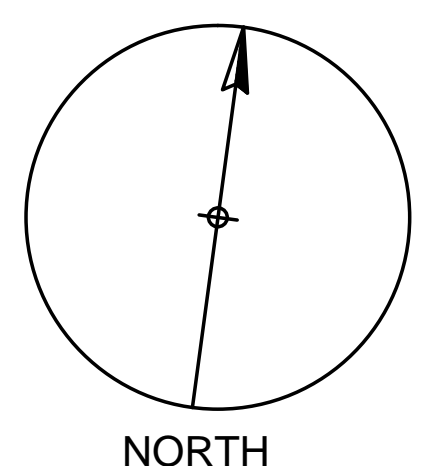
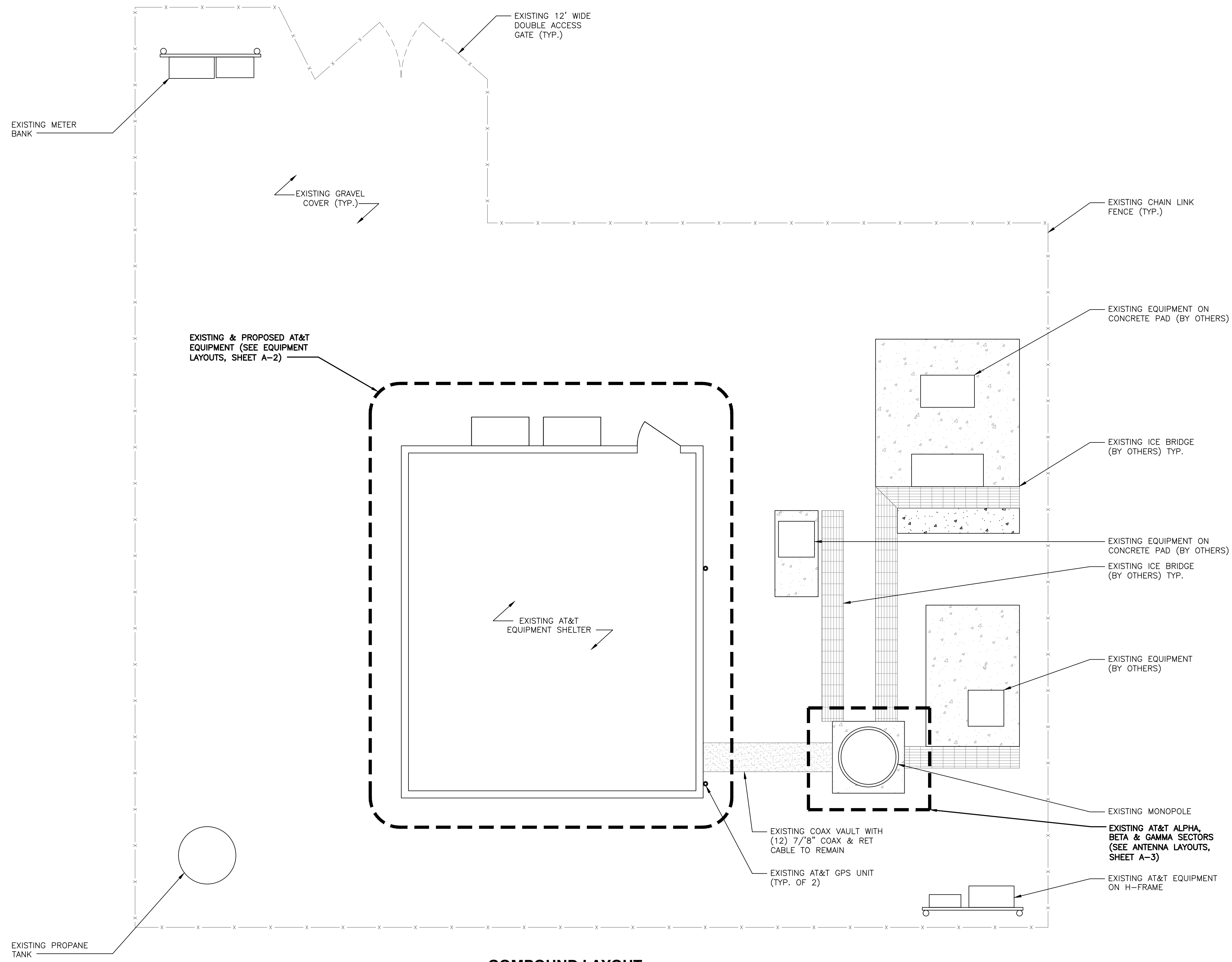


**SITE NUMBER: CTV1004**  
**SITE NAME: SOUTHINGTON**  
 80 SHUTTLE MEADOW ROAD  
 SOUTHINGTON, CT 06489  
 HARTFORD COUNTY



A	10/29/15	INITIAL SUBMISSION	NJM	CJT	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

<b>AT&amp;T</b>		
DRAWING TITLE: <b>GROUNDING &amp; GENERAL NOTES</b>		
JOB NUMBER	DRAWING NUMBER	REV
15174-EMP	GN-1	A



**COMPOUND LAYOUT**  
 SCALE: 1/4" = 1'-0"  
 GRAPHIC SCALE: 1/4" = 1'-0"

NOTE:  
 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 AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

**COM-EX**  
 Consultants  
 4 SECOND AVENUE  
 SUITE 204  
 DENVER, NJ 07834  
 PHONE: 862.209.4300  
 FAX: 862.209.4301

**EMPIRE**  
 telecom  
 16 ESQUIRE ROAD  
 BILLERICA, MA 01821

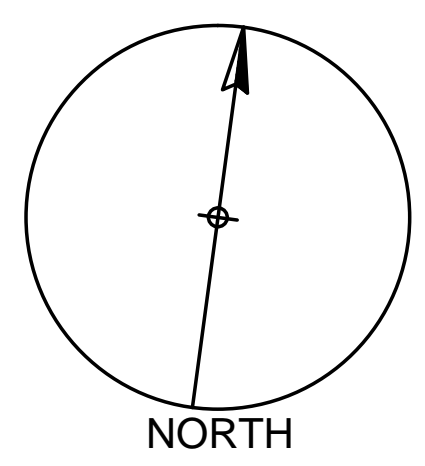
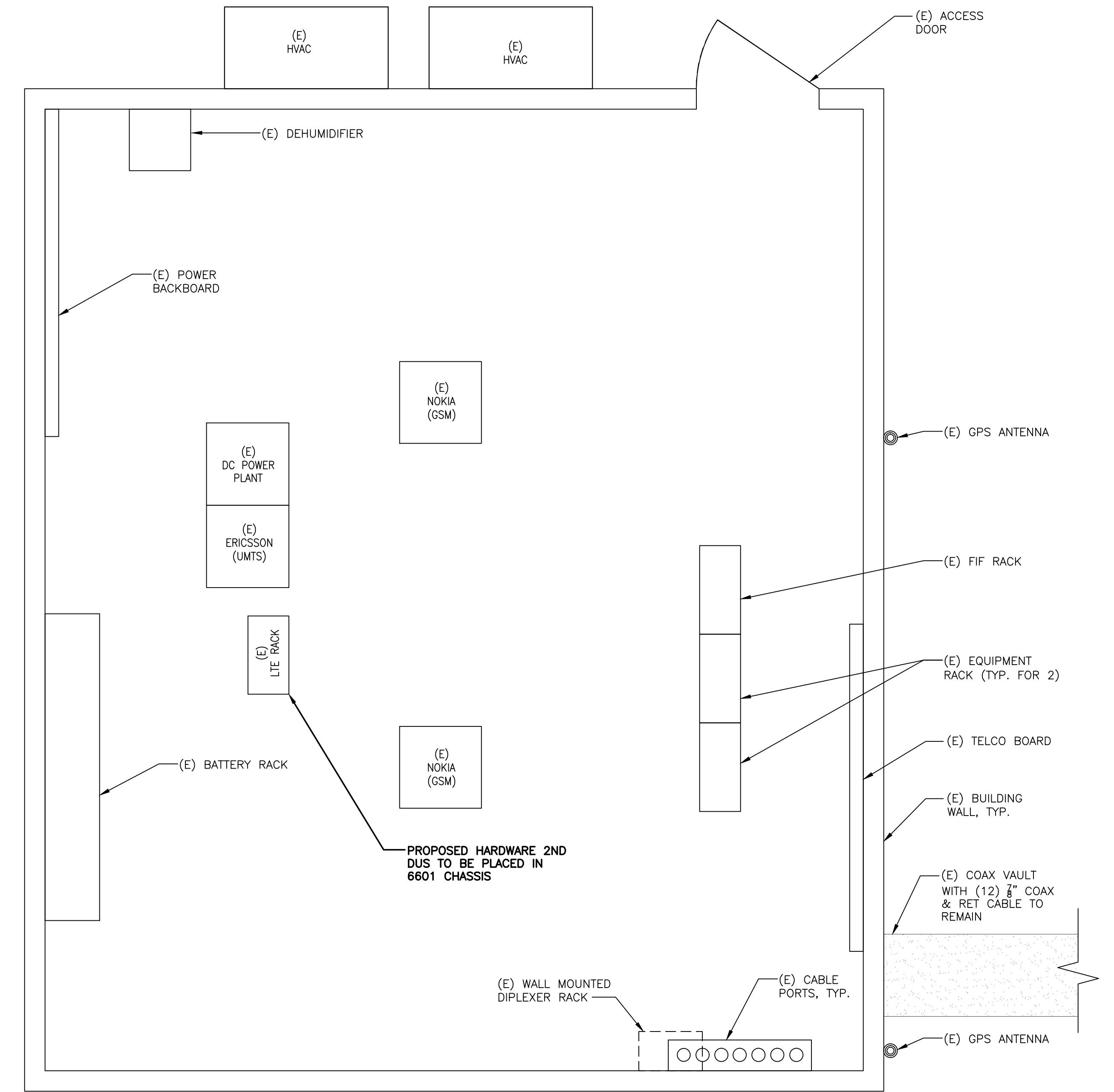
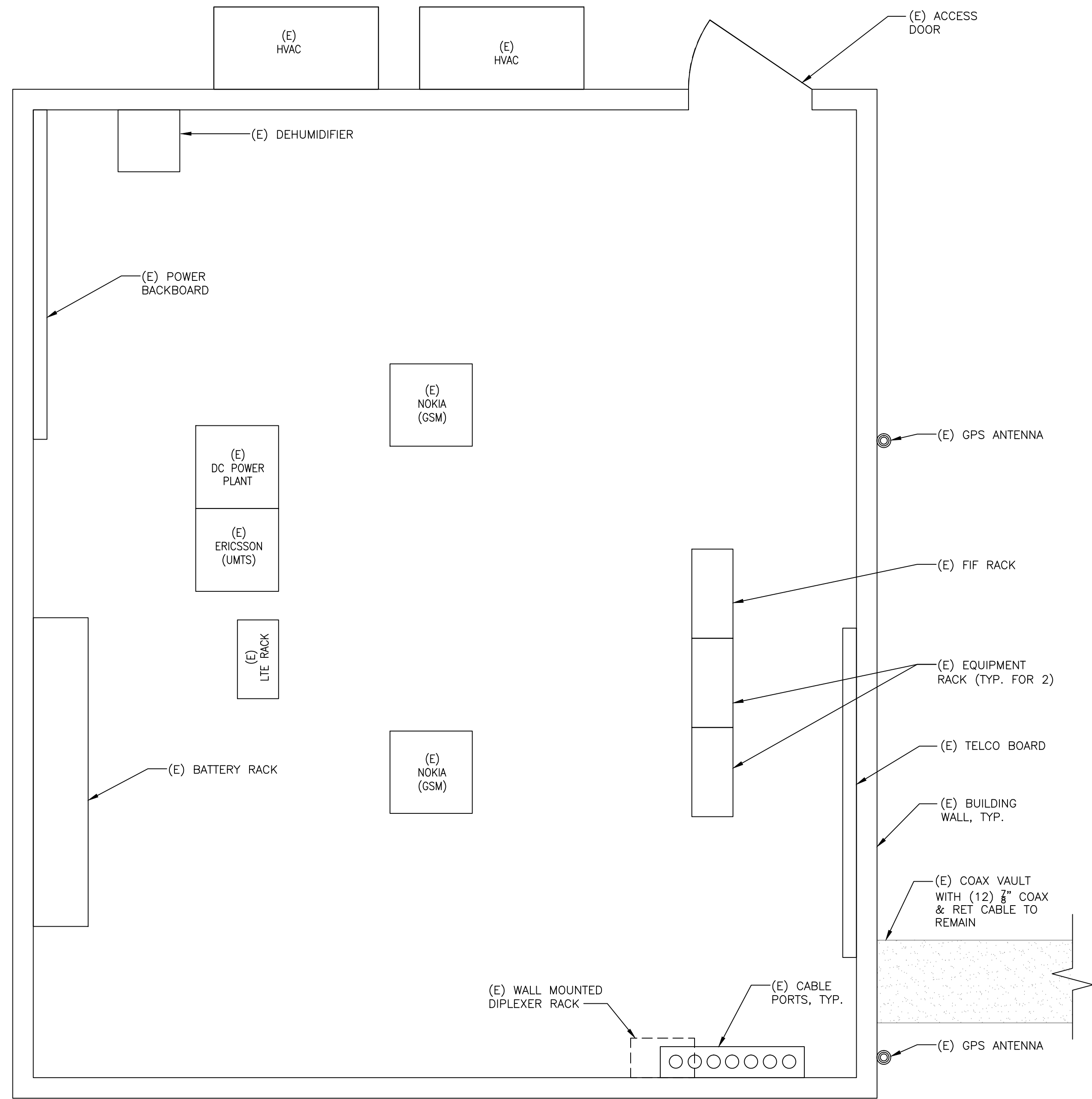
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 **at&t**  
 MOBILITY  
 550 COCHITUATE ROAD  
 FRAMINGHAM, MA 01701

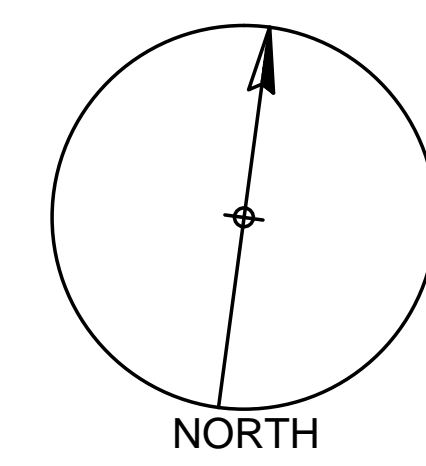
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AT&T		
DRAWING TITLE: <b>COMPOUND LAYOUT</b>		
JOB NUMBER 15174-EMP	DRAWING NUMBER A-1	REV A





**EXISTING EQUIPMENT LAYOUT**  
 SCALE: 1" = 2'-0"  
 ( IN FEET )  
 1/2 Inch = 1 Foot



**PROPOSED EQUIPMENT LAYOUT**  
 SCALE: 1" = 2'-0"  
 ( IN FEET )  
 1/2 Inch = 1 Foot

**COM-EX**  
 Consultants  
 4 SECOND AVENUE  
 SUITE 204  
 DENVER, NJ 07834  
 PHONE: 862.209.4300  
 FAX: 862.209.4301

**EMPIRE**  
 telecom  
 16 ESQUIRE ROAD  
 BILLERICA, MA 01821

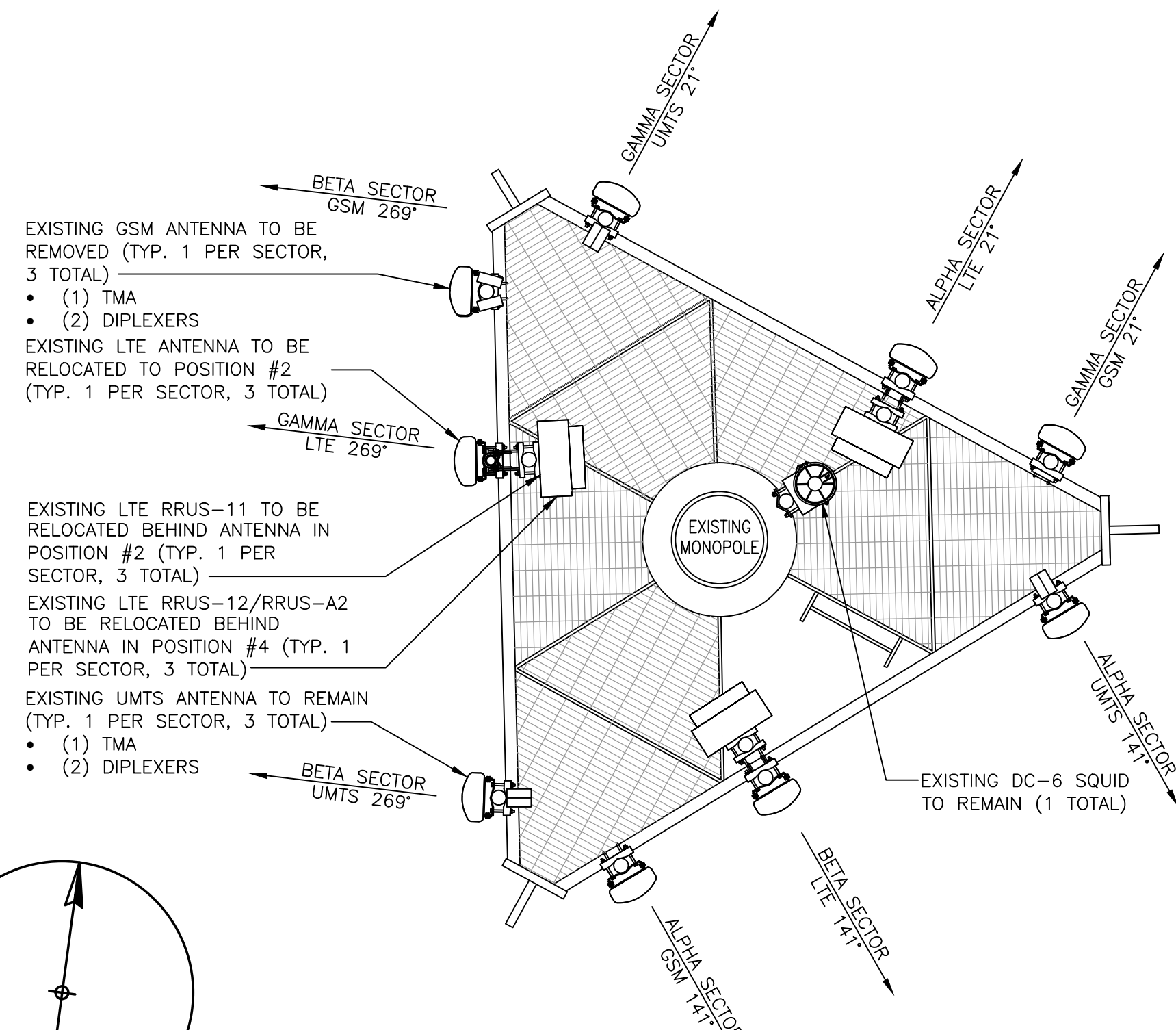
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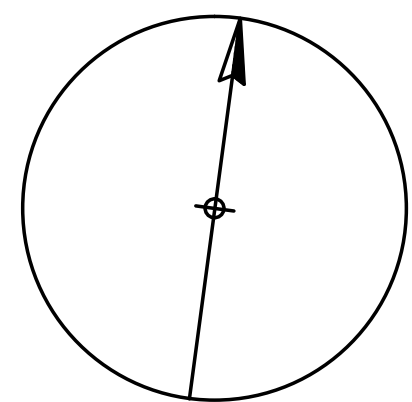
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A	10/29/15	INITIAL SUBMISSION	NJM	CJT	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

