



March 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 Three Radio Heads with A2 Modules

Property Address: 20 Post Office Lane Westport, CT 06880

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 142-foot monopole at the above-referenced address, latitude 41.12346944, longitude -73.31306111. Said monopole is owned by American Tower Corporation. The existing equipment shelter is 24.5' x 12' totaling 294 square feet.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas and adding three remote-radio heads ("RRHs") with A2 modules. The centerline height of said antennas is and will remain at 131 feet. 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 James Marpe, First Selectmen for the Town of Westport, as well as to the landowner Jay Sherwood. A copy of this letter is also being sent to the monopole 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 131 feet on the 142-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 25, 2016).

For the foregoing reasons, AT&T respectfully requests that the proposed antenna 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: James Marpe, First Selectman, Town of Westport  
Jay Sherwood, Property Owner  
American Tower Corporation, Tower Owner

**PROJECT INFORMATION**

SCOPE OF WORK:

- AT&T ANTENNAS: (1) NEW LTE ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW LTE ANTENNAS; (2) EXISTING ANTENNAS TO REMAIN (2 PER SECTOR)
- AT&T RRUS: (1) NEW RRUS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUS; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUS.

SITE ADDRESS: 19-20 POST OFFICE LANE  
WESTPORT, CT 06880

LATITUDE: 41.1234361 41° 07' 24.36996"N  
LONGITUDE: -73.3130550 73° 18' 46.998"W

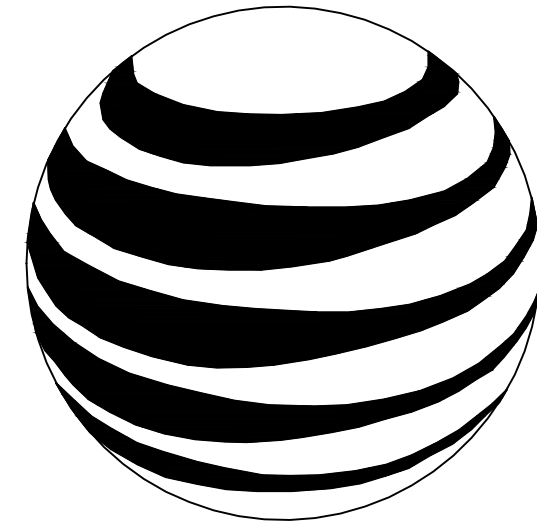
USID: 60390

TOWER OWNER: SPRINGWICH CELLULAR, LP  
17330 PRESTON ROAD, SUITE 100A  
DALLAS, TX 75252

TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

TOWER HEIGHT: 142'-0"±  
RAD CENTER: 131'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY  
PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



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

**FA CODE: 10035073**  
**SITE NUMBER: CT2103**  
**SITE NAME: WESTPORT SOUTH**

**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

**ZONING:**

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

**ENGINEERING:**

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

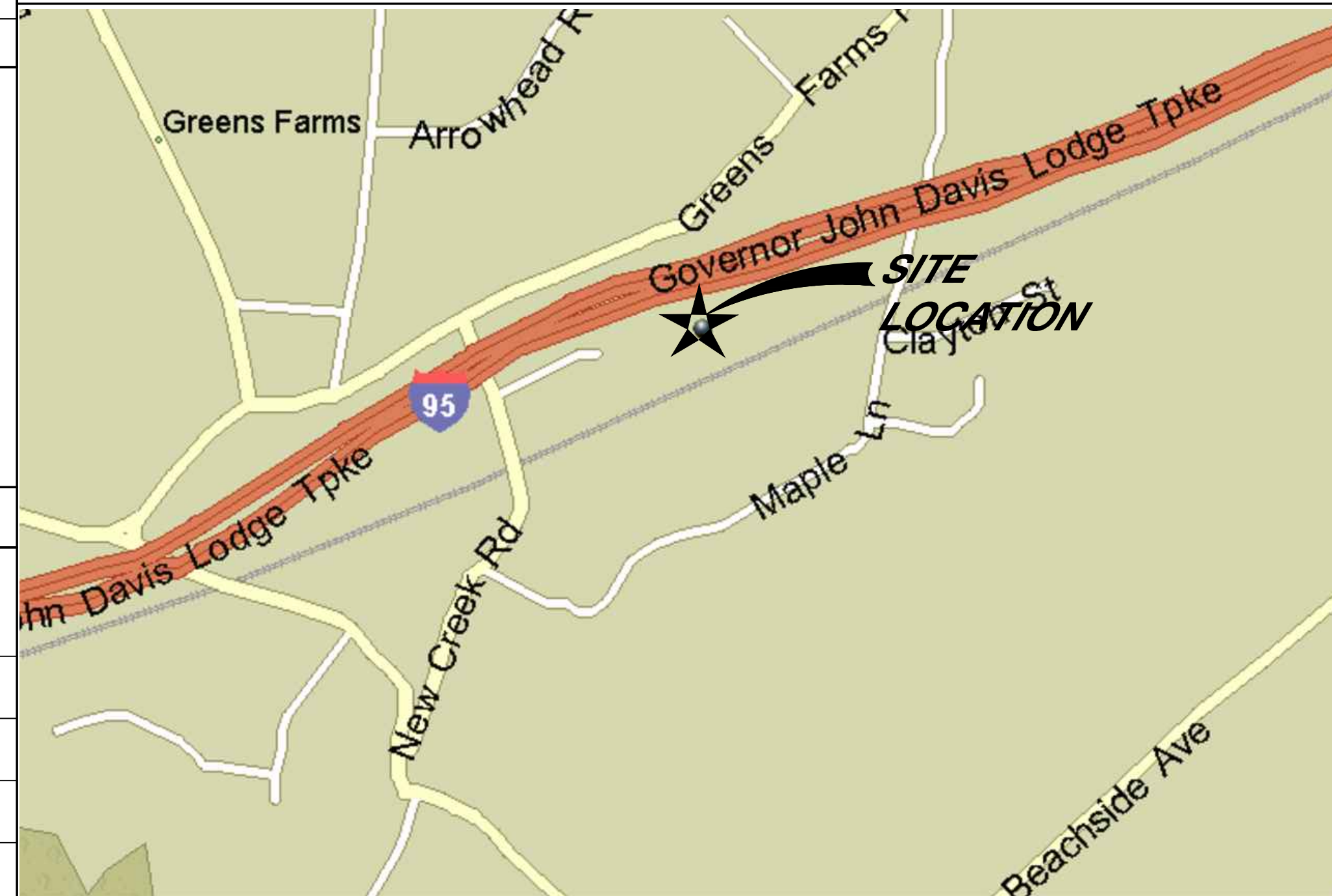
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**VICINITY MAP**

DEPART 500 ENTERPRISE DR, ROCKY HILL, CT 06067: ON ENTERPRISE DR (EAST), TURN LEFT (NORTH-WEST) ONTO CAPITOL BLVD. BEAR RIGHT (NORTH) ONTO CAPITOL BLVD, THEN IMMEDIATELY TURN LEFT (WEST) ONTO WEST ST. TAKE RAMP (LEFT) ONTO I-91AT EXIT 1, TAKE RAMP (LEFT) ONTO I-95 [GOVERNOR JOHN DAVIS LODGE TPKE]. AT EXIT 19, TURN RIGHT ONTO RAMP, KEEP STRAIGHT ONTO PEASE AVE. KEEP RIGHT ONTO US-1 [POST RD], KEEP STRAIGHT ONTO US-1 [POST RD E]. TURN LEFT (SOUTH) ONTO BULKLEY AVE S. BEAR RIGHT (SOUTH) ONTO GREENS FARMS RD, TURN LEFT (SOUTH) ONTO LOCAL ROAD(S) ARRIVE AT SITE.



**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.

**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:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		



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



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FAIRFIELD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
A	09/25/15	ISSUED FOR REVIEW	GR	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:		
<b>AT&amp;T</b>		
DRAWING TITLE: <b>TITLE SHEET</b>		
JOB NUMBER 15064-EMP	DRAWING NUMBER T-1	REV 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.

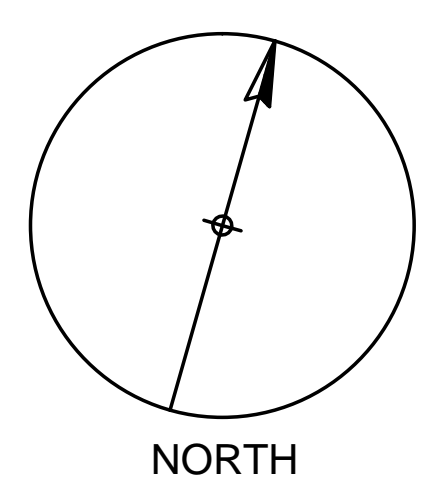
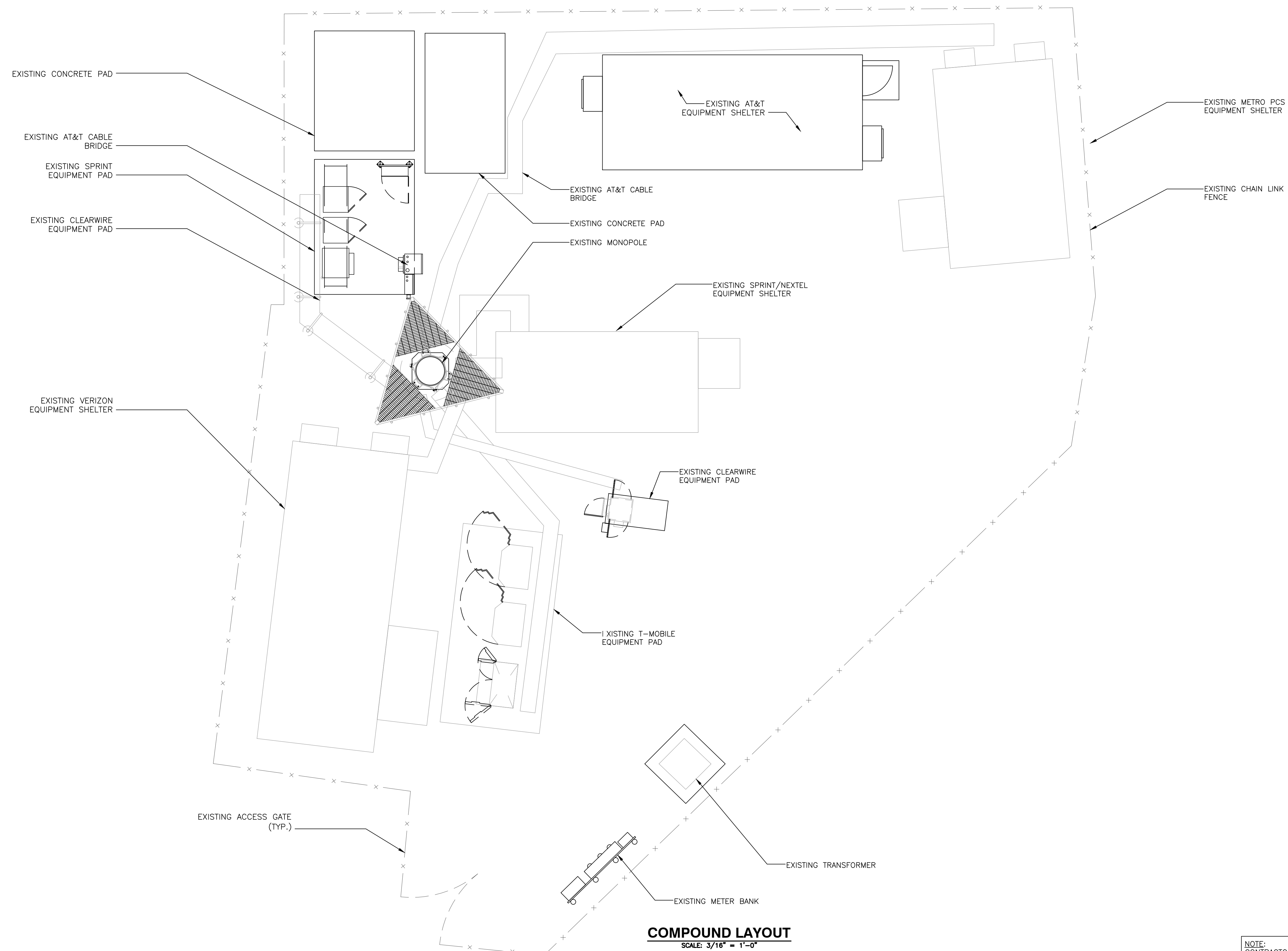