<b>AT&amp;T</b>		
DRAWING TITLE: EQUIPMENT LAYOUT		
JOB NUMBER	DRAWING NUMBER	REV
15174-EMP	A-2	A

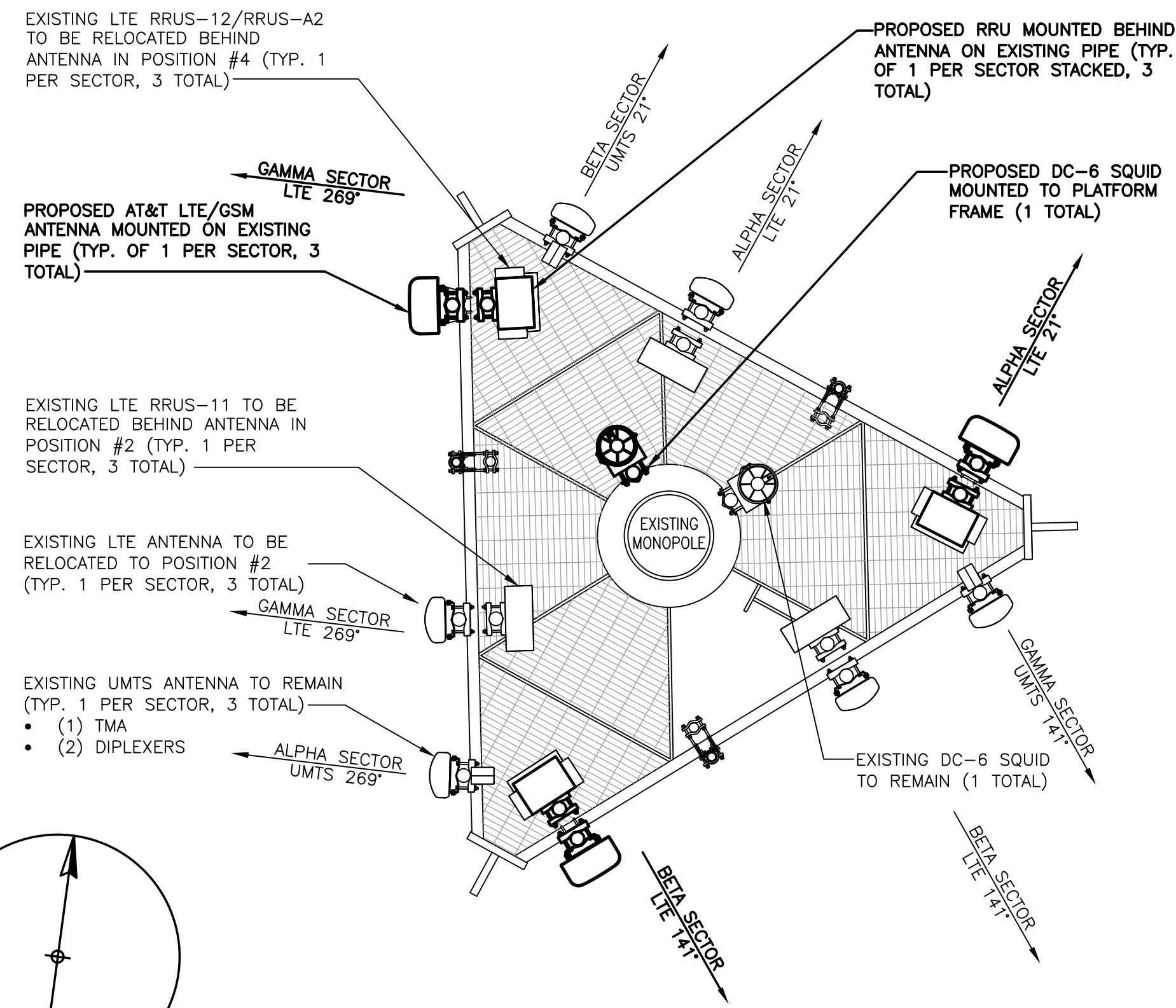
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



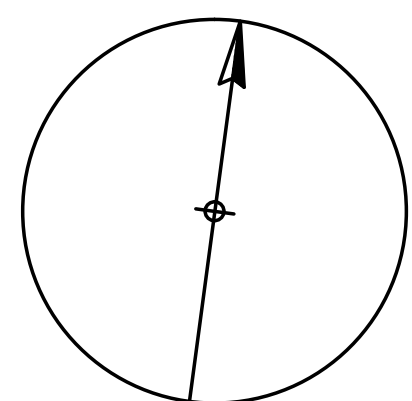
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SCALE: N.T.S.



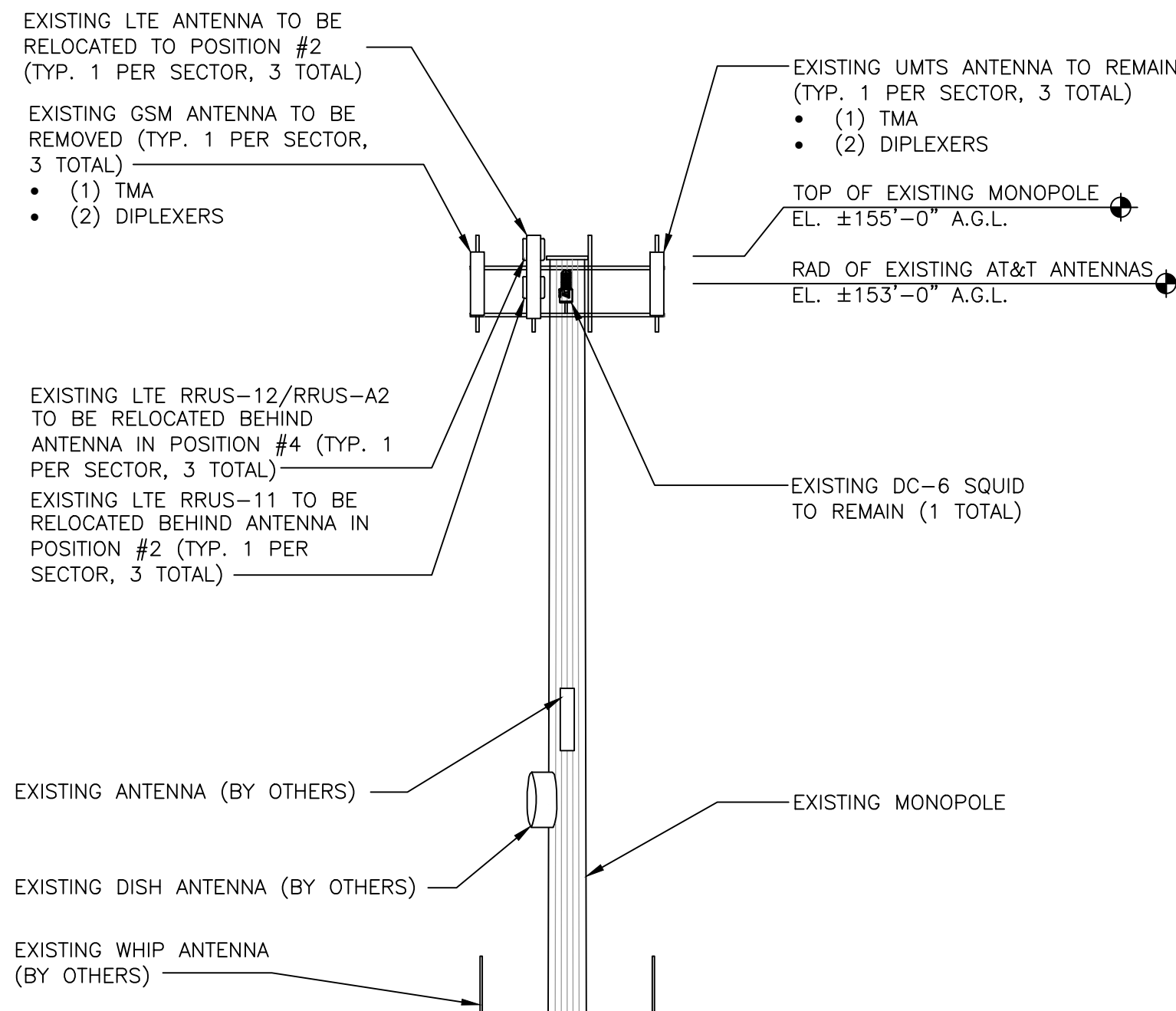
NORTH



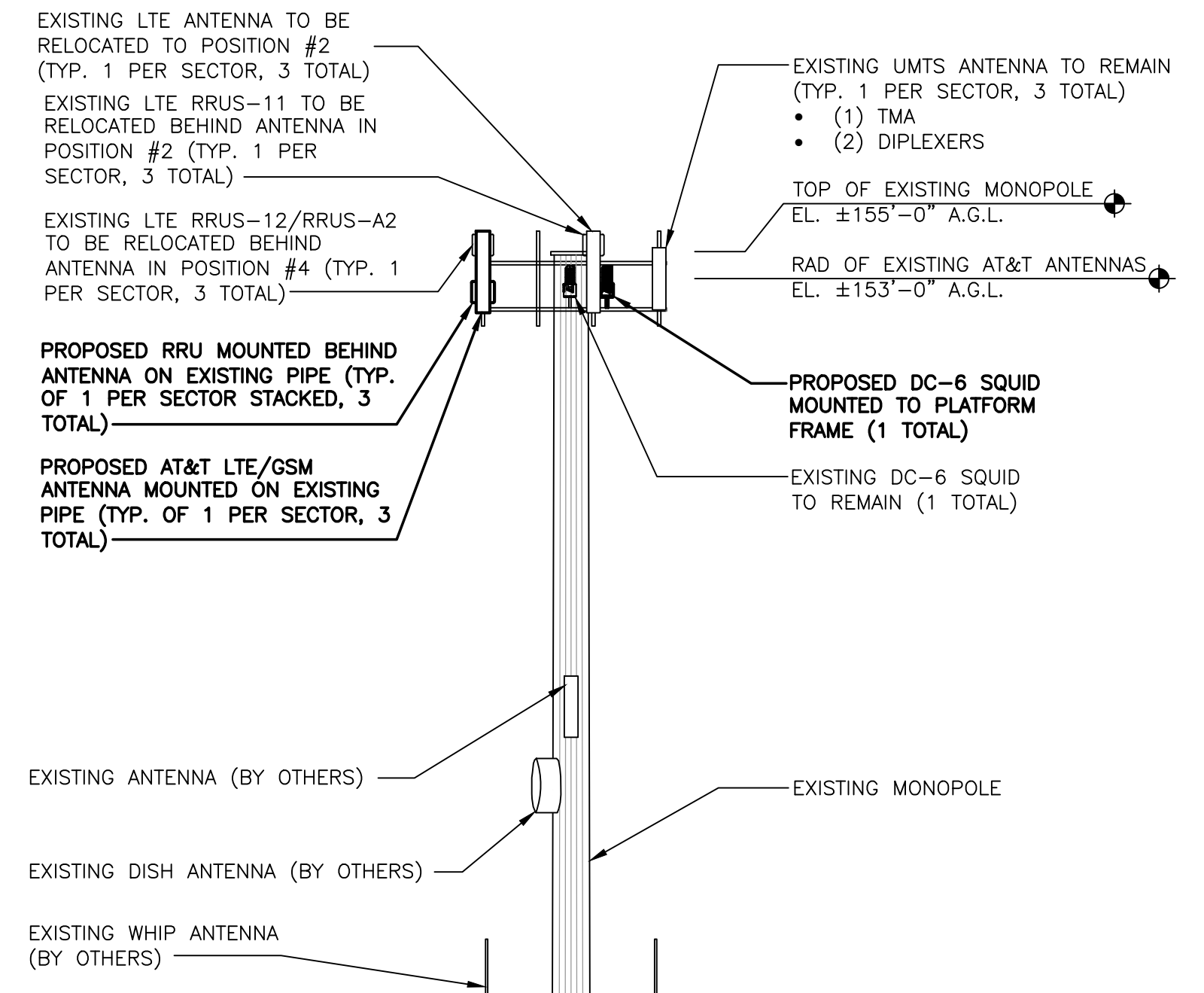
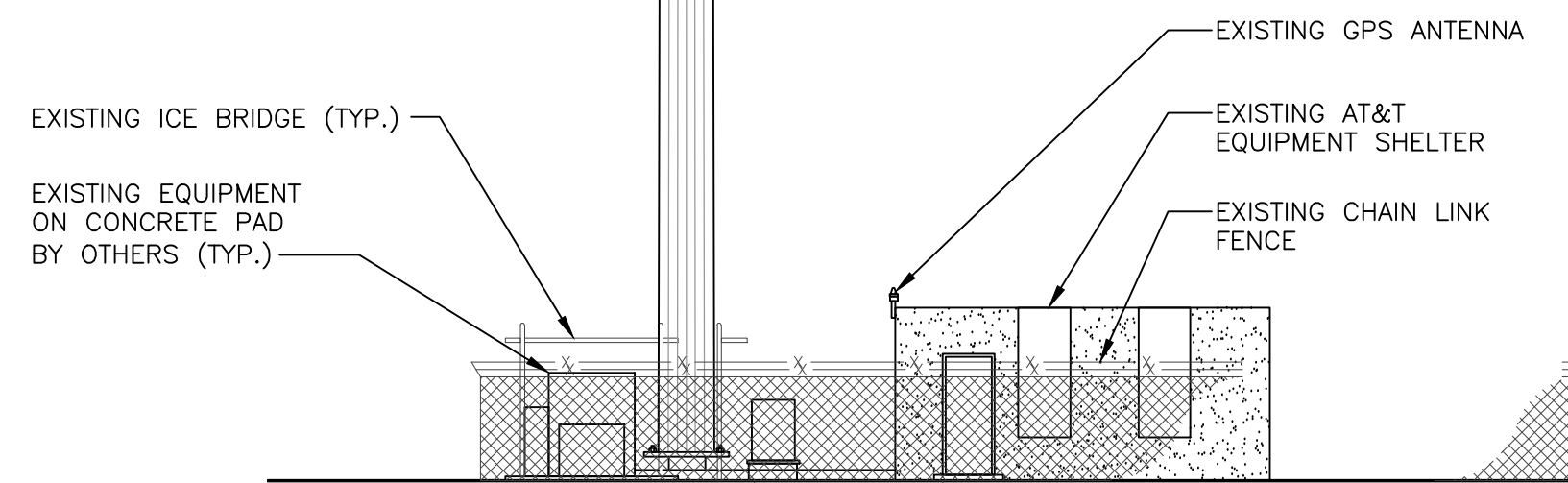
**PROPOSED ANTENNA LAYOUT**  
SCALE: N.T.S.