**SITE NUMBER: CT2103**  
**SITE NAME: WESTPORT SOUTH**  
 19-20 POST OFFICE LANE  
 WESTPORT, CT 06880  
 FAIRFIELD COUNTY



A	09/25/15	ISSUED FOR REVIEW			GR	NDB	NDB
NO.	DATE	REVISIONS			BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM		DRAWN BY: NJM			

SEAL:		
<b>AT&amp;T</b>		
DRAWING TITLE: <b>GROUNDING &amp; GENERAL NOTES</b>		
JOB NUMBER	DRAWING NUMBER	REV
15064-EMP	GN-1	A



**COMPOUND LAYOUT**

SCALE: 3/16" = 1'-0"  
 22"x34" SCALE: 3/16" = 1'-0"  
 11"x17" SCALE: 3/32" = 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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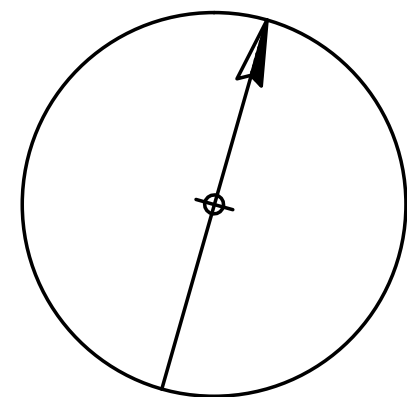
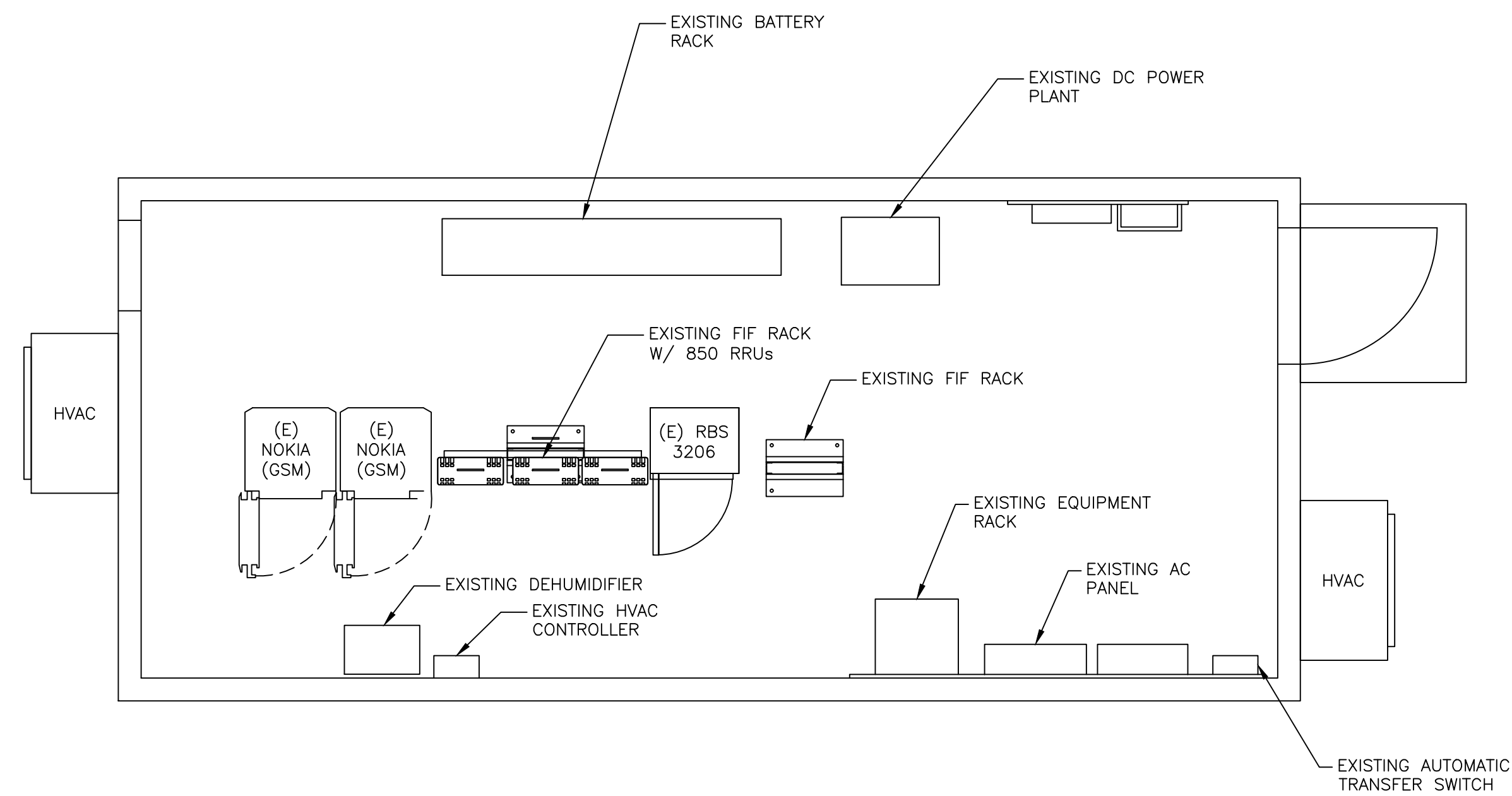
**at&t**  
 MOBILITY  
 550 COCHITUATE ROAD  
 FRAMINGHAM, MA 01701

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SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:

<b>AT&amp;T</b>		
DRAWING TITLE: ROOFTOP LAYOUT		
JOB NUMBER 15064-EMP	DRAWING NUMBER A-1	REV A



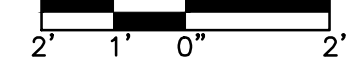


NORTH

**EXISTING EQUIPMENT LAYOUT**

SCALE: 3/8" = 2'-0"

22"x34" SCALE: 3/8" = 1'-0"  
 11"x17" SCALE: 3/16" = 1'-0"



NO GROUND EQUIPMENT MODIFICATIONS ARE BEING MADE AS PART OF THIS SCOPE. EXISTING GROUND EQUIPMENT CONFIGURATION TO REMAIN.

**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

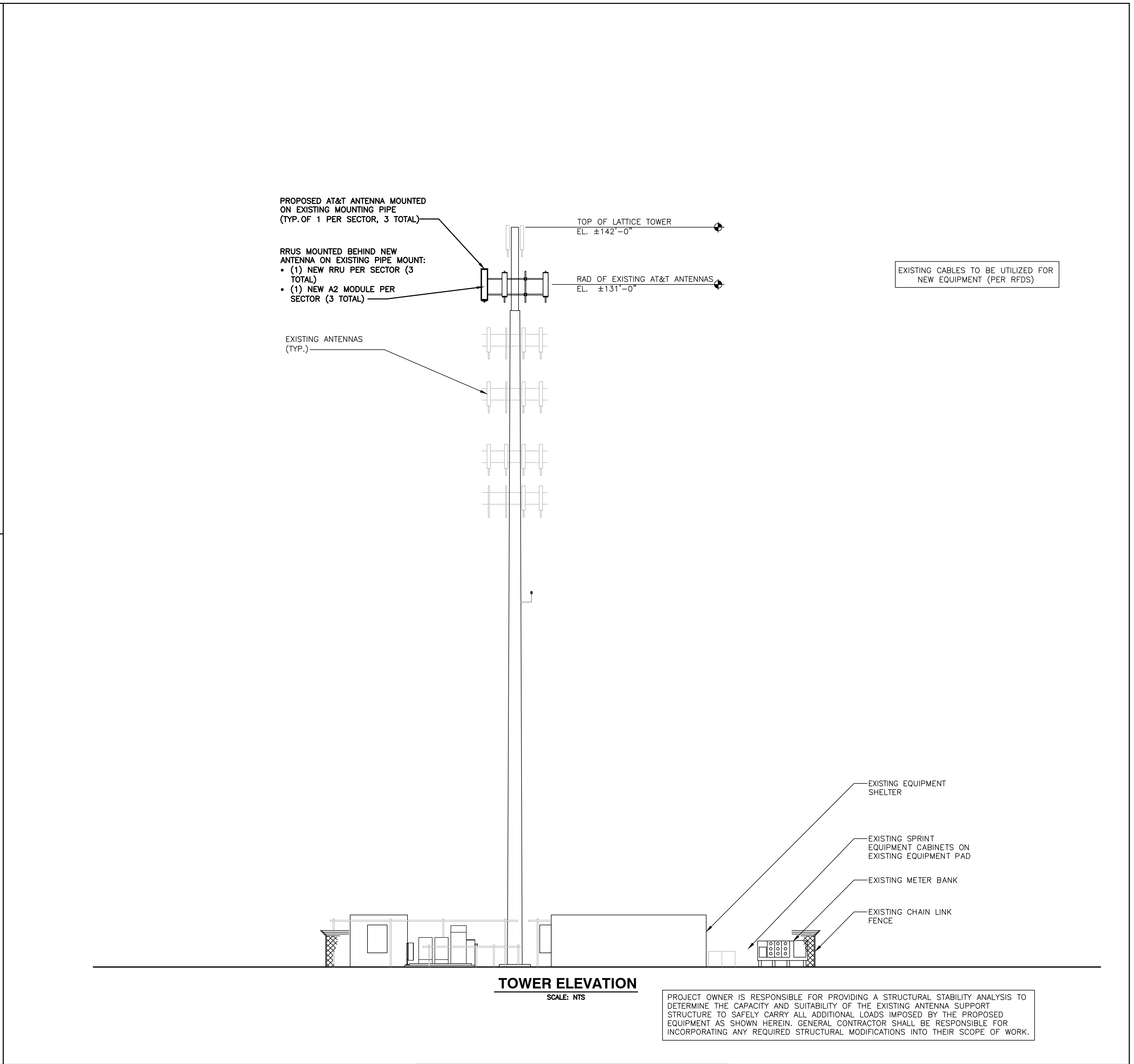
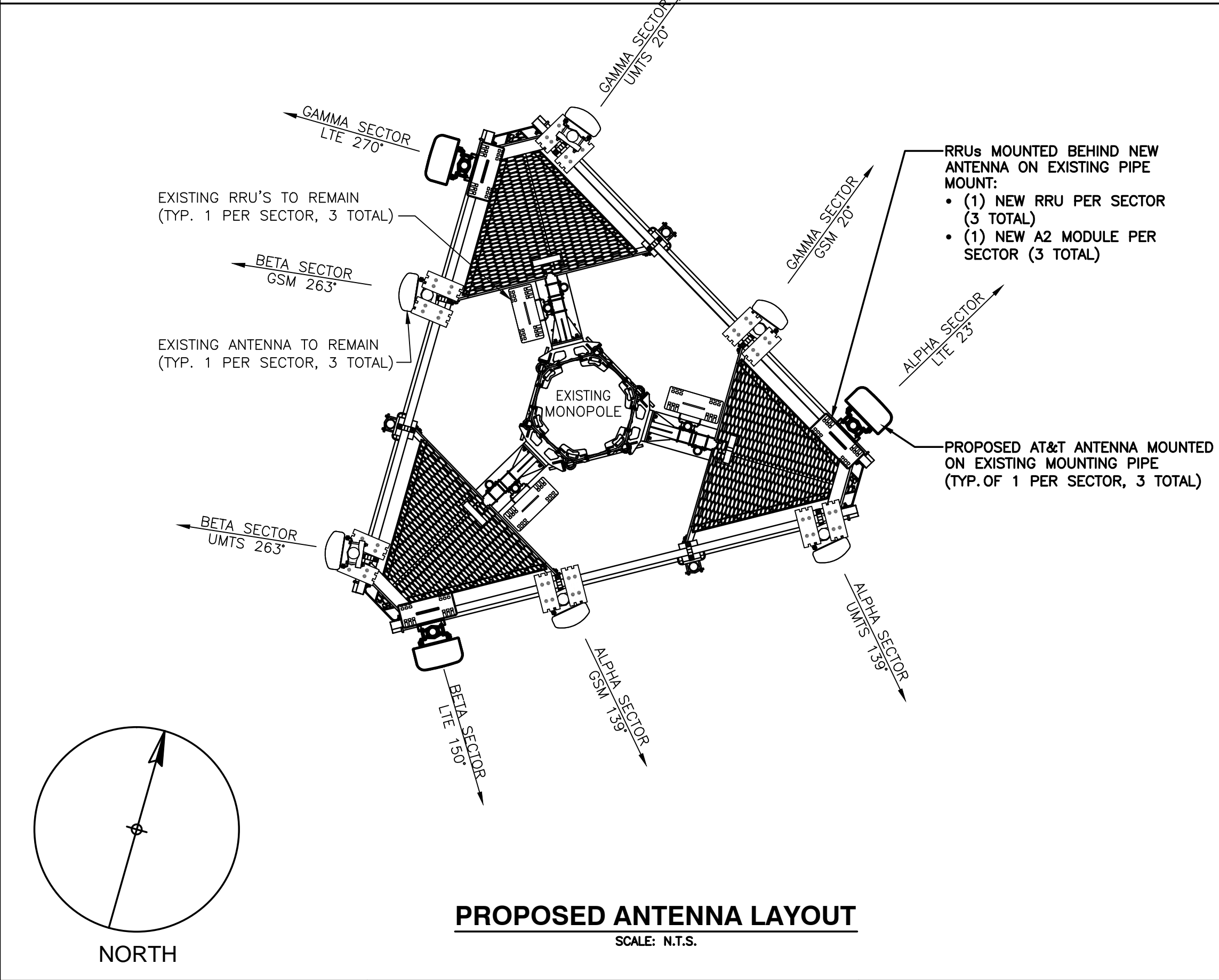
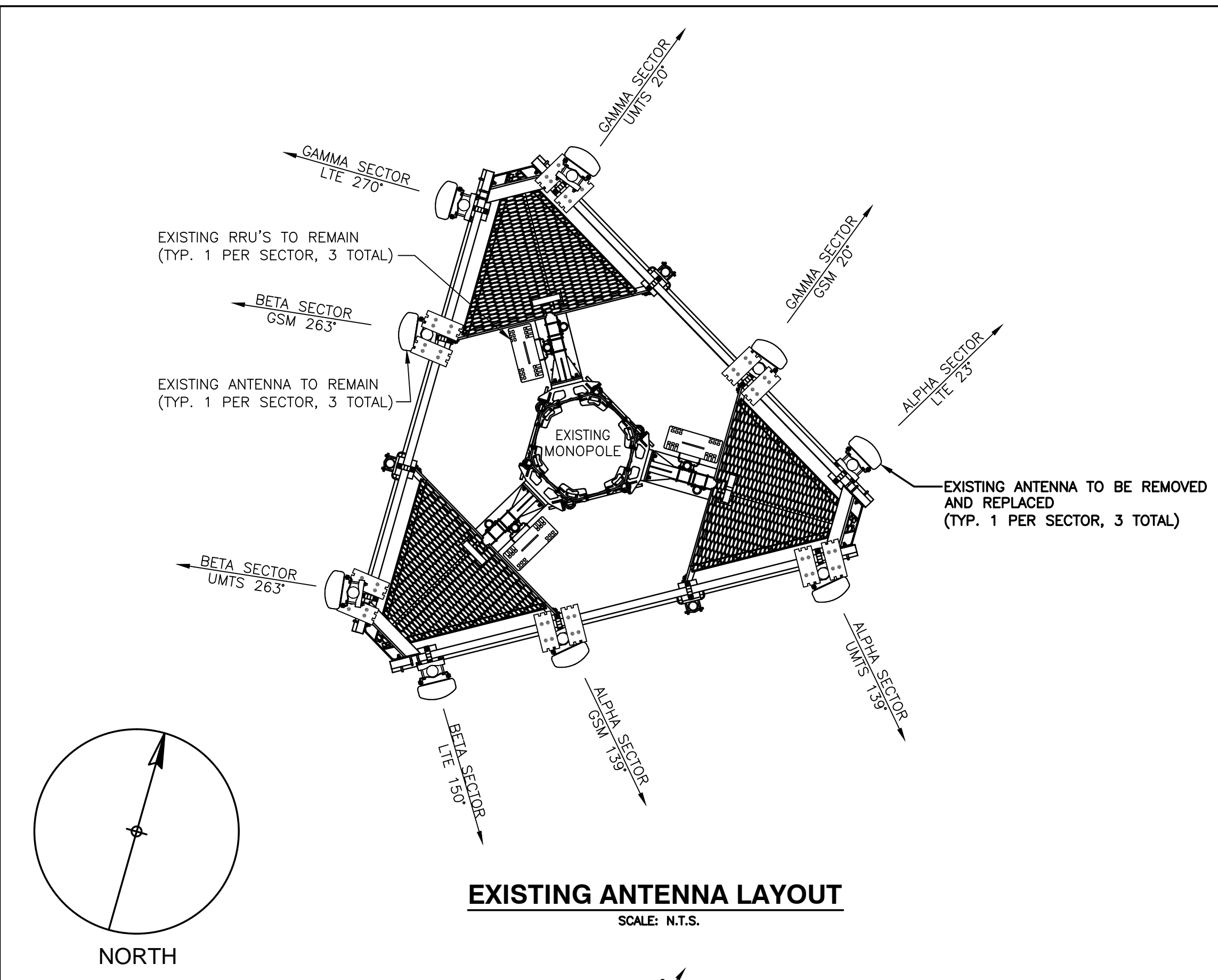
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 **at&t**  
 MOBILITY  
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SEAL:

<b>AT&amp;T</b>		
DRAWING TITLE: EQUIPMENT LAYOUTS		
JOB NUMBER 15064-EMP	DRAWING NUMBER A-2	REV A



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

**SITE NUMBER: CT2103**  
**SITE NAME: WESTPORT SOUTH**  
19-20 POST OFFICE LANE  
WESTPORT, CT 06880  
FAIRFIELD COUNTY

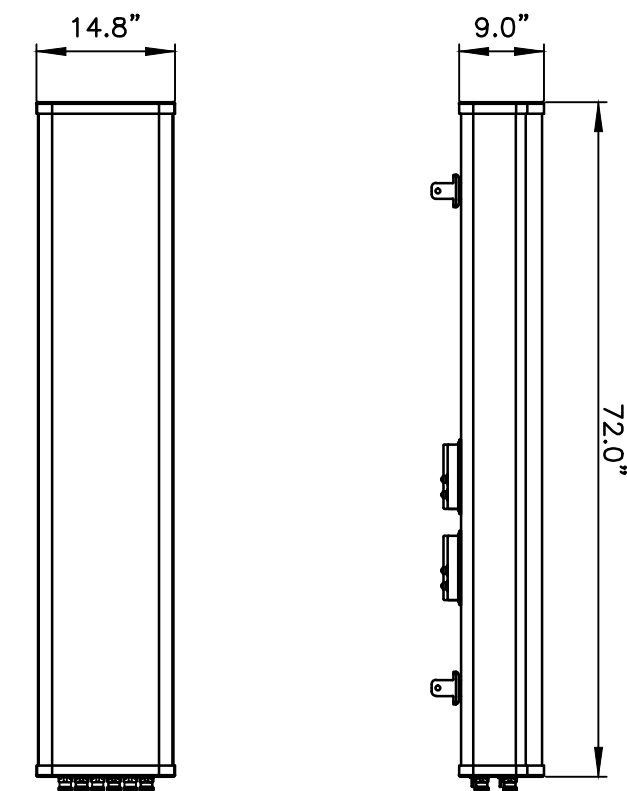
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	09/25/15	ISSUED FOR REVIEW	GR	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:

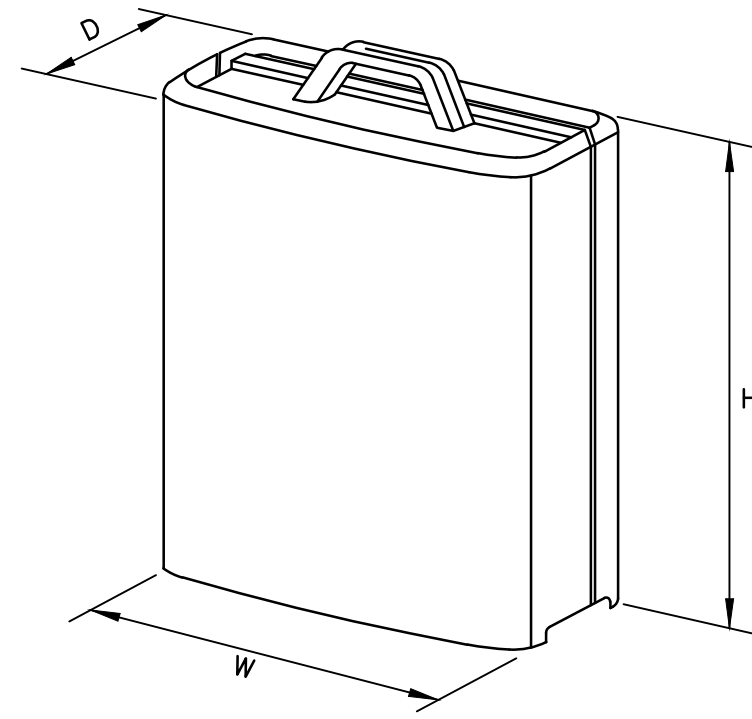
<b>AT&amp;T</b>		
DRAWING TITLE: <b>ANTENNA LAYOUTS &amp; ELEVATIONS</b>		
JOB NUMBER 15064-EMP	DRAWING NUMBER A-3	REV A





FRONT VIEW	
SIDE VIEW	
BOTTOM VIEW	
MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	51.0 LBS

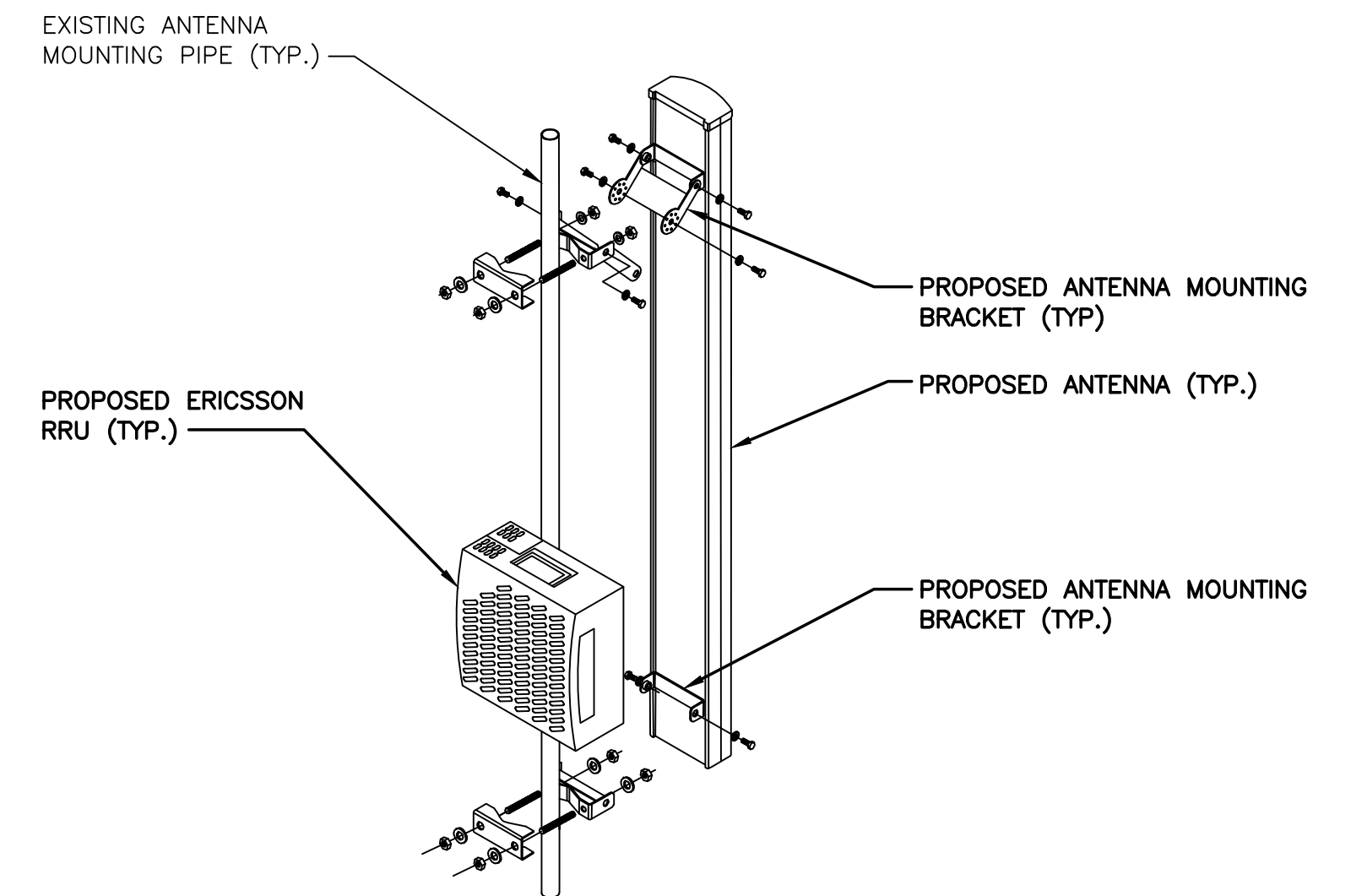
**LTE ANTENNA DETAIL**  
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 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	7770.00.850.10	55"x11"x5"
	A2	-	-	-
	A3	POWERWAVE	7770.00.850.10	55"x11"x5"
	A4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
BETA	B1	POWERWAVE	7770.00.850.08	55"x11"x5"
	B2	-	-	-
	B3	POWERWAVE	7770.00.850.10	55"x11"x5"
	B4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
GAMMA	G1	POWERWAVE	7770.00.850.06	55"x11"x5"
	G2	-	-	-
	G3	POWERWAVE	7770.00.850.10	55"x11"x5"
	G4	POWERWAVE	P65-16-XLH-RR	72"x12"x6"

FINAL ANTENNA SCHEDULE

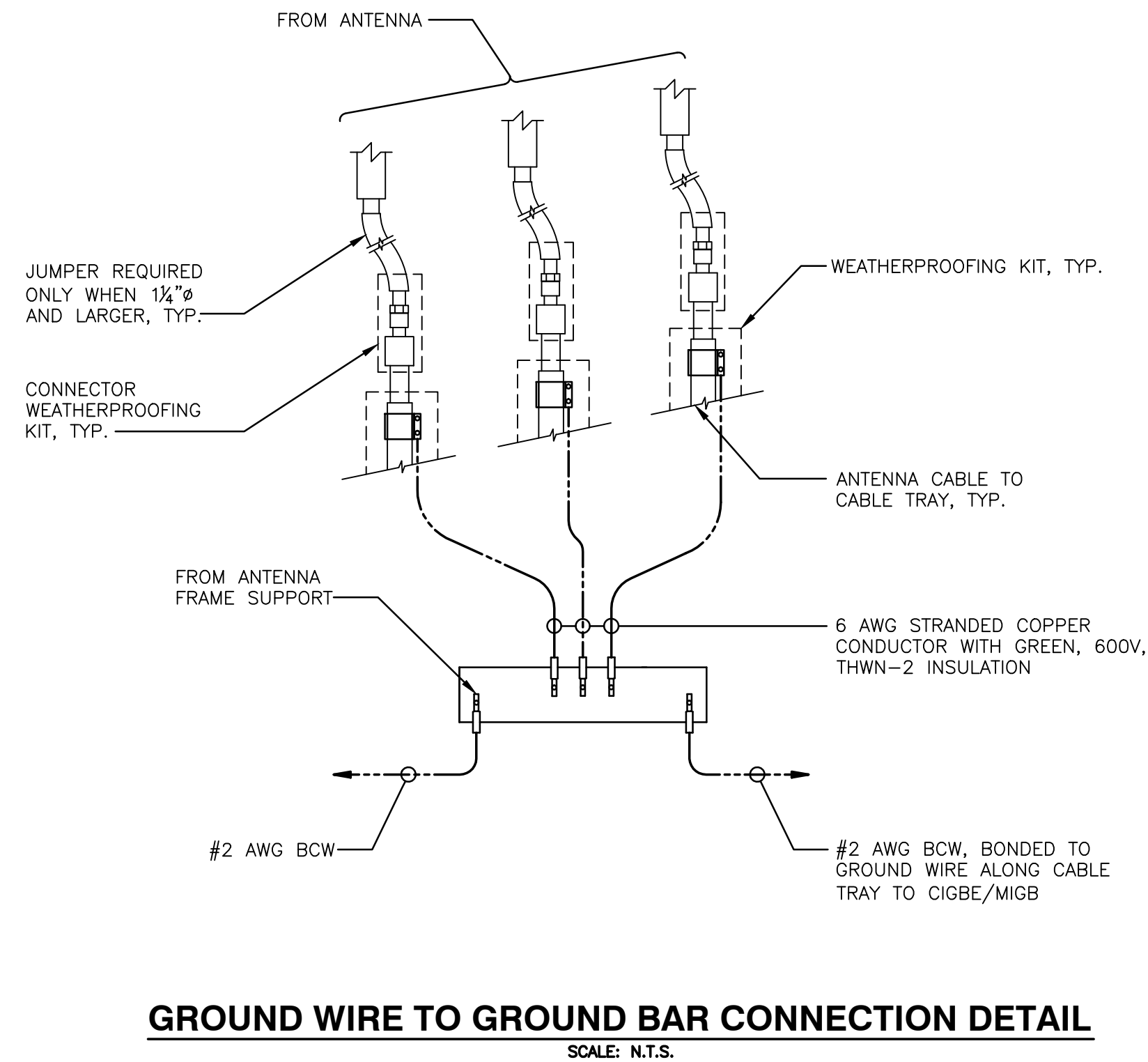
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00.850.10	55"x11"x5"
	A2	-	-	-
	A3	POWERWAVE	7770.00.850.10	55"x11"x5"
	A4	CCI	HPA-65R-BUU-H6	72"x14.8"x9"
BETA	B1	POWERWAVE	7770.00.850.08	55"x11"x5"
	B2	-	-	-
	B3	POWERWAVE	7770.00.850.10	55"x11"x5"
	B4	CCI	HPA-65R-BUU-H6	72"x14.8"x9"
GAMMA	G1	POWERWAVE	7770.00.850.06	55"x11"x5"
	G2	-	-	-
	G3	POWERWAVE	7770.00.850.10	55"x11"x5"
	G4	CCI	HPA-65R-BUU-H6	72"x14.8"x9"