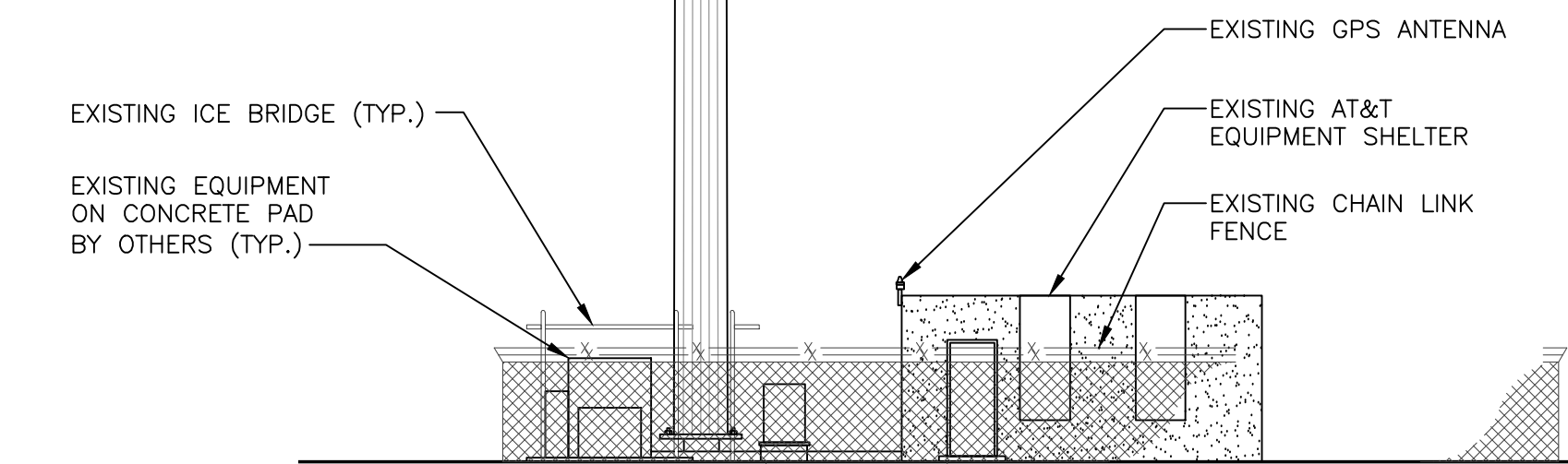
NORTH



**EXISTING TOWER ELEVATION**  
SCALE: N.T.S.



**PROPOSED TOWER ELEVATION**  
SCALE: N.T.S.



**COM-EX**  
Consultants  
4 SECOND AVENUE  
SUITE 204  
DENVER, NJ 07834  
PHONE: 862.209.4300  
FAX: 862.209.4301

**EMPIRE**  
telecom  
16 ESQUIRE ROAD  
BILLERICA, MA 01821

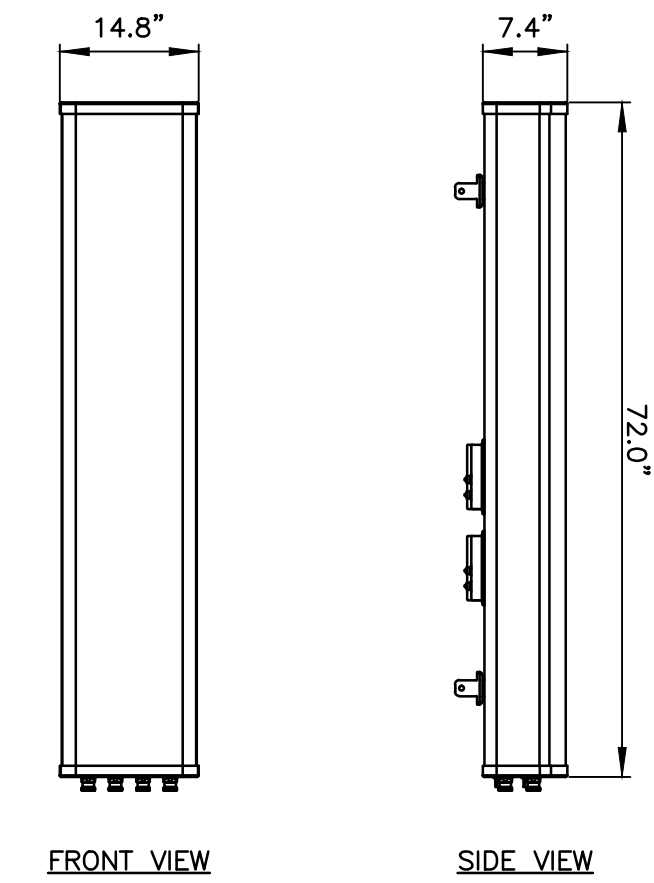
**SITE NUMBER: CTV1004**  
**SITE NAME: SOUTHINGTON**  
80 SHUTTLE MEADOW ROAD  
SOUTHINGTON, CT 06489  
HARTFORD COUNTY

**at&t**  
MOBILITY  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/29/15	INITIAL SUBMISSION	NJM	CJT	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

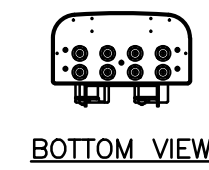
<b>AT&amp;T</b>		
DRAWING TITLE: <b>ANTENNA LAYOUTS &amp; ELEVATIONS</b>		
JOB NUMBER 15174-EMP	DRAWING NUMBER A-3	REV A





FRONT VIEW

SIDE VIEW

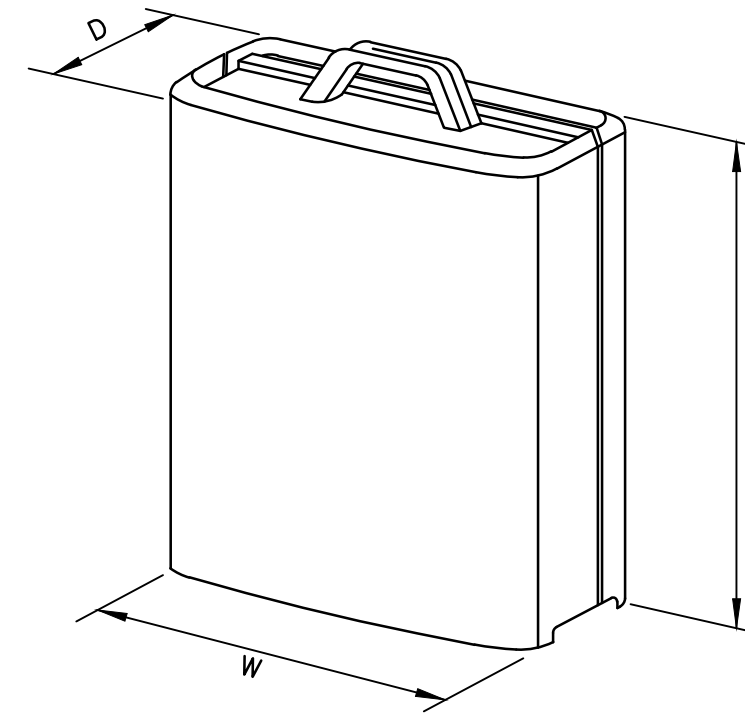


BOTTOM VIEW

MANUFACTURER	QUINTEL
MODEL	QS66512-3
WEIGHT	105.0 LBS

**LTE ANTENNA DETAIL**

SCALE: N.T.S.

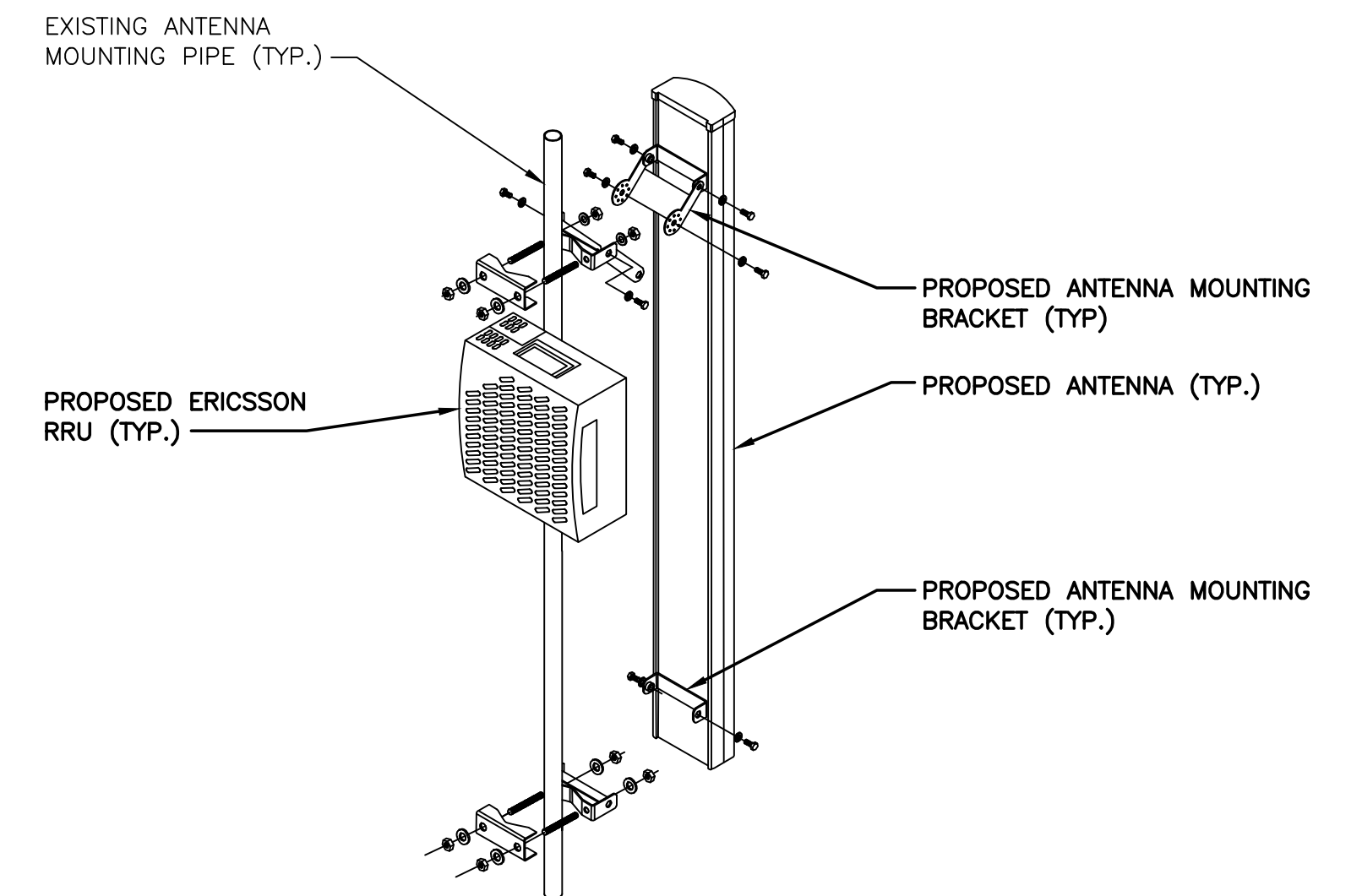


MODEL	L x W x H	WEIGHT
*A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS
*RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-32	29.9"x13.3"x9.5"	77 LBS

\*DENOTES EXISTING.

**RRUS DETAIL**

SCALE: N.T.S.



**ANTENNA AND RRU MOUNTING DETAIL**

SCALE: N.T.S.

**EXISTING ANTENNA SCHEDULE**

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	-	-	-
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	-	-	-
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	G4	POWERWAVE	7770	55"x11"x5"

**FINAL ANTENNA SCHEDULE**

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A3	-	-	-
	A4	QUINTEL	QS66512-3	72"x12"x9.6"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B3	-	-	-
	B4	QUINTEL	QS66512-3	72"x12"x9.6"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	G3	-	-	-
	G4	QUINTEL	QS66512-3	72"x12"x9.6"

**PROPOSED RRU SCHEDULE**

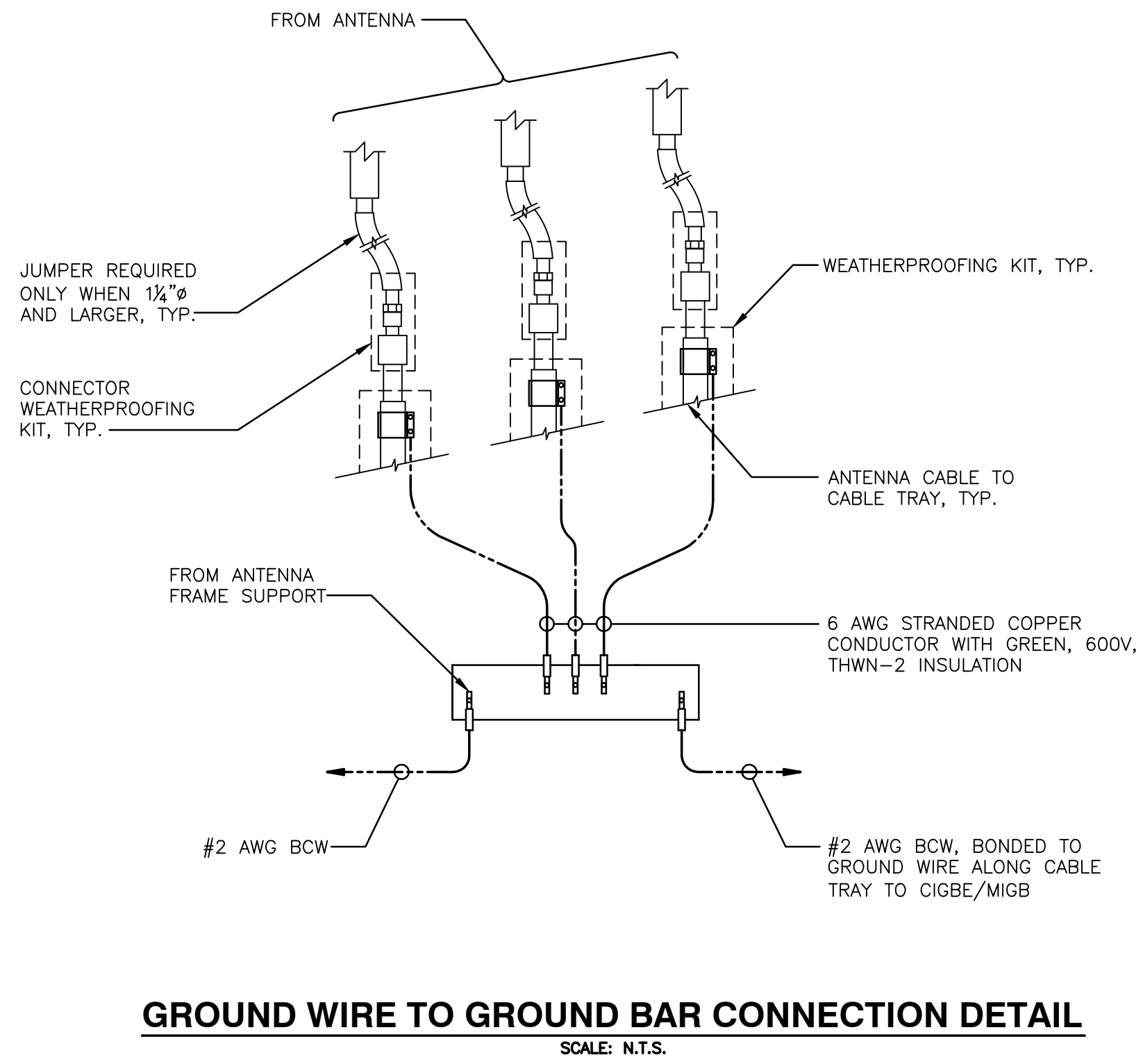
SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
BETA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-12 (EXISTING)	20.4"x18.5"x9.5"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
GAMMA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

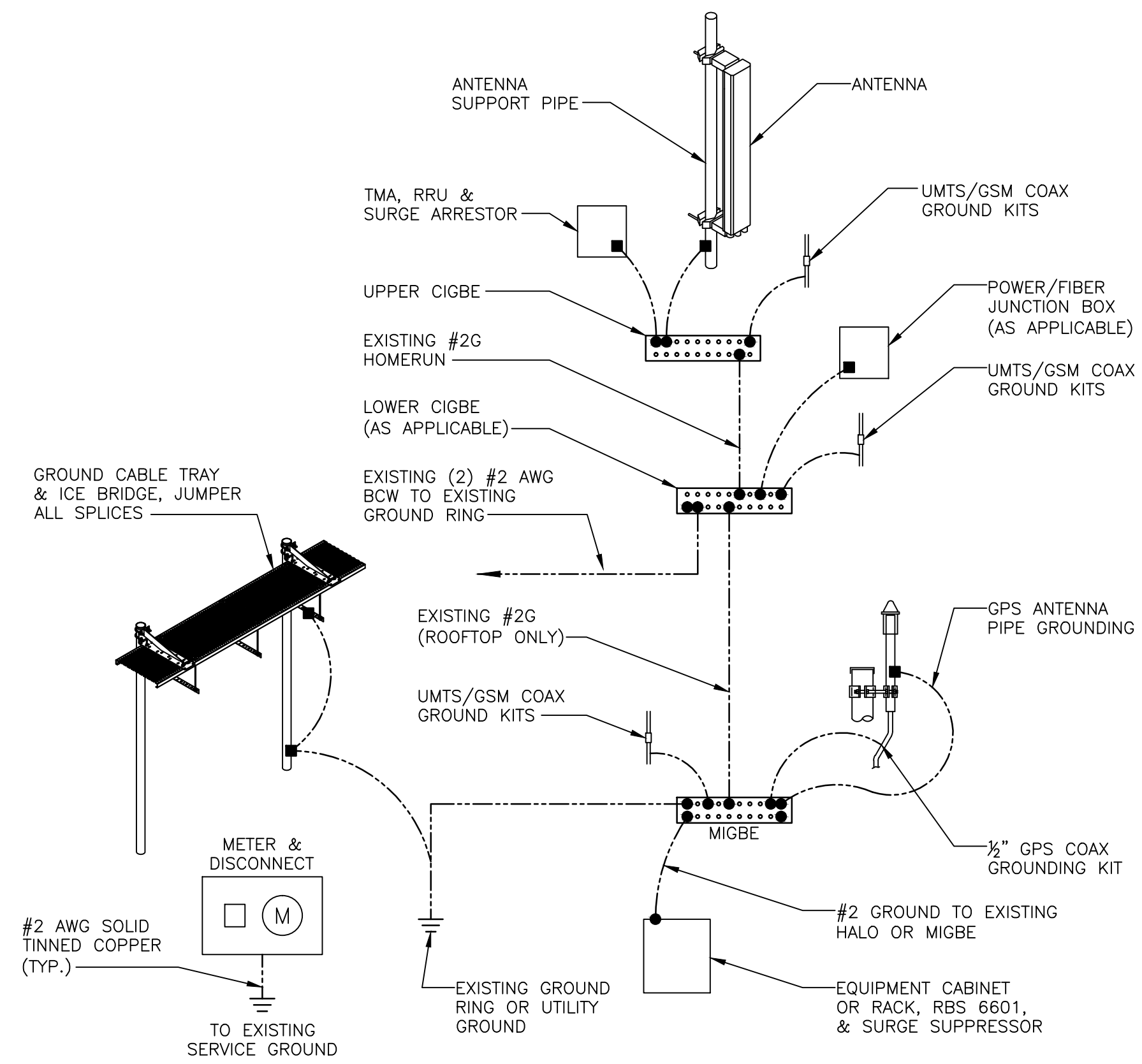
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/29/15	INITIAL SUBMISSION	NJM	CJT	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