PROPOSED RRH SCHEDULE

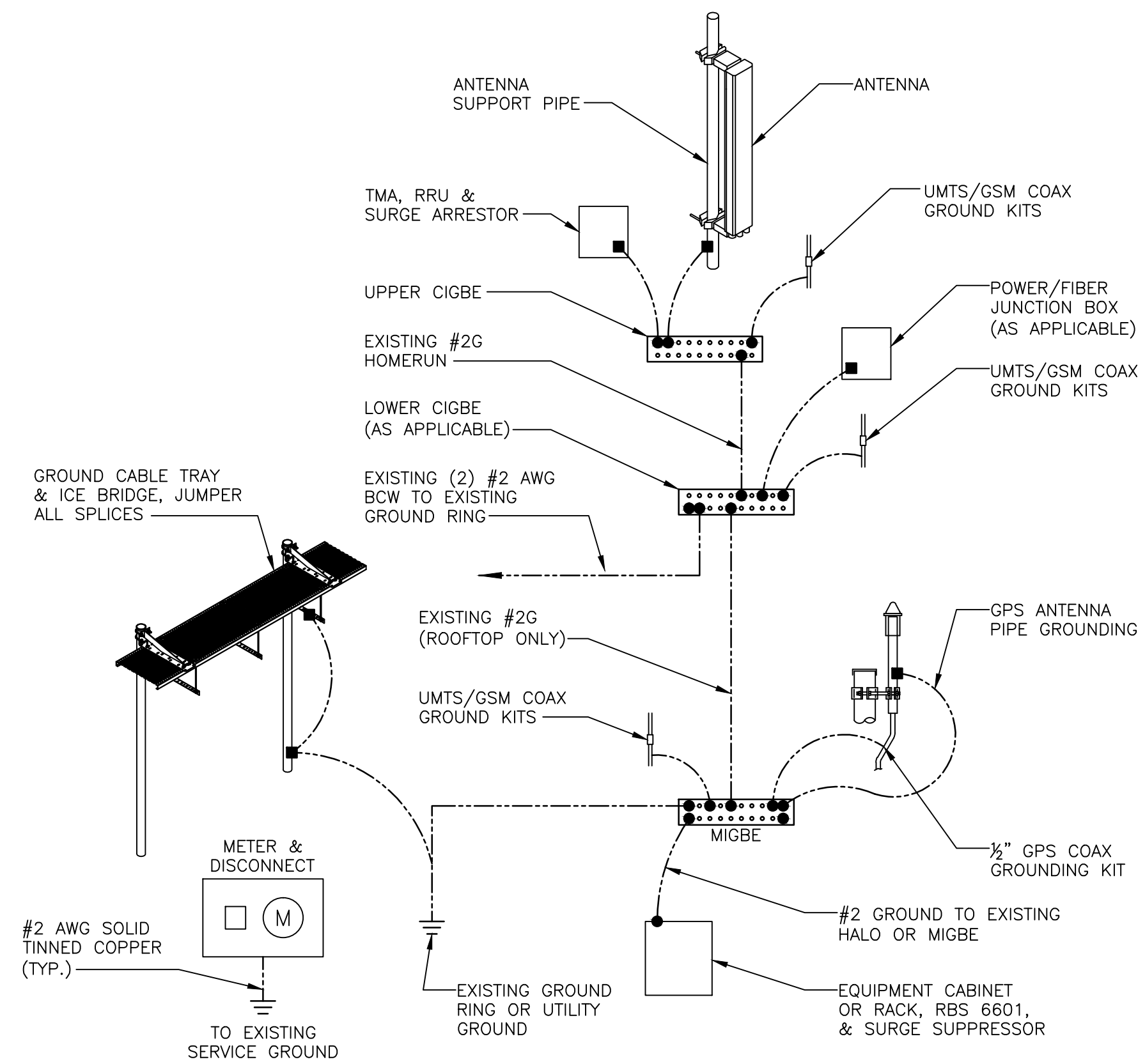
SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-12	29.9"x13.3"x9.5"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11	19.7"x16.9"x7.2"		
BETA	ERICSSON	RRUS-12	29.9"x13.3"x9.5"	ERICSSON A2 MODULE	16.4"x15.2"x3.4"
	ERICSSON	RRUS-11	19.7"x16.9"x7.2"		
GAMMA	ERICSSON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

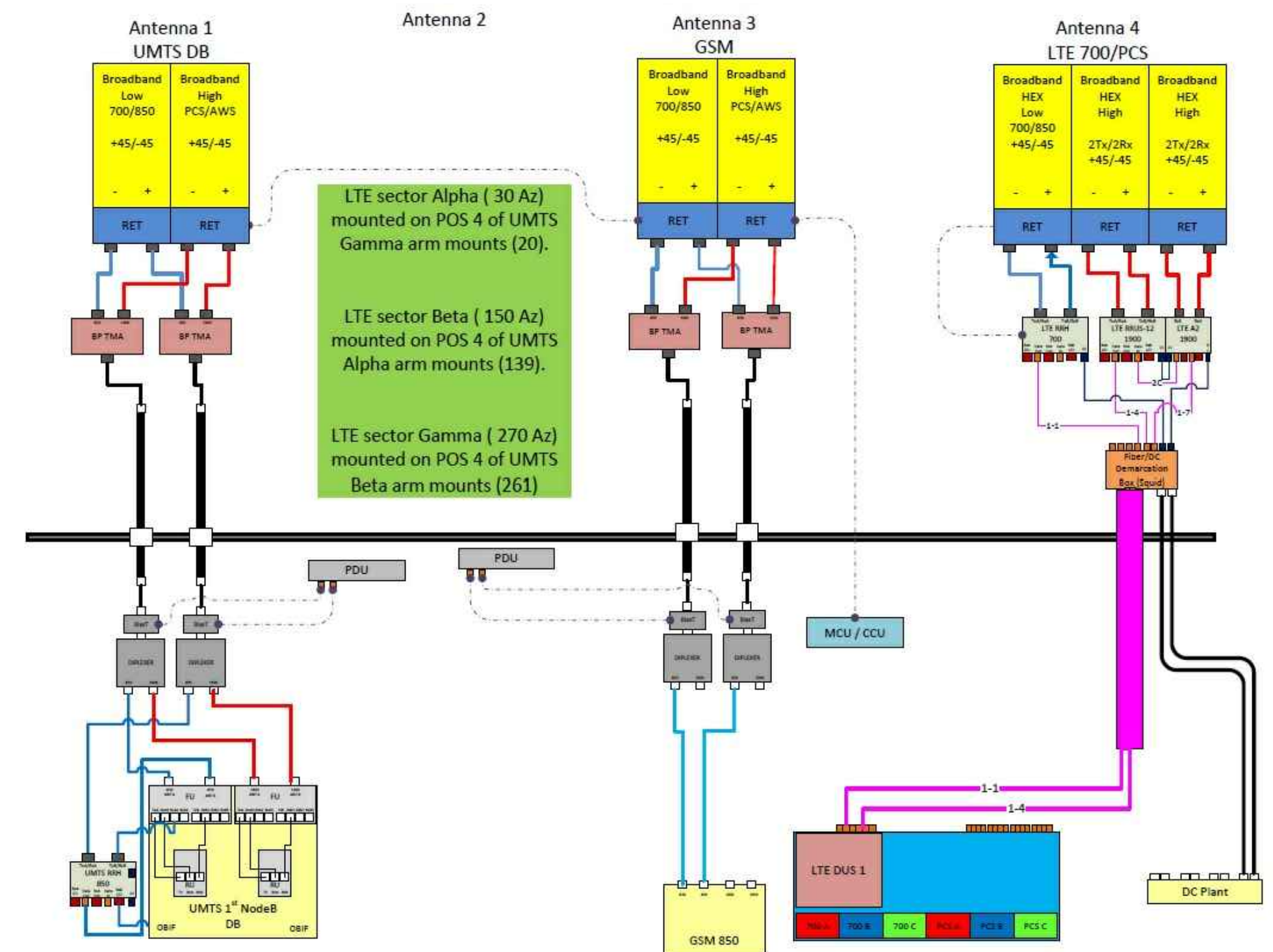




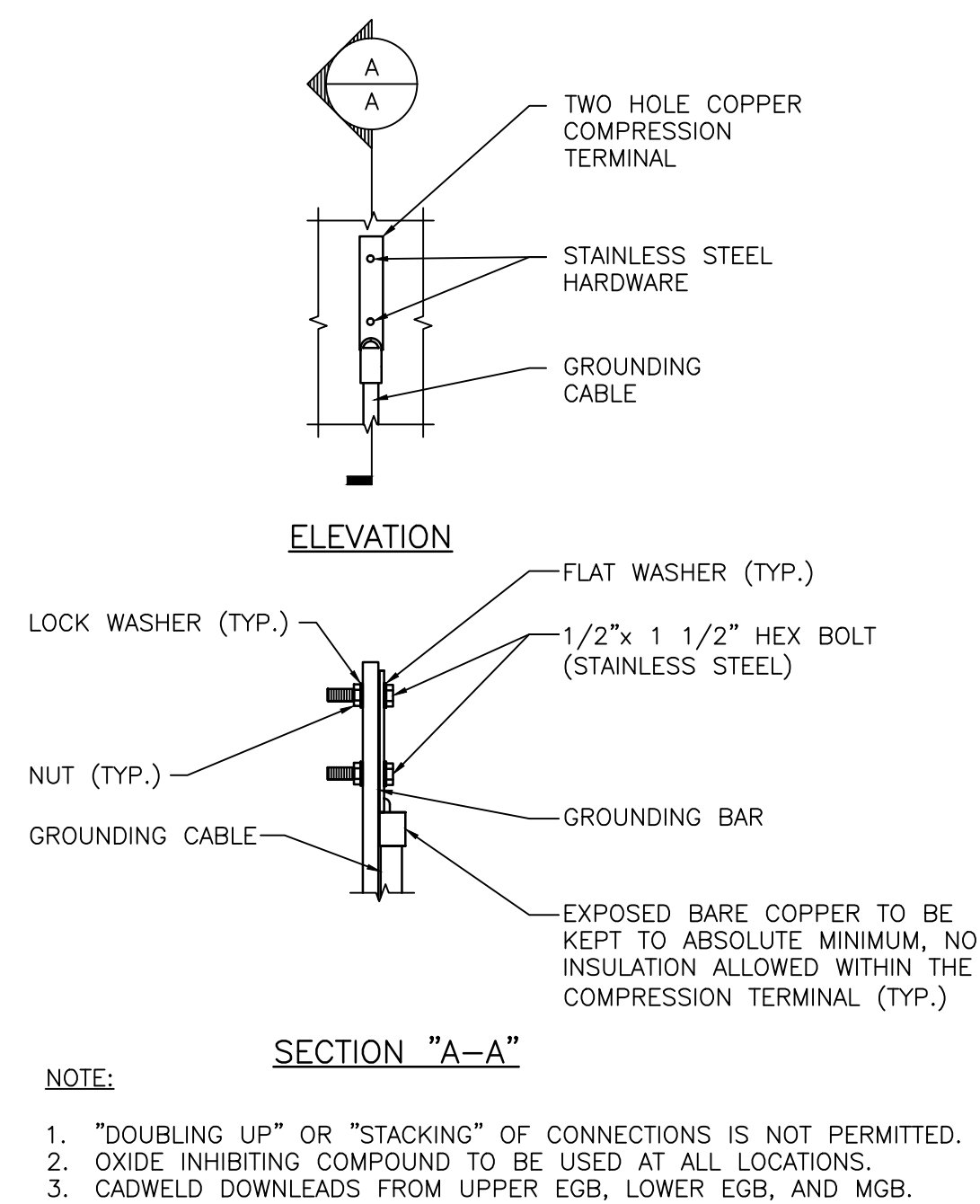
**GROUND WIRE TO GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



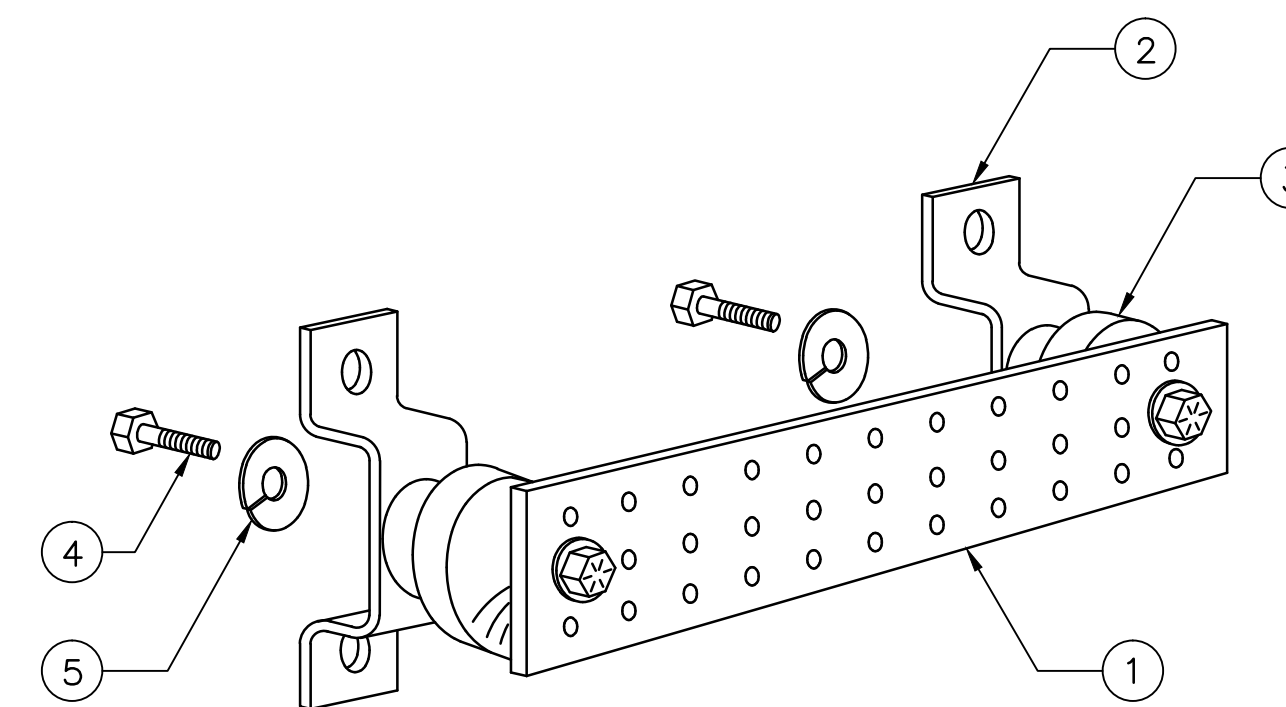
**GROUNDING RISER DIAGRAM**  
SCALE: N.T.S.



**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

**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)

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



**AMERICAN TOWER®**  
CORPORATION

**INFINIGY**

FROM ZERO TO INFINIGY  
the solutions are endless

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## Structural Analysis Report

**Structure** : 142 ft Monopole  
**ATC Site Name** : WSPT - South, CT  
**ATC Site Number** : 302511  
**Engineering Number** : 64785821  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : Westport South  
**Carrier Site Number** : CT2103/FA#10035073  
**Site Location** : 20 Post Office Lane  
Westport, CT 06880-6226  
41.123444,-73.313100  
**County** : Fairfield  
**Date** : January 25, 2016  
**Max Usage** : 87%  
**Result** : Pass

Reviewed by:  
William Garrett, PE  
Chief Engineer



Prepared By:  
Nathaniel Ober  
Infinigy

Jan 27 2016 4:16 PM





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Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 142 ft monopole to reflect the change in loading by T-Mobile.

## Supporting Documents

<b>Tower Drawings</b>	EEI Job #3502, dated March 2, 1998
<b>Foundation Drawing</b>	Walker Job #W0105-988RE, dated August 2, 2001
<b>Geotechnical Report</b>	MB&A Project #011105, dated July 17, 2001
<b>Modifications</b>	EEI Project #11753, dated July 25, 2003 SpectraSite Drawing #CT-0047-M1, dated August 12, 2005 ATC Job #42046633, dated October 16, 2008 ATC Job #46844332/46993332, dated April 15, 2011

## 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>	110 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 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>	$S_s = 0.22$ , $S_1 = 0.07$
<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					
136.0	139.0	3	Generic RCU (Remote Control Unit)	Flush	(6) 1 5/8" Coax (1) 3/8" Coax	Metro PCS
		3	Kathrein 742-218 / AP20-1940/045D/ADT/XP			
131.0	131.0	6	Powerwave LGP21401	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.65" 8 AWG 2C (1) 0.28" RG-6	AT&T Mobility
		1	Raycap DC6-48-60-18-8F ("Squid")			
		3	Ericsson RRUS-11 (50 lbs.)			
		6	Powerwave 7770.00			
120.0	120.0	2	DragonWave Horizon Compact	Platform w/ Handrails	(6) 5/16" Coax (4) 1 1/4" Hybriflex (2) 1/2" Coax (1) 2" Conduit	Clearwire
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		2	DragonWave A-ANT-18G-2-C			
		3	Alcatel-Lucent 800MHz 2X50W RRH w/ Filter			Sprint Nextel
		3	Alcatel-Lucent 1900MHz 4x45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
		3	RFS RFS APXV9TM14-ALU-I20			
3	RFS APXVSP18-C-A20					
110.0	110.0	12	Swedcom ALP 9011-Din	Platform w/ Handrails	(12) 1 5/8" Coax	
100.0	104.0	1	GPS	Platform w/ Handrails	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex (1) 1/2" Coax	Verizon
	100.0	6	RFS FD9R6004/1C-3L			
		3	Alcatel-Lucent RRH2x40-AWS			
		3	Ryma MGD3-800TX			
		3	Antel BXA-171063/12CF__2 FP			
		1	RFS DB-T1-6Z-8AB-OZ			
		3	Antel BXA-70080/6CF__			
		3	Powerwave P65-16-XL-2			
90.0	90.0	4	RFS ATMAA1412D-1A20	Platform w/ Handrails	(14) 1 5/8" Coax (1) 1 1/4" Fiber	T-Mobile
		3	Ericsson RRUS 11 B12			
		4	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-VTM			
80.0	83.0	2	Diamond X50A	Stand-Offs	(2) 1/2" Coax	Senet
70.0	70.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(2) 1/2" Coax	Sprint Nextel

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
131.0	131.0	3	Powerwave P65-16-XLH-RR	-	-	AT&T Mobility
		6	Powerwave LGP219nn			



**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
131.0	131.0	6	Powerwave LGP21401	Platform w/ Handrails	-	AT&T Mobility
		3	Ericsson RRUS 12 w/ RRUS A2			
		3	CCI HPA-65R-BUU-H6			