AT&T		
DRAWING TITLE:		
DETAILS		
JOB NUMBER	DRAWING NUMBER	REV
15174-EMP	A-4	A

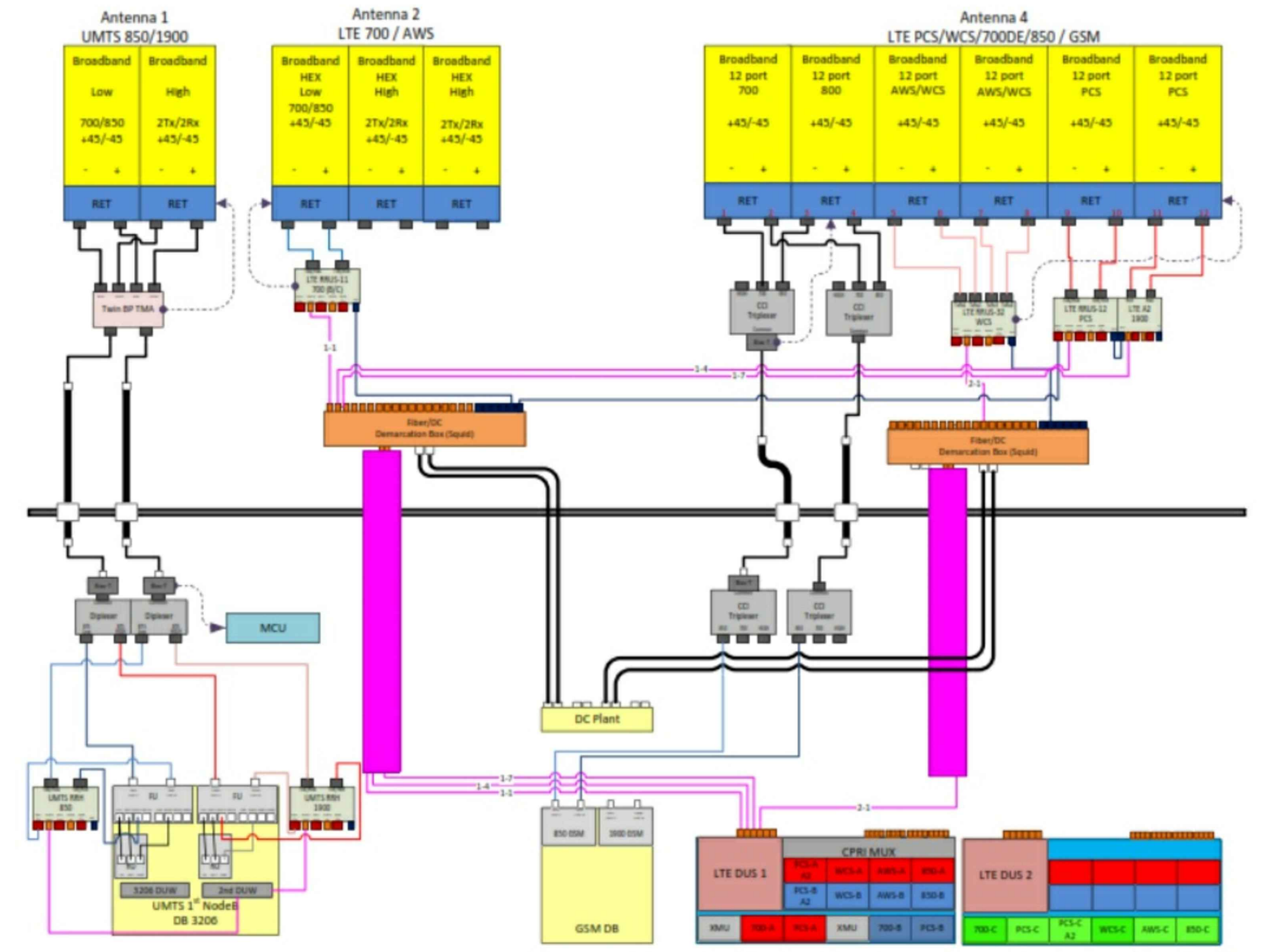




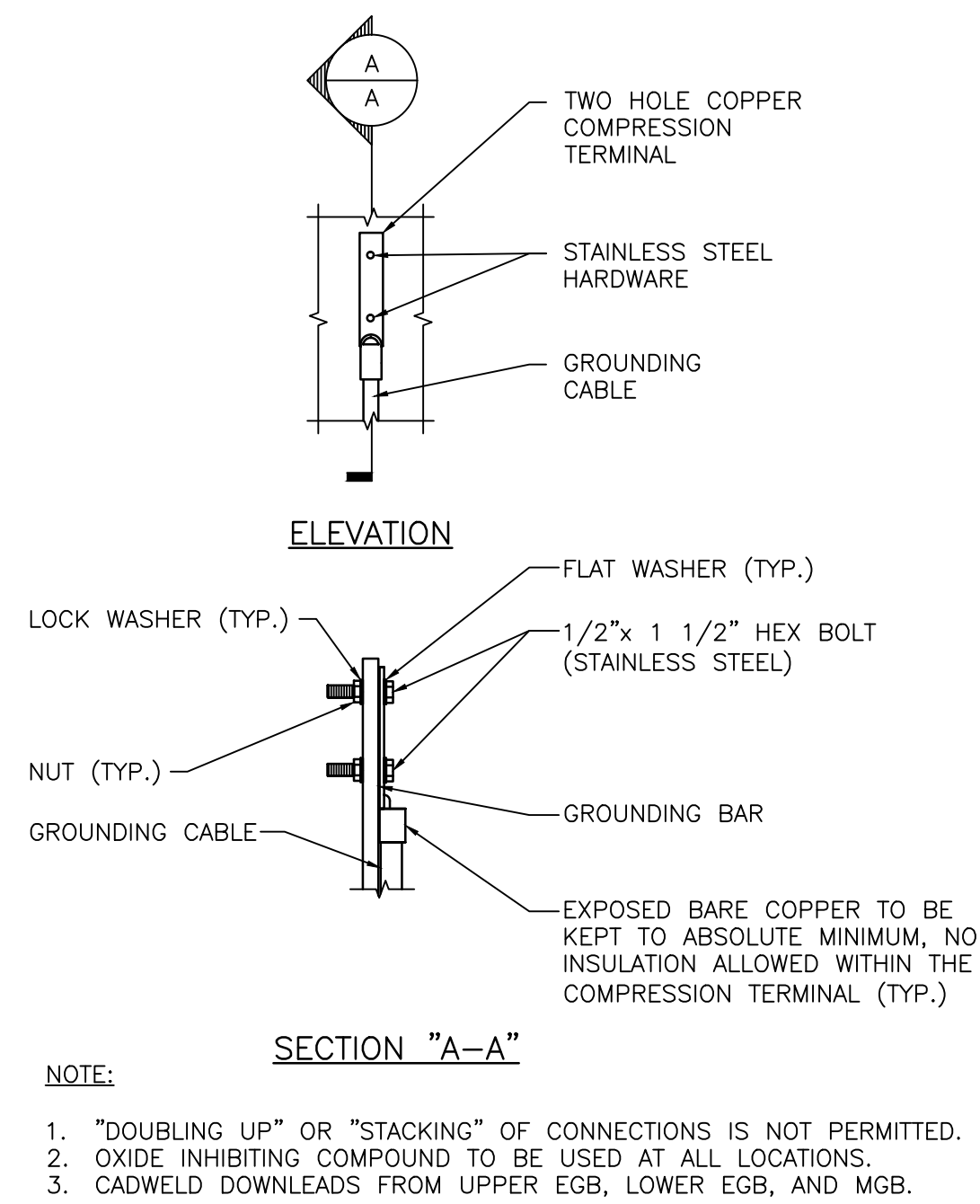
**GROUND WIRE TO GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



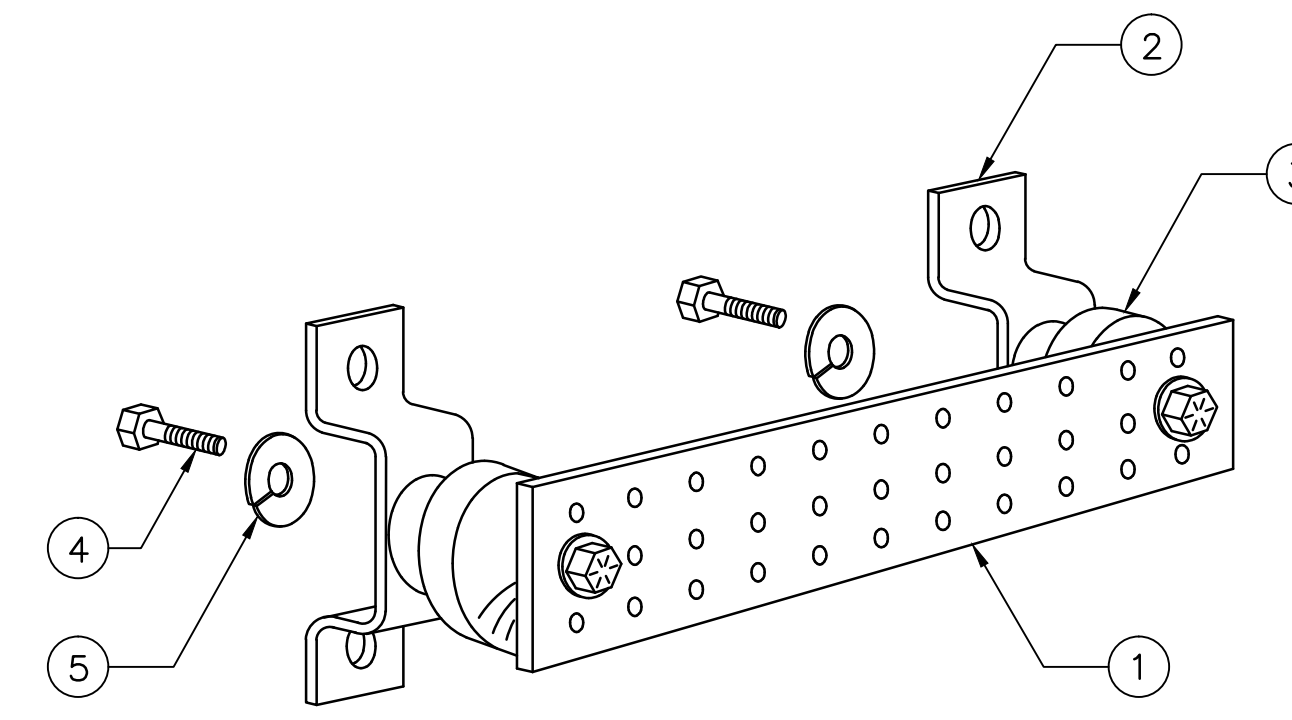
**GROUNDING RISER DIAGRAM**  
SCALE: N.T.S.



**TYPICAL PLUMBING DIAGRAM (PER SECTOR)**  
SCALE: N.T.S.



**TYPICAL GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	5/8"-11x1" H.H.C.S.
5	4	5/8" LOCK WASHER

**GROUND BAR DETAIL**  
SCALE: N.T.S.

- NOTES:
- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION
- SECTION "P" - SURGE PRODUCERS**
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
  - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
  - TELCO GROUND BAR
  - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
  - +24V POWER SUPPLY RETURN BAR (#2)
  - 48V POWER SUPPLY RETURN BAR (#2)
  - RECTIFIER FRAMES
- SECTION "A" - SURGE ABSORBERS**
- INTERIOR GROUND RING (#2)
  - EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
  - METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
  - BUILDING STEEL (IF AVAILABLE) (#2)

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	10/29/15	INITIAL SUBMISSION	NJM	CJT	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

AT&T		
DRAWING TITLE:		
GROUNDING, ONE-LINE DIAGRAM & DETAILS		
JOB NUMBER	DRAWING NUMBER	REV
15174-EMP	G-1	A



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 150 ft Monopole  
**ATC Site Name** : Sttn - Southington, CT  
**ATC Site Number** : 302475  
**Engineering Number** : 64793522  
**Proposed Carrier** : AT&T Mobility  
**Carrier Site Name** : Southington  
**Carrier Site Number** : CT1004/FA#10034967  
**Site Location** : 80 Shuttle Meadow Road  
Southington, CT 06489-1313  
41.638583,-72.841100  
**County** : Hartford  
**Date** : January 19, 2016  
**Max Usage** : 100%  
**Result** : Pass

Reviewed by:  
William Garrett, PE  
Chief Engineer

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



Jan 19 2016 6:17 PM

COA: PEC.0001553





**Table of Contents**

Introduction .....	1
Supporting Documents .....	1
Analysis .....	1
Conclusion.....	1
Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
Proposed Equipment .....	2
Structure Usages .....	3
Foundations .....	3
Deflection, Twist, and Sway.....	3
Standard Conditions .....	4
Calculations .....	Attached



## 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>	100 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
<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	1	Raycap DC6-48-60-18-8F (23.5" Height)	Platform w/ Handrails	(12) 7/8" Coax (2) 0.78" 8 AWG 6 (1) 3" Conduit	AT&T Mobility
		3	Ericsson RRUS-11 (50 lbs.)			
		2	KMW AM-X-CD-16-65-00T-RET			
		1	Andrew SBNH-1D6565C (60.8 lbs)			
130.0	132.0	3	RFS APXV18-206517S-C	Flush	(12) 1 5/8" Coax	Metro PCS
		3	Andrew LNX-6515DS-VTM			
	130.0	3	Kathrein Smart Bias Tee			
120.0	118.0	1	DragonWave Horizon Compact	Leg	(6) 5/16" Coax (1) 1/2" Coax	Clearwire
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		1	DragonWave A-ANT-11G-2.5-C			
116.0	116.0	1	12" x 12" Junction Box	Flush	(1) 2" Conduit	
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					
149.0	153.0	3	Kathrein 800 10764	-	(1) 0.39" Cable	AT&T Mobility
		2	KMW AM-X-CD-16-65-00T-RET			
		1	Andrew SBNH-1D6565C			
		3	Powerwave TT08-19DB111-001			
		6	Powerwave LGP13519			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
149.0	153.0	1	Raycap DC6-48-60-18-8F (23.5" Height)	Platform w/ Handrails	(2) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk	AT&T Mobility
		6	CCI DTMABP7819VG12A (w/ Bracket)			
		3	Ericsson RRUS 12 w/ RRUS A2			
		3	Ericsson RRUS-32			
		3	Powerwave 7770.00			
		3	Quintel QS66512-3 (112 lbs.)			
	152.0	6	CCI TPX-070821			

<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).

Install proposed coax inside the pole shaft.

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	70%	Pass
Shaft	100%	Pass
Base Plate	57%	Pass
Flanges	83%	Pass
Reinforcement	76%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,262.2	87%
Axial (Kips)	67.6	49%
Shear (Kips)	24.0	26%

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. A factor of safety greater than 2 was determined.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
149.0	CCI TPX-070821	AT&T Mobility	2.676	2.235
	Raycap DC6-48-60-18-8F (23.5" Height)			
	CCI DTMABP7819VG12A (w/ Bracket)			
	Ericsson RRUS 12 w/ RRUS A2			
	Ericsson RRUS-32			
	Powerwave Allgon 7770.00			
120.0	DragonWave A-ANT-11G-2.5-C	Clearwire Corporation	1.622	1.838

\*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:

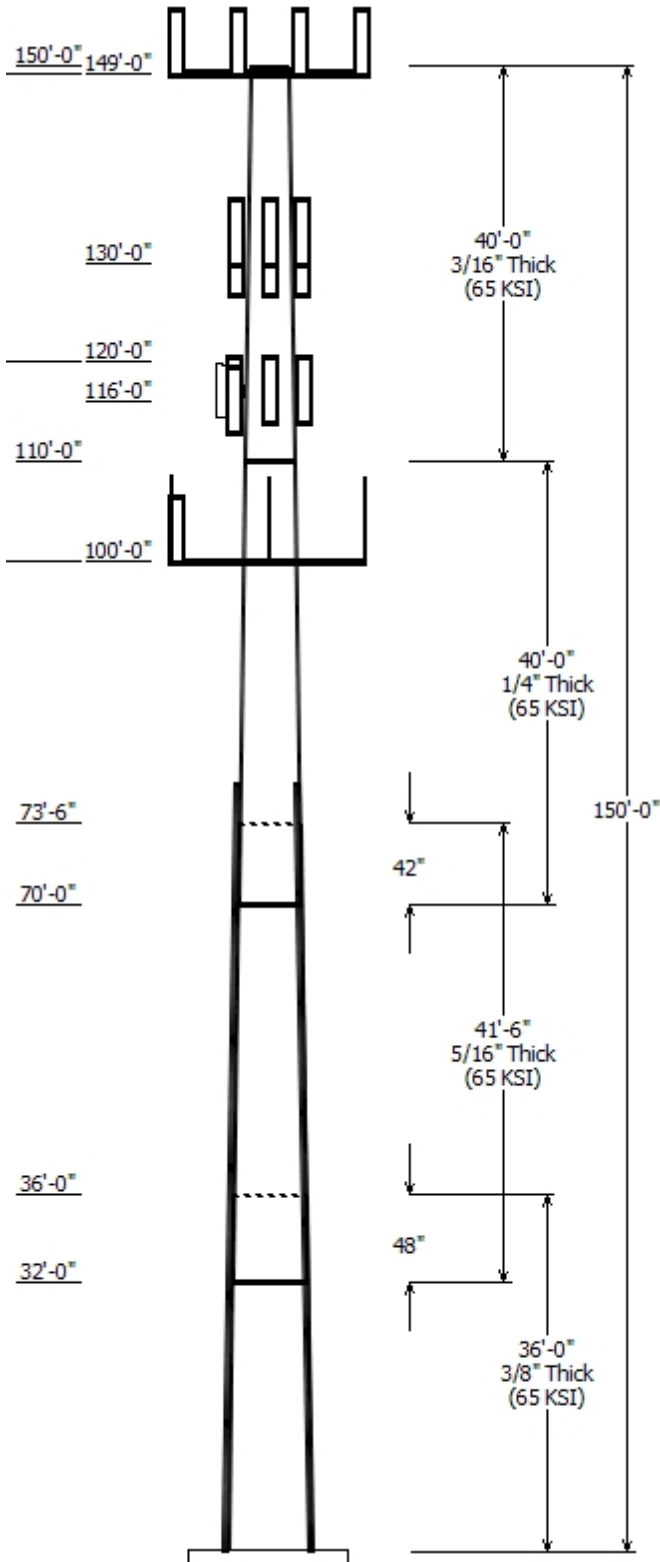
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements 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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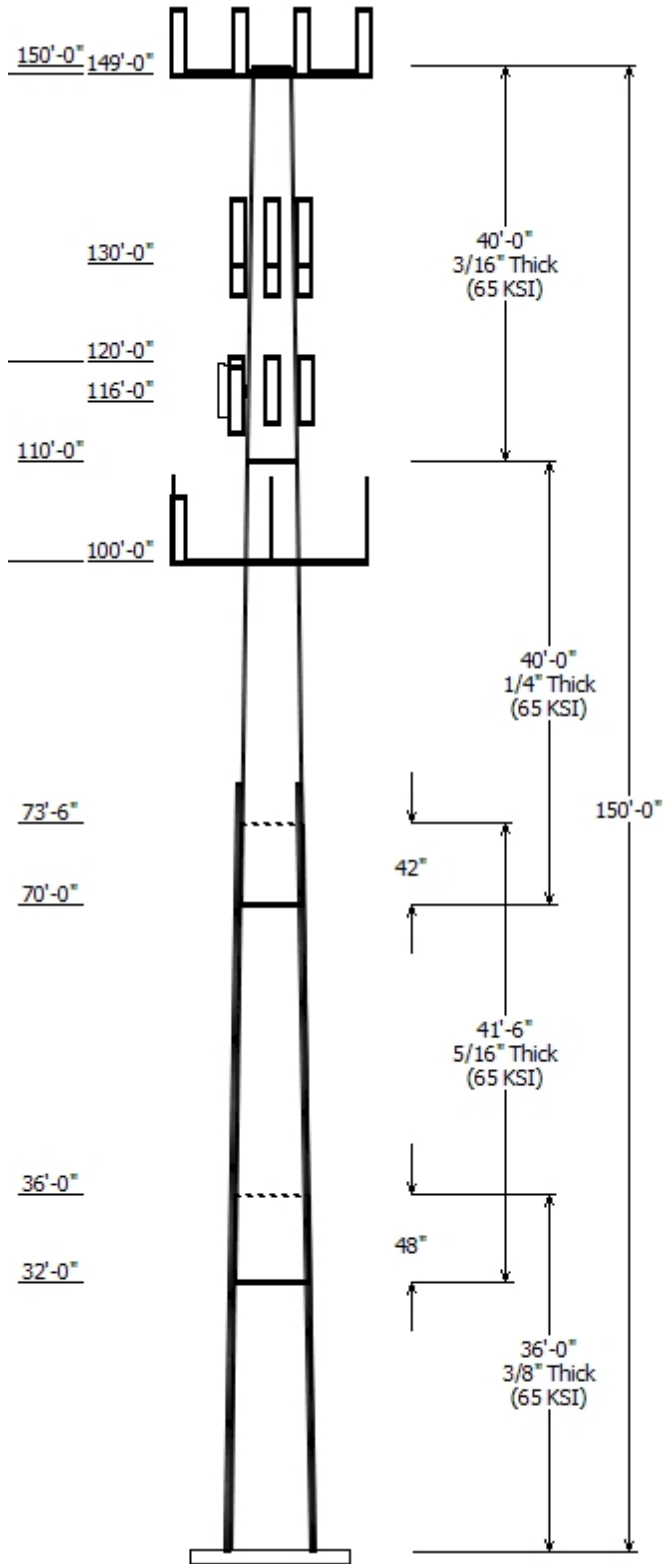
Job Information	
Pole :	302475
Code :	ANSI/TIA-222-G
Description :	150' ITT Meyer Type "B" Monopole
Client :	AT&T Mobility
Struct Class :	II
Location :	Sttn - Southington, CT
Shape :	12 Sides
Exposure :	B
Height :	150.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.15083(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap		Steel Grade (ksi)
		Across Flats Top	Across Flats Bottom			Length (in)	Taper (in/ft)	
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	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
149.000	153.000	3	Ericsson RRUS 12 w/ RRUS A2
149.000	153.000	3	Ericsson RRUS-11 (50 lbs.)
149.000	153.000	6	CCI DTMAPB7819VG12A (w/
149.000	153.000	1	Raycap DC6-48-60-18-8F (23.5"
149.000	153.000	1	Raycap DC6-48-60-18-8F (23.5"
149.000	152.000	6	CCI TPX-070821
130.000	132.000	3	Andrew LNX-6515DS-VTM
130.000	130.000	3	Kathrein Smart Bias Tee
130.000	132.000	3	RFS APXV18-206517S-C
120.000	118.000	1	DragonWave A-ANT-11G-2.5-C
120.000	118.000	3	Argus LLPX310R
120.000	118.000	1	DragonWave Horizon Compact
120.000	118.000	3	NextNet BTS-2500
120.000	120.000	1	Clearwire Mount
116.000	116.000	1	12" x 12" Junction Box
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	116.0	2" Conduit	Yes
0.000	120.0	1/2" Coax	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	0.78" 8 AWG 6	No
0.000	149.0	3" Conduit	No

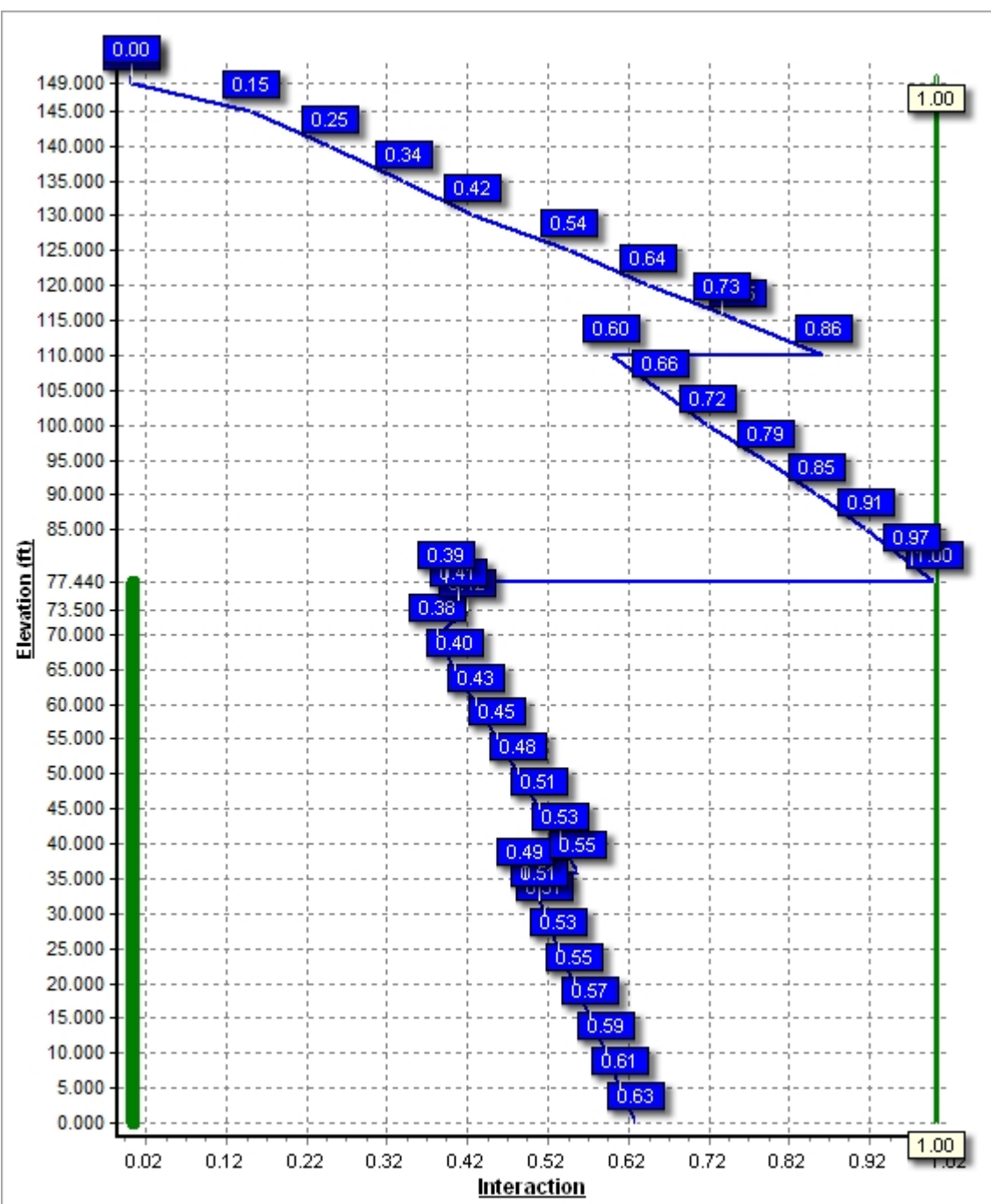




Load Cases	
1.2D + 1.6W	100 mph with No Ice
0.9D + 1.6W	100 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (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	2262.18	24.04	32.55
0.9D + 1.6W	2187.97	23.59	24.40
1.2D + 1.0Di + 1.0Wi	575.11	5.45	67.61
(1.2 + 0.2Sds) * DL + E ELFM	132.97	1.06	32.17
(1.2 + 0.2Sds) * DL + E EMAM	211.54	1.78	32.17
(0.9 - 0.2Sds) * DL + E ELFM	130.42	1.06	22.35
(0.9 - 0.2Sds) * DL + E EMAM	206.98	1.78	22.35
1.0D + 1.0W	495.87	5.31	27.17

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	19.463	1.838



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:05 PM

Customer: AT&T Mobility

**Analysis Parameters**

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

**Ice & Wind Parameters**

Structure Class:	II	Design Wind Speed Without Ice:	100 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):	2.72		
$T_L$ (sec):	6	$p$ :	1.3
$S_s$ :	0.184	$S_1$ :	0.064
$F_a$ :	1.600	$F_v$ :	2.400
$S_{ds}$ :	0.196	$S_{d1}$ :	0.102
		$C_s$ :	0.030
		$C_s$ Max:	0.030
		$C_s$ Min:	0.030

**Load Cases**

1.2D + 1.6W	100 mph with No Ice
0.9D + 1.6W	100 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 ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph



Site Number: 302475

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Site Name: Sttn - Southington, CT

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Customer: AT&T Mobility

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip 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	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor		
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 DTMAPB7819VG12A (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	3.000
149.00	Ericsson RRUS 12 w/ RRUS	3	71.40	3.150	0.50	229.43	4.128	0.50	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	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	1	20.00	1.110	0.67	136.00	2.754	0.67	0.000	4.000
149.00	Raycap DC6-48-60-18-8F	1	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
120.00	Argus LLPX310R	3	28.60	4.290	0.63	179.27	5.486	0.63	0.000	-2.000
120.00	Clearwire Mount	1	560.00	8.500	1.00	1,170.66	17.769	1.00	0.000	0.000
120.00	DragonWave A-ANT-11G-2.5-	1	47.60	8.670	1.00	213.91	10.923	1.00	0.000	-2.000
120.00	DragonWave Horizon	1	10.60	0.430	0.50	54.85	0.774	0.50	0.000	-2.000
120.00	NextNet BTS-2500	3	35.00	1.820	0.50	117.08	2.596	0.50	0.000	-2.000
116.00	12" x 12" Junction Box	1	10.00	1.400	0.50	83.71	1.829	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		61	5083.23			15,835.56			Number of Loadings : 25	

**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	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	149.00	2	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	6	5/16" Coax	0.31	0.05	N	0.00	Y	Clearwire Corporation
0.00	116.00	1	2" Conduit	2.38	3.65	N	2.38	Y	Clearwire Corporation

Site Number: 302475

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Engineering Number: 64793522

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Customer: AT&T Mobility

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	3.64	Y	

**Additional Steel**

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	— Intermediate Connections —		Connectors	Continuation?	
						Description	Spacing (in)	Len (in)		
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

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**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	Fy (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			
100.00		0.2500	22.042	17.543	1,063.3	21.48	88.17	81.3	93.2	0.0	303.6			
105.00		0.2500	21.288	16.935	956.7	20.67	85.15	81.9	86.8	0.0	293.3			
110.00	Top - Section 3	0.2500	20.534	16.328	857.5	19.86	82.13	81.9	80.7	0.0	283.0			
110.00	Bot - Section 4	0.1875	20.534	12.284	649.1	27.20	109.51	75.0	61.1	0.0				
115.00		0.1875	19.780	11.829	579.5	26.12	105.49	76.2	56.6	0.0	205.1			
116.00		0.1875	19.629	11.738	566.3	25.91	104.69	76.5	55.7	0.0	40.1			
120.00		0.1875	19.025	11.373	515.2	25.04	101.47	77.4	52.3	0.0	157.3			
125.00		0.1875	18.271	10.918	455.7	23.97	97.45	78.6	48.2	0.0	189.6			
130.00		0.1875	17.517	10.463	401.1	22.89	93.42	79.8	44.2	0.0	181.9			
135.00		0.1875	16.763	10.007	350.9	21.81	89.40	80.9	40.4	0.0	174.1			
140.00		0.1875	16.009	9.552	305.2	20.73	85.38	81.9	36.8	0.0	166.4			
145.00		0.1875	15.255	9.097	263.6	19.66	81.36	81.9	33.4	0.0	158.6			
149.00		0.1875	14.651	8.733	233.2	18.79	78.14	81.9	30.7	0.0	121.3			
150.00		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



Site Number: 302475

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

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Customer: AT&T Mobility

**Load Case:** 1.2D + 1.6W

100 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		276.2	0.0					0.0	0.0	276.2	0.0	0.0	0.0
5.00		546.6	869.0					119.8	580.3	666.5	1,449.2	0.0	0.0
10.00		535.0	850.4					119.8	580.3	654.8	1,430.6	0.0	0.0
15.00		523.3	831.8					119.8	580.3	643.1	1,412.0	0.0	0.0
20.00		511.6	813.2					119.8	580.3	631.4	1,393.5	0.0	0.0
25.00		499.9	794.6					119.8	580.3	619.7	1,374.9	0.0	0.0
30.00		345.2	776.0					119.8	580.3	465.0	1,356.3	0.0	0.0
32.00	Bot - Section 2	249.9	305.2					48.4	232.1	298.3	537.3	0.0	0.0
35.00		202.7	837.5					74.3	348.2	276.9	1,185.7	0.0	0.0
36.00	Top - Section 1	256.2	276.5					25.2	116.1	281.3	392.5	0.0	0.0
40.00		464.3	502.6					102.7	464.2	566.9	966.8	0.0	0.0
45.00		519.8	614.3					132.5	580.3	652.3	1,194.6	0.0	0.0
50.00		522.2	598.8					136.8	580.3	658.9	1,179.1	0.0	0.0
55.00		522.7	583.3					140.7	580.3	663.4	1,163.6	0.0	0.0
60.00		521.6	567.8					144.5	580.3	666.1	1,148.1	0.0	0.0
65.00		519.1	552.3					147.9	580.3	667.0	1,132.6	0.0	0.0
70.00	Bot - Section 3	442.1	536.9					151.2	580.3	593.3	1,117.1	0.0	0.0
73.50	Top - Section 2	261.5	666.3					107.7	406.2	369.3	1,072.5	0.0	0.0
75.00		204.9	126.6					46.6	174.1	251.5	300.7	0.0	0.0
77.44	Reinf. Top	258.9	203.5					76.4	283.2	335.3	486.7	0.0	0.0
80.00		388.0	210.4					80.9	91.9	468.9	302.3	0.0	0.0
85.00		513.8	401.5					123.7	179.5	637.5	581.0	0.0	0.0
90.00		515.5	389.1					0.0	179.5	515.5	568.6	0.0	0.0
95.00		514.0	376.8					0.0	179.5	514.0	556.2	0.0	0.0
100.00	Appertunance(s)	512.0	364.4	1,016.9	0.0	2,299.1	752.4	0.0	179.5	1,528.9	1,296.2	0.0	0.0
105.00		489.1	352.0					0.0	167.6	489.1	519.5	0.0	0.0
110.00	Top - Section 3	461.9	339.6					94.1	167.6	556.1	507.1	0.0	0.0
115.00		273.2	246.2					95.4	167.6	368.6	413.7	0.0	0.0
116.00	Appertunance(s)	192.8	48.1	24.7	0.0	0.0	12.0	19.2	33.5	236.8	93.6	0.0	0.0
120.00	Appertunance(s)	329.6	188.7	1,078.5	0.0	-1,399.5	970.8	0.0	116.5	1,408.1	1,276.1	0.0	0.0
125.00		360.3	227.6					0.0	143.2	360.3	370.7	0.0	0.0
130.00	Appertunance(s)	348.1	218.3	1,587.3	0.0	3,162.3	291.6	0.0	143.2	1,935.4	653.1	0.0	0.0
135.00		333.2	209.0					0.0	84.1	333.2	293.1	0.0	0.0
140.00		321.5	199.7					0.0	84.1	321.5	283.8	0.0	0.0
145.00		279.6	190.4					0.0	84.1	279.6	274.5	0.0	0.0
149.00	Appertunance(s)	151.7	145.6	3,866.1	0.0	10,248.0	4,073.0	0.0	67.3	4,017.8	4,285.9	0.0	0.0
150.00		29.8	35.5					0.0	0.0	29.8	35.5	0.0	0.0
<b>Totals:</b>										<b>24,238.5</b>	<b>32,604.7</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302475