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

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	57%	Pass
Shaft	87%	Pass
Base Plate	44%	Pass
Reinforcement	77%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,727.3	59%
Axial (Kips)	82.4	20%
Shear (Kips)	41.4	22%

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

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
131.0	Powerwave Allgon LGP21401	AT&T Mobility	1.432	1.228
	Ericsson RRUS 12 w/ RRUS A2			
	CCI HPA-65R-BUU-H6			
120.0	DragonWave A-ANT-18G-2-C	Clearwire	1.199	1.199
90.0	Ericsson RRUS 11 B12	T-Mobile	0.634	0.905

\*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:

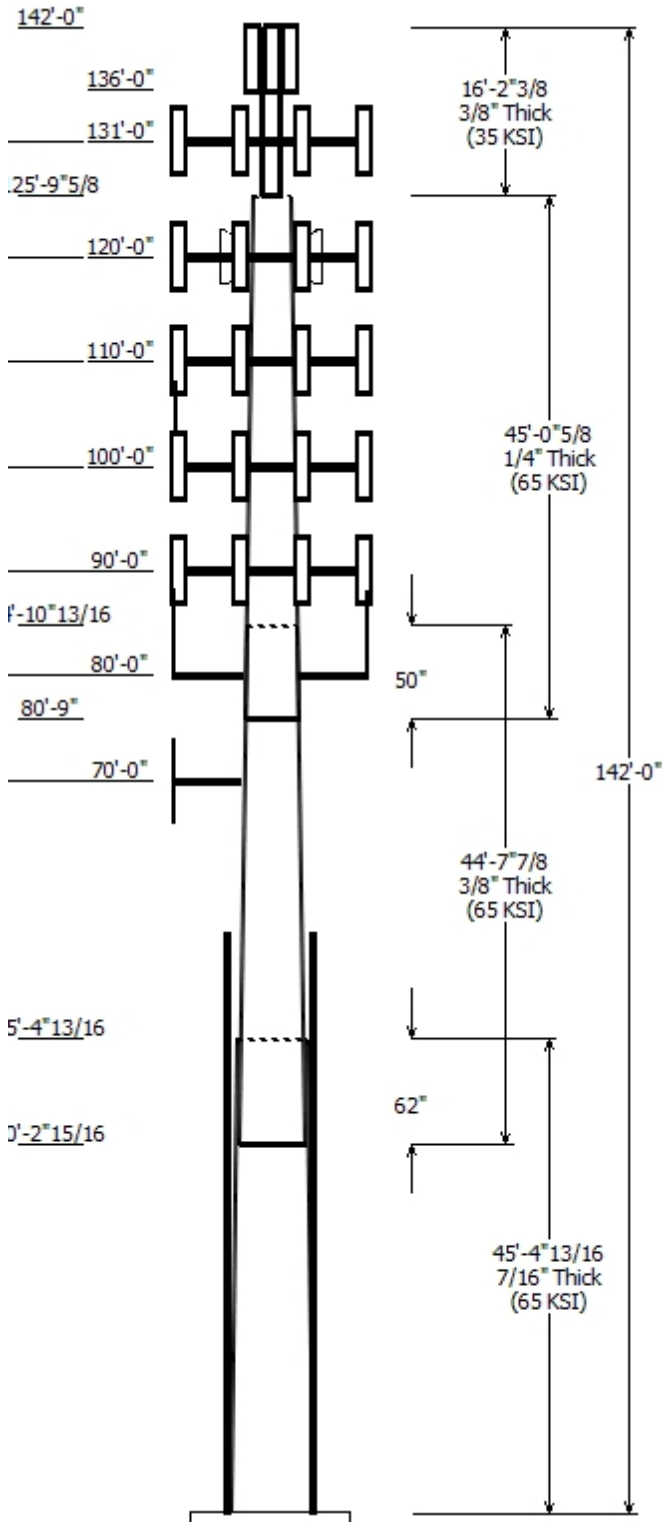
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements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

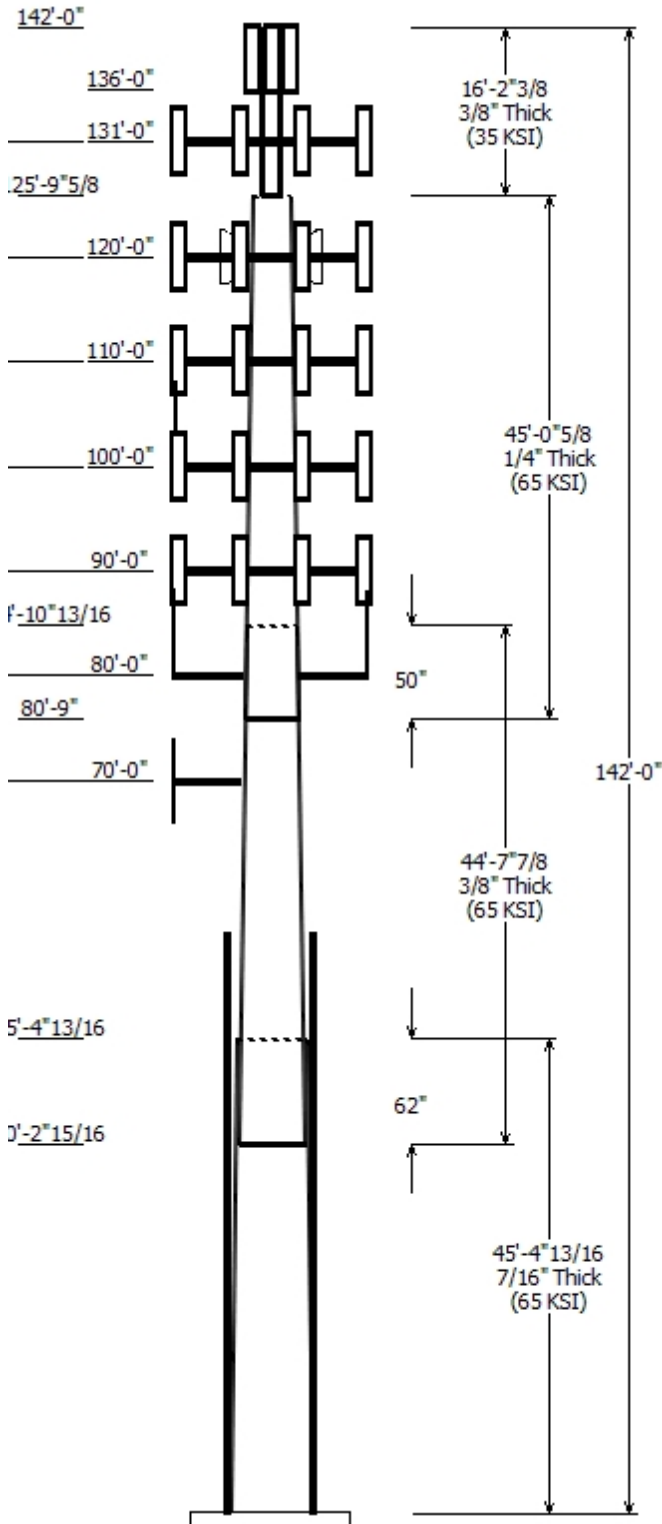
Job Information	
Pole :	302511
Code :	ANSI/TIA-222-G
Description :	142 ft EEI Monopole
Client :	AT&T MOBILITY
Struct Class :	II
Location :	WSPT - South, CT
Shape :	12 Sides
Exposure :	B
Height :	142.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.21263(in/ft)



Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Top	Bottom					
1	45.400	35.34	45.00	0.438		0.000	0.212600	65
2	44.656	27.69	37.19	0.375	Slip Joint	61.875	0.212600	65
3	45.052	19.50	29.08	0.250	Slip Joint	49.813	0.212600	65
4	16.200	10.75	10.75	0.375	Butt Joint	0.000	0.000000	35

Discrete Appurtenance				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	
136.000	139.000	3	Generic RCU (Remote Control)	
136.000	139.000	3	Kathrein Scala 742-218 / AP20-	
131.000	131.000	3	CCI HPA-65R-BUU-H6	
131.000	131.000	3	Ericsson RRUS 12 w/ RRUS A2	
131.000	131.000	6	Powerwave Allgon LGP21401	
131.000	131.000	1	Raycap DC6-48-60-18-8F	
131.000	131.000	3	Ericsson RRUS-11 (50 lbs.)	
131.000	131.000	6	Powerwave Allgon LGP21401	
131.000	131.000	6	Powerwave Allgon 7770.00	
131.000	131.000	1	Flat Platform w/ Handrails	
120.000	120.000	3	RFS RFS APXV9TM14-ALU-I20	
120.000	120.000	3	Alcatel-Lucent TD-RRH8x20-25	
120.000	120.000	3	Alcatel-Lucent 800 MHz 2X50W	
120.000	120.000	3	Alcatel-Lucent 1900 MHz 4x45	
120.000	120.000	3	RFS APXVSP18-C-A20	
120.000	120.000	3	Argus LLPX310R	
120.000	120.000	2	DragonWave Horizon Compact	
120.000	120.000	2	DragonWave A-ANT-18G-2-C	
120.000	120.000	3	NextNet BTS-2500	
120.000	120.000	1	Flat Platform w/ Handrails	
110.000	110.000	12	Swedcom ALP 9011-Din	
110.000	110.000	1	Flat Platform w/ Handrails	
100.000	104.000	1	GPS	
100.000	100.000	3	Antel BXA-171063/12CF_2 FP	
100.000	100.000	3	Antel BXA-70080/6CF_	
100.000	100.000	1	RFS DB-T1-6Z-8AB-0Z	
100.000	100.000	3	Alcatel-Lucent RRH2x40-AWS	
100.000	100.000	6	RFS FD9R6004/1C-3L	
100.000	100.000	3	Powerwave Allgon P65-16-XL-	
100.000	100.000	3	Rym sa MGD3-800TX	
100.000	100.000	1	Flat Platform w/ Handrails	
90.000	90.000	3	Andrew LNX-6515DS-VTM	
90.000	90.000	3	Ericsson RRUS 11 B12	
90.000	90.000	3	Ericsson AIR 21, 1.3M, B4A B2P	
90.000	90.000	4	Ericsson AIR 21, 1.3 M, B2A B4	
90.000	90.000	4	RFS ATMAA1412D-1A20	
90.000	90.000	1	Flat Platform w/ Handrails	
80.000	80.000	2	Stand-Offs	
80.000	83.000	2	Diamond X50A	
70.000	70.000	1	Stand-Off	
70.000	70.000	1	PCTEL GPS-TMG-HR-26N	