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Site Name: Sttn - Southington, CT

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Customer: AT&T Mobility

**Load Case:** 1.2D + 1.6W

100 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	-32.55	-24.04	0.00	-2,262.18	0.00	2,262.18	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.627
5.00	-30.99	-23.52	0.00	-2,141.98	0.00	2,141.98	3,015.96	1,507.98	4,329.28	2,138.07	0.15	-0.27	0.608
10.00	-29.45	-22.99	0.00	-2,024.39	0.00	2,024.39	2,972.53	1,486.26	4,173.67	2,061.22	0.58	-0.54	0.589
15.00	-27.94	-22.47	0.00	-1,909.42	0.00	1,909.42	2,928.13	1,464.06	4,019.46	1,985.06	1.29	-0.82	0.569
20.00	-26.46	-21.94	0.00	-1,797.10	0.00	1,797.10	2,882.77	1,441.38	3,866.74	1,909.64	2.29	-1.08	0.550
25.00	-25.00	-21.40	0.00	-1,687.42	0.00	1,687.42	2,835.18	1,417.59	3,713.97	1,834.19	3.57	-1.35	0.530
30.00	-23.59	-20.98	0.00	-1,580.41	0.00	1,580.41	2,768.06	1,384.03	3,539.19	1,747.87	5.13	-1.62	0.514
32.00	-23.01	-20.72	0.00	-1,538.45	0.00	1,538.45	2,741.21	1,370.60	3,470.46	1,713.93	5.83	-1.73	0.507
35.00	-21.79	-20.45	0.00	-1,476.29	0.00	1,476.29	2,700.94	1,350.47	3,368.63	1,663.64	6.97	-1.89	0.489
36.00	-21.37	-20.20	0.00	-1,455.85	0.00	1,455.85	2,178.16	1,089.08	2,770.79	1,368.39	7.37	-1.94	0.554
40.00	-20.34	-19.68	0.00	-1,375.05	0.00	1,375.05	2,151.08	1,075.54	2,682.35	1,324.71	9.08	-2.14	0.533
45.00	-19.08	-19.07	0.00	-1,276.63	0.00	1,276.63	2,116.36	1,058.18	2,572.65	1,270.54	11.47	-2.41	0.507
50.00	-17.85	-18.44	0.00	-1,181.27	0.00	1,181.27	2,080.68	1,040.34	2,464.00	1,216.88	14.14	-2.68	0.481
55.00	-16.64	-17.80	0.00	-1,089.05	0.00	1,089.05	2,044.03	1,022.02	2,356.47	1,163.77	17.08	-2.94	0.455
60.00	-15.45	-17.14	0.00	-1,000.06	0.00	1,000.06	2,006.42	1,003.21	2,250.16	1,111.27	20.29	-3.19	0.429
65.00	-14.29	-16.47	0.00	-914.36	0.00	914.36	1,966.16	983.08	2,143.32	1,058.50	23.76	-3.44	0.403
70.00	-13.16	-15.85	0.00	-832.01	0.00	832.01	1,910.22	955.11	2,022.41	998.79	27.49	-3.67	0.380
73.50	-12.08	-15.44	0.00	-776.53	0.00	776.53	1,431.47	715.74	1,521.25	751.29	30.24	-3.84	0.416
75.00	-11.77	-15.19	0.00	-753.37	0.00	753.37	1,423.81	711.90	1,499.70	740.65	31.46	-3.91	0.406
77.44	-11.28	-14.84	0.00	-716.31	0.00	716.31	1,411.16	705.58	1,464.78	723.40	33.49	-4.03	0.390
77.44	-11.28	-14.84	0.00	-716.31	0.00	716.31	1,411.16	705.58	1,464.78	723.40	33.49	-4.03	0.999
80.00	-10.92	-14.42	0.00	-678.31	0.00	678.31	1,397.65	698.83	1,428.30	705.38	35.68	-4.15	0.970
85.00	-10.26	-13.84	0.00	-606.21	0.00	606.21	1,370.53	685.26	1,357.58	670.46	40.33	-4.73	0.912
90.00	-9.60	-13.38	0.00	-536.98	0.00	536.98	1,342.44	671.22	1,287.64	635.92	45.58	-5.30	0.852
95.00	-8.98	-12.90	0.00	-470.10	0.00	470.10	1,313.39	656.70	1,218.57	601.80	51.42	-5.85	0.788
100.00	-7.75	-11.31	0.00	-403.33	0.00	403.33	1,283.38	641.69	1,150.46	568.17	57.81	-6.38	0.716
105.00	-7.20	-10.82	0.00	-346.79	0.00	346.79	1,248.31	624.16	1,079.86	533.30	64.75	-6.88	0.656
110.00	-6.68	-10.26	0.00	-292.67	0.00	292.67	1,203.56	601.78	1,003.39	495.54	72.19	-7.35	0.596
110.00	-6.68	-10.26	0.00	-292.67	0.00	292.67	829.71	414.85	695.98	343.72	72.19	-7.35	0.860
115.00	-6.28	-9.87	0.00	-241.36	0.00	241.36	811.47	405.73	655.22	323.59	80.11	-7.80	0.754
116.00	-6.17	-9.66	0.00	-231.49	0.00	231.49	807.71	403.85	647.11	319.59	81.75	-7.91	0.733
120.00	-5.04	-8.12	0.00	-192.86	0.00	192.86	792.27	396.13	614.86	303.65	88.54	-8.34	0.642
125.00	-4.67	-7.75	0.00	-152.26	0.00	152.26	772.10	386.05	574.98	283.96	97.51	-8.82	0.543
130.00	-4.29	-5.76	0.00	-110.37	0.00	110.37	750.97	375.48	535.68	264.55	106.93	-9.23	0.423
135.00	-4.02	-5.41	0.00	-81.56	0.00	81.56	728.87	364.44	497.06	245.48	116.74	-9.57	0.338
140.00	-3.78	-5.06	0.00	-54.54	0.00	54.54	704.09	352.04	458.06	226.22	126.87	-9.85	0.247
145.00	-3.55	-4.74	0.00	-29.25	0.00	29.25	670.52	335.26	415.19	205.05	137.25	-10.04	0.148
149.00	-0.03	-0.04	0.00	-0.04	0.00	0.04	643.68	321.84	382.41	188.86	145.66	-10.13	0.000
150.00	0.00	-0.03	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	147.77	-10.13	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:07 PM

Customer: AT&T Mobility

**Load Case:** 0.9D + 1.6W

100 mph with No Ice (Reduced DL)

28 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		276.2	0.0					0.0	0.0	276.2	0.0	0.0	0.0
5.00		546.6	651.7					119.8	435.2	666.5	1,086.9	0.0	0.0
10.00		535.0	637.8					119.8	435.2	654.8	1,073.0	0.0	0.0
15.00		523.3	623.8					119.8	435.2	643.1	1,059.0	0.0	0.0
20.00		511.6	609.9					119.8	435.2	631.4	1,045.1	0.0	0.0
25.00		499.9	596.0					119.8	435.2	619.7	1,031.1	0.0	0.0
30.00		345.2	582.0					119.8	435.2	465.0	1,017.2	0.0	0.0
32.00	Bot - Section 2	249.9	228.9					48.4	174.1	298.3	403.0	0.0	0.0
35.00		202.7	628.2					74.3	261.1	276.9	889.3	0.0	0.0
36.00	Top - Section 1	256.2	207.3					25.2	87.0	281.3	294.4	0.0	0.0
40.00		464.3	377.0					102.7	348.2	566.9	725.1	0.0	0.0
45.00		519.8	460.7					132.5	435.2	652.3	895.9	0.0	0.0
50.00		522.2	449.1					136.8	435.2	658.9	884.3	0.0	0.0
55.00		522.7	437.5					140.7	435.2	663.4	872.7	0.0	0.0
60.00		521.6	425.9					144.5	435.2	666.1	861.1	0.0	0.0
65.00		519.1	414.3					147.9	435.2	667.0	849.5	0.0	0.0
70.00	Bot - Section 3	442.1	402.6					151.2	435.2	593.3	837.8	0.0	0.0
73.50	Top - Section 2	261.5	499.7					107.7	304.6	369.3	804.4	0.0	0.0
75.00		204.9	94.9					46.6	130.6	251.5	225.5	0.0	0.0
77.44	Reinf. Top	258.9	152.7					76.4	212.4	335.3	365.0	0.0	0.0
80.00		388.0	157.8					80.9	68.9	468.9	226.7	0.0	0.0
85.00		465.9	301.2					123.7	134.6	589.6	435.8	0.0	0.0
90.00		416.9	291.9					0.0	134.6	416.9	426.5	0.0	0.0
95.00		409.8	282.6					0.0	134.6	409.8	417.2	0.0	0.0
100.00	Appertunance(s)	402.1	273.3	1,016.9	0.0	2,299.1	564.3	0.0	134.6	1,419.0	972.2	0.0	0.0
105.00		432.8	264.0					0.0	125.7	432.8	389.7	0.0	0.0
110.00	Top - Section 3	461.9	254.7					94.1	125.7	556.1	380.4	0.0	0.0
115.00		273.2	184.6					95.4	125.7	368.6	310.3	0.0	0.0
116.00	Appertunance(s)	192.8	36.1	24.7	0.0	0.0	9.0	19.2	25.1	236.8	70.2	0.0	0.0
120.00	Appertunance(s)	328.2	141.6	1,078.5	0.0	-1,399.5	728.1	0.0	87.4	1,406.7	957.1	0.0	0.0
125.00		355.3	170.7					0.0	107.4	355.3	278.0	0.0	0.0
130.00	Appertunance(s)	344.5	163.7	1,587.3	0.0	3,162.3	218.7	0.0	107.4	1,931.8	489.8	0.0	0.0
135.00		333.2	156.7					0.0	63.1	333.2	219.8	0.0	0.0
140.00		321.5	149.8					0.0	63.1	321.5	212.8	0.0	0.0
145.00		279.6	142.8					0.0	63.1	279.6	205.9	0.0	0.0
149.00	Appertunance(s)	151.7	109.2	3,866.1	0.0	10,248.0	3,054.8	0.0	50.5	4,017.8	3,214.5	0.0	0.0
150.00		29.8	26.6					0.0	0.0	29.8	26.6	0.0	0.0
<b>Totals:</b>										<b>23,811.5</b>	<b>24,453.5</b>	<b>0.00</b>	<b>0.00</b>



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:09 PM

Customer: AT&T Mobility

**Load Case:** 0.9D + 1.6W

100 mph with No Ice (Reduced DL)

28 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	-24.40	-23.59	0.00	-2,187.97	0.00	2,187.97	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.605
5.00	-23.21	-23.03	0.00	-2,070.01	0.00	2,070.01	3,015.96	1,507.98	4,329.28	2,138.07	0.14	-0.26	0.586
10.00	-22.04	-22.47	0.00	-1,954.86	0.00	1,954.86	2,972.53	1,486.26	4,173.67	2,061.22	0.56	-0.53	0.567
15.00	-20.89	-21.91	0.00	-1,842.51	0.00	1,842.51	2,928.13	1,464.06	4,019.46	1,985.06	1.25	-0.79	0.548
20.00	-19.75	-21.35	0.00	-1,732.97	0.00	1,732.97	2,882.77	1,441.38	3,866.74	1,909.64	2.21	-1.05	0.529
25.00	-18.64	-20.79	0.00	-1,626.22	0.00	1,626.22	2,835.18	1,417.59	3,713.97	1,834.19	3.45	-1.31	0.510
30.00	-17.57	-20.36	0.00	-1,522.25	0.00	1,522.25	2,768.06	1,384.03	3,539.19	1,747.87	4.96	-1.56	0.493
32.00	-17.13	-20.09	0.00	-1,481.54	0.00	1,481.54	2,741.21	1,370.60	3,470.46	1,713.93	5.63	-1.67	0.487
35.00	-16.22	-19.81	0.00	-1,421.28	0.00	1,421.28	2,700.94	1,350.47	3,368.63	1,663.64	6.73	-1.82	0.470
36.00	-15.89	-19.56	0.00	-1,401.46	0.00	1,401.46	2,178.16	1,089.08	2,770.79	1,368.39	7.12	-1.87	0.532
40.00	-15.11	-19.03	0.00	-1,323.24	0.00	1,323.24	2,151.08	1,075.54	2,682.35	1,324.71	8.77	-2.07	0.512
45.00	-14.16	-18.40	0.00	-1,228.11	0.00	1,228.11	2,116.36	1,058.18	2,572.65	1,270.54	11.07	-2.33	0.487
50.00	-13.22	-17.76	0.00	-1,136.10	0.00	1,136.10	2,080.68	1,040.34	2,464.00	1,216.88	13.65	-2.58	0.462
55.00	-12.31	-17.11	0.00	-1,047.28	0.00	1,047.28	2,044.03	1,022.02	2,356.47	1,163.77	16.48	-2.83	0.436
60.00	-11.42	-16.45	0.00	-961.71	0.00	961.71	2,006.42	1,003.21	2,250.16	1,111.27	19.58	-3.07	0.411
65.00	-10.54	-15.78	0.00	-879.45	0.00	879.45	1,966.16	983.08	2,143.32	1,058.50	22.92	-3.31	0.386
70.00	-9.69	-15.17	0.00	-800.55	0.00	800.55	1,910.22	955.11	2,022.41	998.79	26.51	-3.54	0.364
73.50	-8.88	-14.77	0.00	-747.44	0.00	747.44	1,431.47	715.74	1,521.25	751.29	29.16	-3.70	0.399
75.00	-8.65	-14.52	0.00	-725.29	0.00	725.29	1,423.81	711.90	1,499.70	740.65	30.33	-3.76	0.390
77.44	-8.28	-14.18	0.00	-689.86	0.00	689.86	1,411.16	705.58	1,464.78	723.40	32.29	-3.88	0.375
77.44	-8.28	-14.18	0.00	-689.86	0.00	689.86	1,411.16	705.58	1,464.78	723.40	32.29	-3.88	0.960
80.00	-8.00	-13.74	0.00	-653.57	0.00	653.57	1,397.65	698.83	1,428.30	705.38	34.40	-3.99	0.933
85.00	-7.48	-13.19	0.00	-584.87	0.00	584.87	1,370.53	685.26	1,357.58	670.46	38.88	-4.56	0.878
90.00	-6.97	-12.81	0.00	-518.90	0.00	518.90	1,342.44	671.22	1,287.64	635.92	43.94	-5.10	0.822
95.00	-6.48	-12.42	0.00	-454.86	0.00	454.86	1,313.39	656.70	1,218.57	601.80	49.56	-5.64	0.761
100.00	-5.57	-10.96	0.00	-390.46	0.00	390.46	1,283.38	641.69	1,150.46	568.17	55.73	-6.15	0.692
105.00	-5.14	-10.53	0.00	-335.67	0.00	335.67	1,248.31	624.16	1,079.86	533.30	62.42	-6.63	0.634
110.00	-4.75	-9.97	0.00	-283.03	0.00	283.03	1,203.56	601.78	1,003.39	495.54	69.60	-7.09	0.575
110.00	-4.75	-9.97	0.00	-283.03	0.00	283.03	829.71	414.85	695.98	343.72	69.60	-7.09	0.830
115.00	-4.45	-9.58	0.00	-233.19	0.00	233.19	811.47	405.73	655.22	323.59	77.25	-7.52	0.727
116.00	-4.37	-9.36	0.00	-223.61	0.00	223.61	807.71	403.85	647.11	319.59	78.83	-7.64	0.706
120.00	-3.55	-7.86	0.00	-186.17	0.00	186.17	792.27	396.13	614.86	303.65	85.39	-8.05	0.618
125.00	-3.27	-7.50	0.00	-146.85	0.00	146.85	772.10	386.05	574.98	283.96	94.03	-8.51	0.522
130.00	-3.04	-5.53	0.00	-106.21	0.00	106.21	750.97	375.48	535.68	264.55	103.13	-8.91	0.406
135.00	-2.85	-5.18	0.00	-78.55	0.00	78.55	728.87	364.44	497.06	245.48	112.60	-9.23	0.324
140.00	-2.68	-4.84	0.00	-52.64	0.00	52.64	704.09	352.04	458.06	226.22	122.38	-9.50	0.237
145.00	-2.51	-4.54	0.00	-28.43	0.00	28.43	670.52	335.26	415.19	205.05	132.39	-9.69	0.143
149.00	-0.02	-0.03	0.00	-0.03	0.00	0.03	643.68	321.84	382.41	188.86	140.51	-9.77	0.000
150.00	0.00	-0.03	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	142.55	-9.77	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:09 PM

Customer: AT&T Mobility

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	28 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					40.4	997.0	133.5	2,233.9	0.0	0.0
10.00		91.9	1,254.6					42.9	1,054.2	134.8	2,308.8	0.0	0.0
15.00		90.4	1,249.3					44.2	1,084.1	134.6	2,333.4	0.0	0.0
20.00		88.8	1,236.6					45.1	1,105.0	133.9	2,341.6	0.0	0.0
25.00		87.2	1,219.9					45.8	1,121.3	133.0	2,341.3	0.0	0.0
30.00		60.4	1,200.8					46.3	1,134.8	106.7	2,335.7	0.0	0.0
32.00	Bot - Section 2	43.8	475.7					18.8	457.2	62.7	933.0	0.0	0.0
35.00		35.6	1,096.8					29.0	689.1	64.6	1,785.9	0.0	0.0
36.00	Top - Section 1	45.1	363.0					9.9	230.5	55.0	593.5	0.0	0.0
40.00		81.9	845.0					40.4	925.9	122.4	1,770.9	0.0	0.0
45.00		92.1	1,037.4					52.6	1,165.5	144.6	2,202.9	0.0	0.0
50.00		92.9	1,016.8					54.6	1,173.6	147.5	2,190.4	0.0	0.0
55.00		93.4	995.5					56.5	1,181.1	149.9	2,176.6	0.0	0.0
60.00		93.6	973.7					58.4	1,188.0	152.0	2,161.7	0.0	0.0
65.00		93.6	951.4					60.1	1,194.4	153.7	2,145.8	0.0	0.0
70.00	Bot - Section 3	80.0	928.7					61.7	1,200.3	141.7	2,129.1	0.0	0.0
73.50	Top - Section 2	47.4	942.2					44.1	843.6	91.5	1,785.8	0.0	0.0
75.00		37.2	244.3					19.1	362.3	56.4	606.7	0.0	0.0
77.44	Reinf. Top	47.1	393.0					31.4	590.4	78.6	983.5	0.0	0.0
80.00		70.9	407.1					33.3	415.6	104.2	822.7	0.0	0.0
85.00		93.2	776.9					53.6	748.2	146.8	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		52.0	568.0					45.8	598.1	97.8	1,166.2	0.0	0.0
116.00	Appertunance(s)	42.6	112.2	5.0	0.0	0.0	85.7	9.2	119.9	56.9	317.9	0.0	0.0
120.00	Appertunance(s)	75.8	438.7	265.5	0.0	-283.5	2,930.8	0.0	419.2	341.3	3,788.8	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	307.8	0.0	608.8	1,929.4	0.0	438.4	388.8	2,878.8	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	969.2	0.0	2,089.7	9,778.4	0.0	67.3	1,006.2	10,194.7	0.0	0.0
150.00		7.3	86.0					0.0	0.0	7.3	86.0	0.0	0.0
<b>Totals:</b>										5,452.76	67,609.0	0.00	0.00

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:12 PM

Customer: AT&T Mobility

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

50 mph with 1.00 in Radial Ice

28 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	-67.61	-5.45	0.00	-575.11	0.00	575.11	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.173
5.00	-65.37	-5.39	0.00	-547.87	0.00	547.87	3,015.96	1,507.98	4,329.28	2,138.07	0.04	-0.07	0.168
10.00	-63.05	-5.33	0.00	-520.91	0.00	520.91	2,972.53	1,486.26	4,173.67	2,061.22	0.15	-0.14	0.164
15.00	-60.71	-5.26	0.00	-494.26	0.00	494.26	2,928.13	1,464.06	4,019.46	1,985.06	0.33	-0.21	0.160
20.00	-58.36	-5.19	0.00	-467.95	0.00	467.95	2,882.77	1,441.38	3,866.74	1,909.64	0.59	-0.28	0.155
25.00	-56.02	-5.11	0.00	-442.00	0.00	442.00	2,835.18	1,417.59	3,713.97	1,834.19	0.92	-0.35	0.150
30.00	-53.68	-5.04	0.00	-416.44	0.00	416.44	2,768.06	1,384.03	3,539.19	1,747.87	1.32	-0.42	0.147
32.00	-52.74	-5.00	0.00	-406.37	0.00	406.37	2,741.21	1,370.60	3,470.46	1,713.93	1.50	-0.45	0.145
35.00	-50.95	-4.94	0.00	-391.38	0.00	391.38	2,700.94	1,350.47	3,368.63	1,663.64	1.80	-0.49	0.141
36.00	-50.36	-4.91	0.00	-386.43	0.00	386.43	2,178.16	1,089.08	2,770.79	1,368.39	1.90	-0.50	0.160
40.00	-48.58	-4.83	0.00	-366.78	0.00	366.78	2,151.08	1,075.54	2,682.35	1,324.71	2.35	-0.56	0.154
45.00	-46.38	-4.72	0.00	-342.63	0.00	342.63	2,116.36	1,058.18	2,572.65	1,270.54	2.97	-0.63	0.148
50.00	-44.18	-4.60	0.00	-319.03	0.00	319.03	2,080.68	1,040.34	2,464.00	1,216.88	3.67	-0.70	0.141
55.00	-42.00	-4.47	0.00	-296.02	0.00	296.02	2,044.03	1,022.02	2,356.47	1,163.77	4.44	-0.77	0.134
60.00	-39.84	-4.34	0.00	-273.65	0.00	273.65	2,006.42	1,003.21	2,250.16	1,111.27	5.28	-0.84	0.128
65.00	-37.69	-4.20	0.00	-251.96	0.00	251.96	1,966.16	983.08	2,143.32	1,058.50	6.20	-0.91	0.121
70.00	-35.56	-4.06	0.00	-230.97	0.00	230.97	1,910.22	955.11	2,022.41	998.79	7.19	-0.97	0.115
73.50	-33.77	-3.95	0.00	-216.78	0.00	216.78	1,431.47	715.74	1,521.25	751.29	7.92	-1.02	0.127
75.00	-33.17	-3.90	0.00	-210.85	0.00	210.85	1,423.81	711.90	1,499.70	740.65	8.24	-1.04	0.124
77.44	-32.18	-3.82	0.00	-201.34	0.00	201.34	1,411.16	705.58	1,464.78	723.40	8.78	-1.07	0.120
77.44	-32.18	-3.82	0.00	-201.34	0.00	201.34	1,411.16	705.58	1,464.78	723.40	8.78	-1.07	0.301
80.00	-31.35	-3.76	0.00	-191.55	0.00	191.55	1,397.65	698.83	1,428.30	705.38	9.37	-1.11	0.294
85.00	-29.82	-3.66	0.00	-172.77	0.00	172.77	1,370.53	685.26	1,357.58	670.46	10.61	-1.27	0.279
90.00	-28.37	-3.62	0.00	-154.45	0.00	154.45	1,342.44	671.22	1,287.64	635.92	12.03	-1.43	0.264
95.00	-26.94	-3.56	0.00	-136.37	0.00	136.37	1,313.39	656.70	1,218.57	601.80	13.62	-1.59	0.247
100.00	-23.53	-3.18	0.00	-117.99	0.00	117.99	1,283.38	641.69	1,150.46	568.17	15.37	-1.75	0.226
105.00	-22.24	-3.10	0.00	-102.11	0.00	102.11	1,248.31	624.16	1,079.86	533.30	17.28	-1.89	0.209
110.00	-20.97	-2.98	0.00	-86.59	0.00	86.59	1,203.56	601.78	1,003.39	495.54	19.34	-2.03	0.192
110.00	-20.97	-2.98	0.00	-86.59	0.00	86.59	829.71	414.85	695.98	343.72	19.34	-2.03	0.277
115.00	-19.81	-2.86	0.00	-71.71	0.00	71.71	811.47	405.73	655.22	323.59	21.54	-2.17	0.246
116.00	-19.49	-2.82	0.00	-68.85	0.00	68.85	807.71	403.85	647.11	319.59	22.00	-2.20	0.240
120.00	-15.71	-2.37	0.00	-57.56	0.00	57.56	792.27	396.13	614.86	303.65	23.90	-2.33	0.209
125.00	-14.74	-2.28	0.00	-45.71	0.00	45.71	772.10	386.05	574.98	283.96	26.41	-2.47	0.180
130.00	-11.88	-1.79	0.00	-33.70	0.00	33.70	750.97	375.48	535.68	264.55	29.07	-2.59	0.143
135.00	-11.31	-1.70	0.00	-24.76	0.00	24.76	728.87	364.44	497.06	245.48	31.84	-2.70	0.116
140.00	-10.75	-1.61	0.00	-16.25	0.00	16.25	704.09	352.04	458.06	226.22	34.71	-2.78	0.087
145.00	-10.22	-1.52	0.00	-8.20	0.00	8.20	670.52	335.26	415.19	205.05	37.66	-2.84	0.055
149.00	-0.09	-0.01	0.00	-0.01	0.00	0.01	643.68	321.84	382.41	188.86	40.05	-2.86	0.000
150.00	0.00	-0.01	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	40.65	-2.86	0.000

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:12 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		62.2	0.0					0.0	0.0	62.2	0.0	0.0	0.0
5.00		123.0	724.1					27.0	483.5	150.0	1,207.7	0.0	0.0
10.00		120.4	708.6					27.0	483.5	147.3	1,192.2	0.0	0.0
15.00		117.7	693.2					27.0	483.5	144.7	1,176.7	0.0	0.0
20.00		115.1	677.7					27.0	483.5	142.1	1,161.2	0.0	0.0
25.00		112.5	662.2					27.0	483.5	139.4	1,145.7	0.0	0.0
30.00		77.7	646.7					27.0	483.5	104.6	1,130.2	0.0	0.0
32.00	Bot - Section 2	56.2	254.3					10.9	193.4	67.1	447.8	0.0	0.0
35.00		45.6	698.0					16.7	290.1	62.3	988.1	0.0	0.0
36.00	Top - Section 1	57.6	230.4					5.7	96.7	63.3	327.1	0.0	0.0
40.00		104.5	418.8					23.1	386.8	127.6	805.7	0.0	0.0
45.00		117.0	511.9					29.8	483.5	146.8	995.5	0.0	0.0
50.00		117.5	499.0					30.8	483.5	148.3	982.6	0.0	0.0
55.00		117.6	486.1					31.7	483.5	149.3	969.7	0.0	0.0
60.00		117.4	473.2					32.5	483.5	149.9	956.7	0.0	0.0
65.00		116.8	460.3					33.3	483.5	150.1	943.8	0.0	0.0
70.00	Bot - Section 3	99.5	447.4					34.0	483.5	133.5	930.9	0.0	0.0
73.50	Top - Section 2	58.8	555.3					24.2	338.5	83.1	893.7	0.0	0.0
75.00		46.1	105.5					10.5	145.1	56.6	250.6	0.0	0.0
77.44	Reinf. Top	58.3	169.6					17.2	236.0	75.4	405.6	0.0	0.0
80.00		87.3	175.3					18.2	76.6	105.5	251.9	0.0	0.0
85.00		104.8	334.6					27.8	149.6	132.7	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		61.5	205.1					21.5	139.7	82.9	344.8	0.0	0.0
116.00	Appertunance(s)	43.4	40.1	5.6	0.0	0.0	10.0	4.3	27.9	53.3	78.0	0.0	0.0
120.00	Appertunance(s)	73.8	157.3	242.7	0.0	-314.9	809.0	0.0	97.1	316.5	1,063.4	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	357.1	0.0	711.5	243.0	0.0	119.3	434.6	544.2	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	869.9	0.0	2,305.8	3,394.2	0.0	56.1	904.0	3,571.6	0.0	0.0
150.00		6.7	29.6					0.0	0.0	6.7	29.6	0.0	0.0
<b>Totals:</b>										<b>5,357.60</b>	<b>27,170.6</b>	<b>0.00</b>	<b>0.00</b>



Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

1/19/2016 4:37:14 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	-27.17	-5.31	0.00	-495.87	0.00	495.87	3,058.44	1,529.22	4,486.20	2,215.57	0.00	0.00	0.142
5.00	-25.95	-5.19	0.00	-469.33	0.00	469.33	3,015.96	1,507.98	4,329.28	2,138.07	0.03	-0.06	0.137
10.00	-24.76	-5.06	0.00	-443.40	0.00	443.40	2,972.53	1,486.26	4,173.67	2,061.22	0.13	-0.12	0.133
15.00	-23.58	-4.94	0.00	-418.09	0.00	418.09	2,928.13	1,464.06	4,019.46	1,985.06	0.28	-0.18	0.129
20.00	-22.41	-4.82	0.00	-393.40	0.00	393.40	2,882.77	1,441.38	3,866.74	1,909.64	0.50	-0.24	0.124
25.00	-21.26	-4.69	0.00	-369.32	0.00	369.32	2,835.18	1,417.59	3,713.97	1,834.19	0.78	-0.30	0.120
30.00	-20.13	-4.60	0.00	-345.86	0.00	345.86	2,768.06	1,384.03	3,539.19	1,747.87	1.12	-0.35	0.116
32.00	-19.68	-4.54	0.00	-336.67	0.00	336.67	2,741.21	1,370.60	3,470.46	1,713.93	1.28	-0.38	0.114
35.00	-18.69	-4.47	0.00	-323.06	0.00	323.06	2,700.94	1,350.47	3,368.63	1,663.64	1.53	-0.41	0.110
36.00	-18.36	-4.42	0.00	-318.59	0.00	318.59	2,178.16	1,089.08	2,770.79	1,368.39	1.61	-0.42	0.125
40.00	-17.55	-4.30	0.00	-300.92	0.00	300.92	2,151.08	1,075.54	2,682.35	1,324.71	1.99	-0.47	0.120
45.00	-16.55	-4.16	0.00	-279.42	0.00	279.42	2,116.36	1,058.18	2,572.65	1,270.54	2.51	-0.53	0.114
50.00	-15.57	-4.02	0.00	-258.62	0.00	258.62	2,080.68	1,040.34	2,464.00	1,216.88	3.10	-0.59	0.109
55.00	-14.60	-3.87	0.00	-238.53	0.00	238.53	2,044.03	1,022.02	2,356.47	1,163.77	3.74	-0.64	0.103
60.00	-13.64	-3.73	0.00	-219.16	0.00	219.16	2,006.42	1,003.21	2,250.16	1,111.27	4.44	-0.70	0.097
65.00	-12.69	-3.58	0.00	-200.53	0.00	200.53	1,966.16	983.08	2,143.32	1,058.50	5.21	-0.75	0.091
70.00	-11.76	-3.44	0.00	-182.66	0.00	182.66	1,910.22	955.11	2,022.41	998.79	6.02	-0.80	0.086
73.50	-10.87	-3.35	0.00	-170.63	0.00	170.63	1,431.47	715.74	1,521.25	751.29	6.63	-0.84	0.094
75.00	-10.62	-3.29	0.00	-165.61	0.00	165.61	1,423.81	711.90	1,499.70	740.65	6.89	-0.86	0.092
77.44	-10.21	-3.21	0.00	-157.58	0.00	157.58	1,411.16	705.58	1,464.78	723.40	7.34	-0.88	0.089
77.44	-10.21	-3.21	0.00	-157.58	0.00	157.58	1,411.16	705.58	1,464.78	723.40	7.34	-0.88	0.225
80.00	-9.96	-3.12	0.00	-149.35	0.00	149.35	1,397.65	698.83	1,428.30	705.38	7.82	-0.91	0.219
85.00	-9.47	-3.00	0.00	-133.76	0.00	133.76	1,370.53	685.26	1,357.58	670.46	8.84	-1.04	0.206
90.00	-8.99	-2.91	0.00	-118.77	0.00	118.77	1,342.44	671.22	1,287.64	635.92	9.99	-1.16	0.193
95.00	-8.52	-2.83	0.00	-104.20	0.00	104.20	1,313.39	656.70	1,218.57	601.80	11.27	-1.28	0.180
100.00	-7.44	-2.50	0.00	-89.53	0.00	89.53	1,283.38	641.69	1,150.46	568.17	12.68	-1.40	0.163
105.00	-7.01	-2.41	0.00	-77.03	0.00	77.03	1,248.31	624.16	1,079.86	533.30	14.21	-1.51	0.150
110.00	-6.59	-2.28	0.00	-65.00	0.00	65.00	1,203.56	601.78	1,003.39	495.54	15.85	-1.62	0.137
110.00	-6.59	-2.28	0.00	-65.00	0.00	65.00	829.71	414.85	695.98	343.72	15.85	-1.62	0.197
115.00	-6.24	-2.19	0.00	-53.60	0.00	53.60	811.47	405.73	655.22	323.59	17.60	-1.72	0.173
116.00	-6.16	-2.15	0.00	-51.41	0.00	51.41	807.71	403.85	647.11	319.59	17.96	-1.74	0.169
120.00	-5.11	-1.80	0.00	-42.83	0.00	42.83	792.27	396.13	614.86	303.65	19.46	-1.84	0.148
125.00	-4.80	-1.72	0.00	-33.80	0.00	33.80	772.10	386.05	574.98	283.96	21.45	-1.94	0.125
130.00	-4.27	-1.28	0.00	-24.48	0.00	24.48	750.97	375.48	535.68	264.55	23.53	-2.04	0.098
135.00	-4.02	-1.20	0.00	-18.10	0.00	18.10	728.87	364.44	497.06	245.48	25.70	-2.11	0.079
140.00	-3.79	-1.12	0.00	-12.11	0.00	12.11	704.09	352.04	458.06	226.22	27.95	-2.17	0.059
145.00	-3.56	-1.05	0.00	-6.51	0.00	6.51	670.52	335.26	415.19	205.05	30.25	-2.22	0.037
149.00	-0.03	-0.01	0.00	-0.01	0.00	0.01	643.68	321.84	382.41	188.86	32.11	-2.23	0.000
150.00	0.00	-0.01	0.00	0.00	0.00	0.00	636.96	318.48	374.43	184.91	32.58	-2.23	0.000

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Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

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Customer: AT&T Mobility

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### 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 ( $S_1$ ):	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):	2.72
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	27.17 k
Seismic Base Shear (E):	1.06 k

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### 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):	2.72
Redundancy Factor ( $\rho$ ):	1.30

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

#### Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	149.50	30	1.877	1.914	1.116	0.363	9	25
35	147.00	177	1.815	1.608	1.004	0.322	50	153
34	142.50	229	1.706	1.144	0.823	0.255	51	197
33	137.50	236	1.588	0.742	0.654	0.189	39	204
32	132.50	244	1.475	0.441	0.513	0.131	28	210
31	127.50	301	1.366	0.222	0.397	0.081	21	259
30	122.50	309	1.261	0.069	0.302	0.039	10	266
29	118.00	254	1.170	-0.022	0.233	0.008	2	219
28	115.50	68	1.121	-0.058	0.200	-0.007	0	59
27	112.50	345	1.063	-0.088	0.165	-0.021	-6	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	-0.019	-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	0.052	43	824
13	52.50	970	0.232	0.058	0.019	0.055	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
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	0.050	50	986
4	17.50	1,161	0.026	0.067	0.040	0.048	48	1,000
3	12.50	1,177	0.013	0.059	0.034	0.044	44	1,013

Site Number: 302475

Code: ANSI/TIA-222-G

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Engineering Number: 64793522

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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	20	1.865	1.850	1.093	0.354	6	17
Raycap DC6-48-60-18-	149.00	20	1.865	1.850	1.093	0.354	6	17
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 12 w/	149.00	214	1.865	1.850	1.093	0.354	66	184
Ericsson RRUS-32	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
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
12" x 12" Junction B	116.00	10	1.130	-0.051	0.206	-0.004	0	9
DB Systems 5100A	100.00	21	0.840	-0.118	0.066	-0.053	-1	18
VertexRSI 101V VPD	100.00	4	0.840	-0.118	0.066	-0.053	0	3
DB Systems 5100A-D	100.00	152	0.840	-0.118	0.066	-0.053	-7	131
Round Side Arm	100.00	450	0.840	-0.118	0.066	-0.053	-21	387
		27,171	60.219	29.019	22.448	6.366	1,795	23,387

**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)
36	149.50	30	1.877	1.914	1.116	0.363	9	25
35	147.00	177	1.815	1.608	1.004	0.322	50	153
34	142.50	229	1.706	1.144	0.823	0.255	51	197
33	137.50	236	1.588	0.742	0.654	0.189	39	204
32	132.50	244	1.475	0.441	0.513	0.131	28	210
31	127.50	301	1.366	0.222	0.397	0.081	21	259
30	122.50	309	1.261	0.069	0.302	0.039	10	266
29	118.00	254	1.170	-0.022	0.233	0.008	2	219
28	115.50	68	1.121	-0.058	0.200	-0.007	0	59
27	112.50	345	1.063	-0.088	0.165	-0.021	-6	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	-0.019	-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	0.052	43	824
13	52.50	970	0.232	0.058	0.019	0.055	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

Site Number: 302475

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Engineering Number: 64793522

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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
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	0.050	50	986
4	17.50	1,161	0.026	0.067	0.040	0.048	48	1,000
3	12.50	1,177	0.013	0.059	0.034	0.044	44	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	20	1.865	1.850	1.093	0.354	6	17
Raycap DC6-48-60-18-	149.00	20	1.865	1.850	1.093	0.354	6	17
CCI DTMABP7819VG12A	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 12 w/	149.00	214	1.865	1.850	1.093	0.354	66	184
Ericsson RRUS-32	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
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
12" x 12" Junction B	116.00	10	1.130	-0.051	0.206	-0.004	0	9
DB Systems 5100A	100.00	21	0.840	-0.118	0.066	-0.053	-1	18
VertexRSI 101V VPD	100.00	4	0.840	-0.118	0.066	-0.053	0	3
DB Systems 5100A-D	100.00	152	0.840	-0.118	0.066	-0.053	-7	131
Round Side Arm	100.00	450	0.840	-0.118	0.066	-0.053	-21	387
		27,171	60.219	29.019	22.448	6.366	1,795	23,387

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

**Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	149.50	30	1.877	1.914	1.116	0.363	9	25
35	147.00	177	1.815	1.608	1.004	0.322	50	153
34	142.50	229	1.706	1.144	0.823	0.255	51	197
33	137.50	236	1.588	0.742	0.654	0.189	39	204
32	132.50	244	1.475	0.441	0.513	0.131	28	210
31	127.50	301	1.366	0.222	0.397	0.081	21	259
30	122.50	309	1.261	0.069	0.302	0.039	10	266
29	118.00	254	1.170	-0.022	0.233	0.008	2	219
28	115.50	68	1.121	-0.058	0.200	-0.007	0	59
27	112.50	345	1.063	-0.088	0.165	-0.021	-6	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	-0.019	-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



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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	0.052	43	824
13	52.50	970	0.232	0.058	0.019	0.055	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
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	0.050	50	986
4	17.50	1,161	0.026	0.067	0.040	0.048	48	1,000
3	12.50	1,177	0.013	0.059	0.034	0.044	44	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	20	1.865	1.850	1.093	0.354	6	17
Raycap DC6-48-60-18-	149.00	20	1.865	1.850	1.093	0.354	6	17
CCI DTMABP7819VG12A	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 12 w/	149.00	214	1.865	1.850	1.093	0.354	66	184
Ericsson RRUS-32	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
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
12" x 12" Junction B	116.00	10	1.130	-0.051	0.206	-0.004	0	9
DB Systems 5100A	100.00	21	0.840	-0.118	0.066	-0.053	-1	18
VertexRSI 101V VPD	100.00	4	0.840	-0.118	0.066	-0.053	0	3
DB Systems 5100A-D	100.00	152	0.840	-0.118	0.066	-0.053	-7	131
Round Side Arm	100.00	450	0.840	-0.118	0.066	-0.053	-21	387
		27,171	60.219	29.019	22.448	6.366	1,795	23,387

**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)
36	149.50	30	1.877	1.914	1.116	0.363	9	25
35	147.00	177	1.815	1.608	1.004	0.322	50	153
34	142.50	229	1.706	1.144	0.823	0.255	51	197
33	137.50	236	1.588	0.742	0.654	0.189	39	204
32	132.50	244	1.475	0.441	0.513	0.131	28	210
31	127.50	301	1.366	0.222	0.397	0.081	21	259
30	122.50	309	1.261	0.069	0.302	0.039	10	266
29	118.00	254	1.170	-0.022	0.233	0.008	2	219
28	115.50	68	1.121	-0.058	0.200	-0.007	0	59
27	112.50	345	1.063	-0.088	0.165	-0.021	-6	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

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

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Customer: AT&T Mobility

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	-0.019	-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	0.052	43	824
13	52.50	970	0.232	0.058	0.019	0.055	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
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	0.050	50	986
4	17.50	1,161	0.026	0.067	0.040	0.048	48	1,000
3	12.50	1,177	0.013	0.059	0.034	0.044	44	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	20	1.865	1.850	1.093	0.354	6	17
Raycap DC6-48-60-18-	149.00	20	1.865	1.850	1.093	0.354	6	17
CCI DTMABP7819VG12A	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 12 w/	149.00	214	1.865	1.850	1.093	0.354	66	184
Ericsson RRUS-32	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
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
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Round Side Arm	100.00	450	0.840	-0.118	0.066	-0.053	-21	387
		27,171	60.219	29.019	22.448	6.366	1,795	23,387

Site Number: 302475

Code: ANSI/TIA-222-G

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Site Name: Sttn - Southington, CT

Engineering Number: 64793522

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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	24.04	0.00	32.55	0.00	0.00	2262.18	77.44	1.00
0.9D + 1.6W	23.59	0.00	24.40	0.00	0.00	2187.97	77.44	0.96
1.2D + 1.0Di + 1.0Wi	5.45	0.00	67.61	0.00	0.00	575.11	77.44	0.30
(1.2 + 0.2Sds) * DL + E ELFM	1.06	0.00	32.17	0.00	0.00	132.97	77.44	0.08
(1.2 + 0.2Sds) * DL + E EMAM	1.78	0.00	32.17	0.00	0.00	211.54	110.00	0.16
(0.9 - 0.2Sds) * DL + E ELFM	1.06	0.00	22.35	0.00	0.00	130.42	77.44	0.08
(0.9 - 0.2Sds) * DL + E EMAM	1.78	0.00	22.35	0.00	0.00	206.98	110.00	0.15
1.0D + 1.0W	5.31	0.00	27.17	0.00	0.00	495.87	77.44	0.23

**Additional Steel Summary**

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Shear Applied (kips)	Shear 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	280.4	8.4	16.8	161.8	12.0	14	12	0.0	12.0	0	0	251.3	330.5	0.760

<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	903.45 k-in
<b>Stiffeners</b>	#	0

Code Rev. **G**

Date **1/19/2016**  
 Engineer **BMS**  
 Site # **302475**  
 Carrier **AT&T**

Moment **2253.9 k-ft**  
 Axial **32.6 k**

<b>Bolts</b>	#	<b>8</b>
	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	180.69 k	
<b>Reinforcement</b>	#	<b>4</b>
	DYW. Circle	43 in
	Offset Angle	15°
	Type	#20
	Diameter	2.5 in
Fu	100 ksi	
<b>Extra Bolts O</b>	#	0

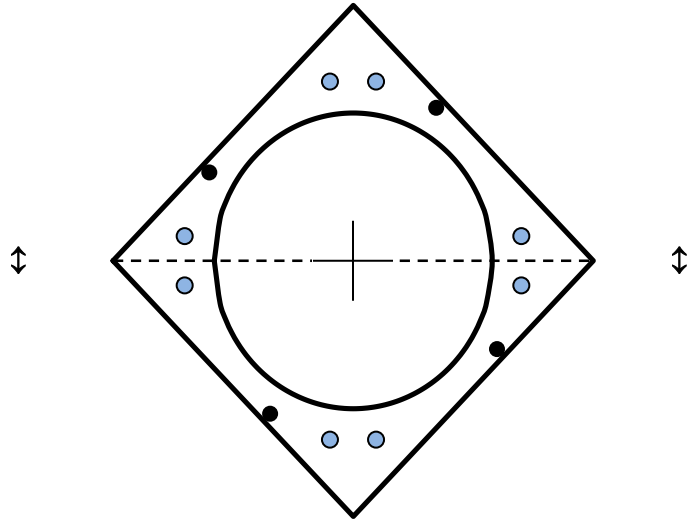


Plate Stress Ratio:  
**0.57** (Pass)

Bolt Stress Ratio:  
**0.70** (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	78.06 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 **1/19/2016**  
 Engineer **BMS**  
 Site # **302475**  
 Carrier **AT&T**

Moment **293.4 k-ft**  
 Axial **6.6 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	44.99 k
<b>Reinforcement</b>	#	<b>0</b>
<b>Extra Bolts</b>	#	<b>0</b>

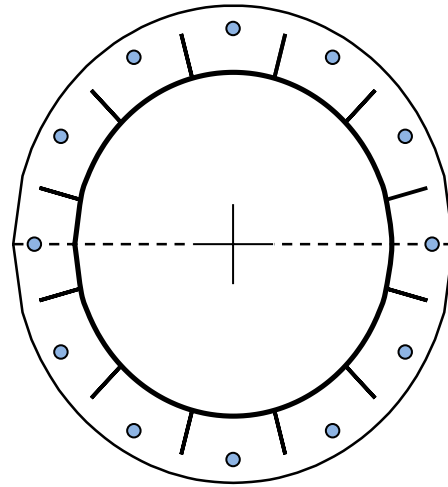


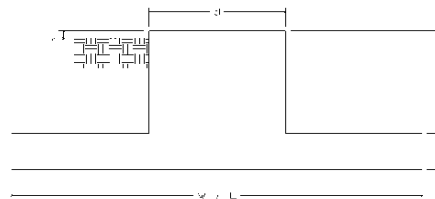
Plate Stress Ratio:  
**0.21** (Pass)

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



Site Name: STTN - Southington, CT  
 Site Number: 302475  
 Engineering Number: 64793522  
 Engineer: Brendan M Smith  
 Date: 01/19/16  
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:

	Analysis
Compression/Leg:	32.6 k
Uplift/Leg:	0.0 k
Total Shear:	24.1 k
Moment:	2253.9 k-ft
Tower + Appurtenance Weight:	18.0 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:	2459.1 k-ft
OTM Resistance:	2841.0 k-ft
Design OTM / OTM Resistance:	0.87 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	4365 psf
Factored Nominal Bearing Pressure:	9000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.49 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

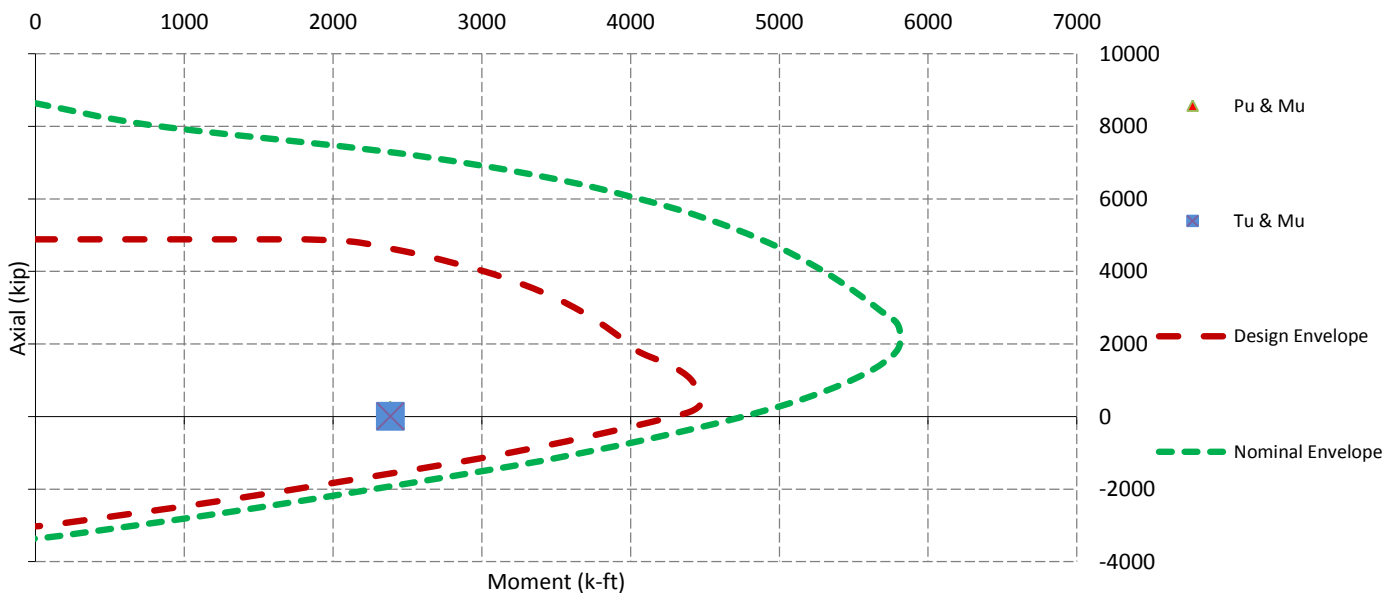
**Sliding Factor of Safety**

Total Factored Sliding Resistance:	92.1 k
Sliding Design / Sliding Resistance:	0.26 Result: OK

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

Factored One Way Shear ( $V_u$ ):	161.5 k
One Way Shear Capacity ( $\phi V_c$ ):	498.2 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.32 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	948.2 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	6148.2 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.15 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	667.6 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	1581.1 k-ft
$M_u / \phi M_n$ :	0.42 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
$V_u / \phi V_c$ :	0.00 Result: OK
Factored Moment in Pier ( $M_u$ ):	2386.7 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	5432.9 k-ft
$M_u / \phi M_n$ :	0.44 Result: OK
Factored Shear in Pier ( $V_u$ ):	24.1 k
Pier Shear Capacity ( $\phi V_n$ ):	175.6 k
$V_u / \phi V_c$ :	0.14 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 ( $P_u$ ):	32.6 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
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.44 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  
80 Shuttle Meadow Road  
Southington, CT 06489

**February 22, 2016**

**EBI Project Number: 6216000894**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>5.08 %</b>

February 22, 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 **80 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 **80 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 (PCS Band – 1900 MHz) 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 (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (PCS Band – 1900 MHz) 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 six 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 **Quintel QS66512-3, KMW AM-X-CD-16-65-00T-RET, Commscope SBNH-1D6565C and the Powerwave 7770.00** 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 centerline of the proposed antennas is **153 feet** above ground level (AGL).
- 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**

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	153 feet	Height (AGL):	153 feet	Height (AGL):	153 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	<b>0.51</b>	Antenna B1 MPE%	<b>0.51</b>	Antenna C1 MPE%	<b>0.51</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
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:	13.65 dBd
Height (AGL):	153 feet	Height (AGL):	153 feet	Height (AGL):	153 feet
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	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,595.26	ERP (W):	2,595.26	ERP (W):	2,780.87
Antenna A2 MPE%	<b>0.76</b>	Antenna B2 MPE%	<b>0.76</b>	Antenna C2 MPE%	<b>0.82</b>
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Quintel QS66512-3	Make / Model:	Quintel QS66512-3	Make / Model:	Quintel QS66512-3
Gain:	11.35 / 14.85 / 13.45 dBd	Gain:	11.35 / 14.85 / 13.45 dBd	Gain:	11.35 / 14.85 / 13.45 dBd
Height (AGL):	153 feet	Height (AGL):	153 feet	Height (AGL):	153 feet
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2300 (WCS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2300 (WCS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2300 (WCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	300	Total TX Power(W):	300	Total TX Power(W):	300
ERP (W):	7,140.37	ERP (W):	7,140.37	ERP (W):	7,140.37
Antenna A3 MPE%	<b>1.65</b>	Antenna B3 MPE%	<b>1.65</b>	Antenna C3 MPE%	<b>1.65</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>2.93 %</b>
Clearwire	0.14 %
T-Mobile	2.01 %
<b>Site Total MPE %:</b>	<b>5.08 %</b>

AT&T Sector 1 Total:	2.93 %
AT&T Sector 2 Total:	2.93 %
AT&T Sector 3 Total:	2.98 %
<b>Site Total:</b>	<b>5.08 %</b>

AT&T_ Max Sector (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	567	0.30 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	153	2.18	1900	1000	0.22 %
AT&T 700 MHz LTE	2	1390.44	153	4.63	700	467	0.82 %
AT&T 850 MHz GSM	2	409.37	153	1.36	850	567	0.14 %
AT&T 2300 MHz (WCS) LTE	2	1832.95	153	6.10	2300	1000	1.08 %
AT&T 1900 MHz (PCS) LTE	2	1327.86	153	4.42	1900	1000	0.44 %
						Total:	2.98 %

## 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 1:	2.93 %
Sector 2:	2.93 %
Sector 3 :	2.98 %
AT&T Maximum Total (per sector):	2.98 %
Site Total:	5.08 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **5.08%** 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.



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