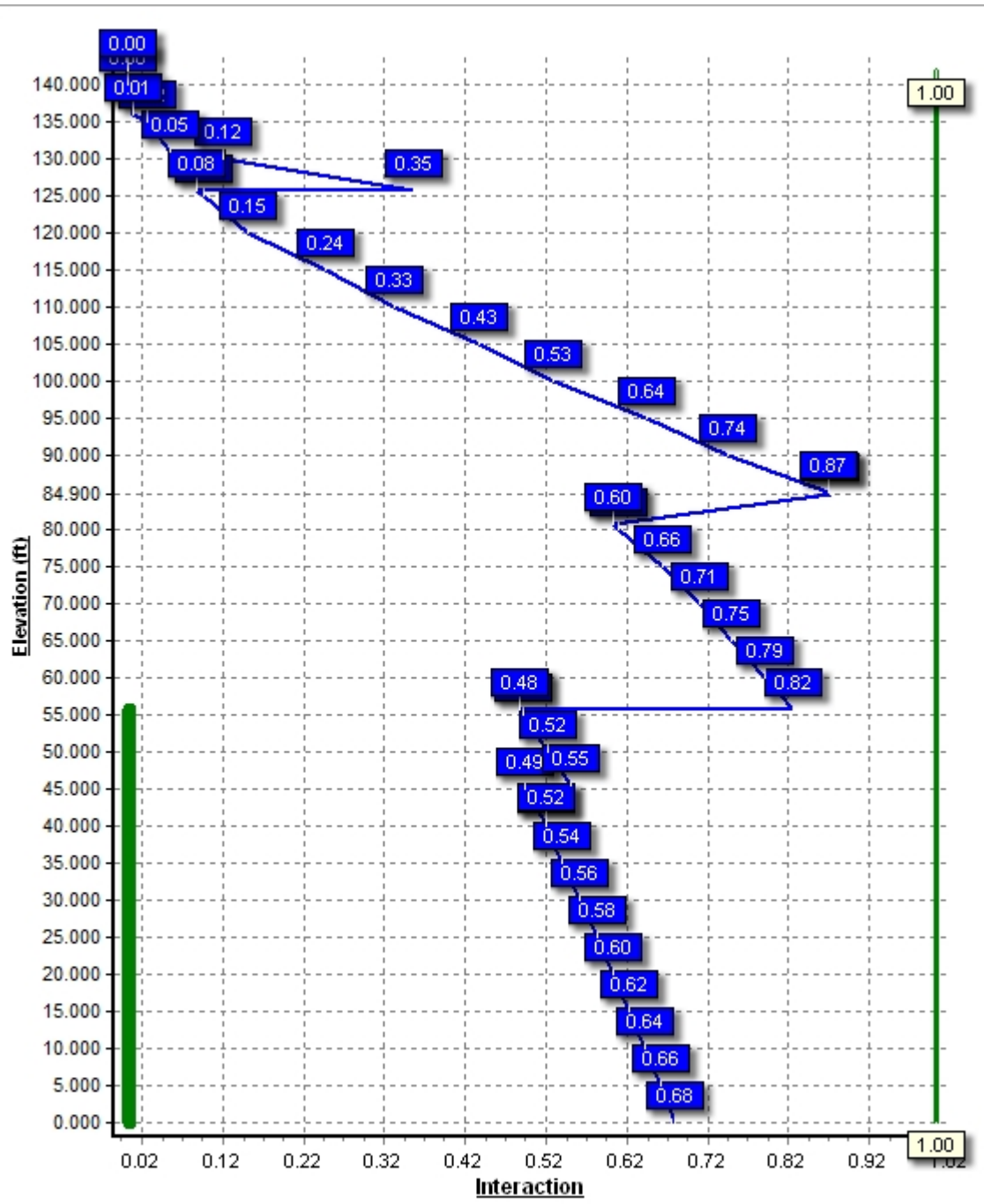


Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	63.000	DYWIDAG	Yes
0.000	70.000	1/2" Coax	No
0.000	80.000	1/2" Coax	No
0.000	90.000	1 1/4" Fiber	No
0.000	90.000	1 5/8" Coax	Yes
0.000	100.0	1 5/8" Coax	No
0.000	100.0	1 5/8" Hybriflex	No
0.000	100.0	1/2" Coax	No
0.000	110.0	1 5/8" Coax	No
0.000	120.0	1 1/4" Hybriflex	No
0.000	120.0	1/2" Coax	No
0.000	120.0	2" Conduit	No
0.000	120.0	5/16" Coax	No
0.000	131.0	0.28" RG-6	No
0.000	131.0	0.65" 8 AWG 2C	No
0.000	131.0	1 1/4" Coax	No
0.000	136.0	1 5/8" Coax	Yes
0.000	136.0	3/8" Coax	No

Load Cases	
1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 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	3727.32	41.38	50.12
0.9D + 1.6W	3634.78	40.14	37.57
1.2D + 1.0Di + 1.0Wi	671.02	6.96	82.45
(1.2 + 0.2Sds) * DL + E ELFM	191.09	1.79	50.10
(1.2 + 0.2Sds) * DL + E EMAM	147.26	1.67	50.10
(0.9 - 0.2Sds) * DL + E ELFM	188.43	1.78	34.26
(0.9 - 0.2Sds) * DL + E EMAM	145.01	1.67	34.26
1.0D + 1.0W	681.48	7.48	41.84

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	120.00	14.387	1.199



Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:01 PM

Customer: AT&T MOBILITY

**Analysis Parameters**

Location:	Fairfield County, CT	Height (ft):	142
Code:	ANSI/TIA-222-G	Base Diameter (in):	45.00
Shape:	12 Sides. Sect 4: Round	Top Diameter (in):	10.75
Pole Type:	Custom	Taper (in/ft) :	0.213
Pole Manufacturer:	EEI		

**Ice & Wind Parameters**

Structure Class:	II	Design Wind Speed Without Ice:	110 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:	0.75 in

**Seismic Parameters**

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.15		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.221	S <sub>1</sub> :	0.066
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.236	S <sub>d1</sub> :	0.106
		C <sub>s</sub> :	0.033
		C <sub>s</sub> Max:	0.033
		C <sub>s</sub> Min:	0.030

**Load Cases**

1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 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: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

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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	45.400	0.4375	65		0.00	8,648	45.00	0.00	62.78	15912.1	25.42	102.86	35.34	45.40	49.18	7649.3	19.50	80.79	0.212638
2-12	44.656	0.3750	65	Slip	61.88	5,884	37.19	40.24	44.46	7692.0	24.43	99.18	27.69	84.90	32.99	3143.5	17.65	73.86	0.212638
3-12	45.052	0.2500	65	Slip	49.81	2,967	29.08	80.75	23.21	2462.1	29.02	116.32	19.50	125.80	15.50	732.9	18.76	78.00	0.212638
4-R	16.200	0.3750	35	Butt	0.00	674	10.75	125.80	12.22	164.6	0.00	28.67	10.75	142.00	12.22	164.6	0.00	28.67	0.000000
Shaft Weight						18,173													

**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		
136.00	Generic RCU (Remote Control	3	1.00	0.160	0.33	11.01	0.359	0.33	0.000	3.000
136.00	Kathrein Scala 742-218 /	3	22.50	3.850	0.73	110.51	4.762	0.73	0.000	3.000
131.00	CCI HPA-65R-BUU-H6	3	51.00	9.660	0.69	295.12	11.006	0.69	0.000	0.000
131.00	Ericsson RRUS 12 w/ RRUS	3	71.40	3.150	0.50	180.77	3.853	0.50	0.000	0.000
131.00	Ericsson RRUS-11 (50 lbs.)	3	50.00	2.570	0.50	129.98	3.205	0.50	0.000	0.000
131.00	Flat Platform w/ Handrails	1	2000.00	39.500	1.00	3,404.39	58.807	1.00	0.000	0.000
131.00	Powerwave Allgon 7770.00	6	35.00	5.510	0.65	167.80	6.544	0.65	0.000	0.000
131.00	Powerwave Allgon LGP21401	6	14.10	1.100	0.50	47.10	1.556	0.50	0.000	0.000
131.00	Powerwave Allgon LGP21401	6	14.10	1.100	0.50	47.10	1.556	0.50	0.000	0.000
131.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	123.18	2.843	1.00	0.000	0.000
120.00	Alcatel-Lucent 1900 MHz	3	60.00	2.320	0.50	152.37	2.975	0.50	0.000	0.000
120.00	Alcatel-Lucent 800 MHz	3	64.00	2.060	0.50	152.13	2.640	0.50	0.000	0.000
120.00	Alcatel-Lucent TD-RRH8x20-	3	70.00	4.050	0.50	159.37	5.675	0.50	0.000	0.000
120.00	Argus LLPX310R	3	28.60	4.290	0.63	133.23	5.166	0.63	0.000	0.000
120.00	DragonWave A-ANT-18G-2-C	2	27.10	4.690	0.90	122.53	5.936	0.90	0.000	0.000
120.00	DragonWave Horizon	2	10.60	0.430	0.33	39.85	0.653	0.33	0.000	0.000
120.00	Flat Platform w/ Handrails	1	2000.00	39.500	1.00	3,389.73	58.605	1.00	0.000	0.000
120.00	NextNet BTS-2500	3	35.00	1.820	0.50	91.05	2.383	0.50	0.000	0.000
120.00	RFS APXVSP18-C-A20	3	57.00	8.020	0.69	250.96	9.281	0.69	0.000	0.000
120.00	RFS RFS APXV9TM14-ALU-I20	3	55.10	6.340	0.66	210.83	7.422	0.66	0.000	0.000
110.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,377.42	62.727	1.00	0.000	0.000
110.00	Swedcom ALP 9011-Din	12	10.00	3.170	0.74	106.31	3.443	0.74	0.000	0.000
100.00	Alcatel-Lucent RRH2x40-AWS	3	44.00	2.160	0.50	113.66	2.774	0.50	0.000	0.000
100.00	Antel BXA-171063/12CF__2	3	15.00	4.790	0.72	128.79	5.957	0.72	0.000	0.000
100.00	Antel BXA-70080/6CF__	3	18.00	5.840	0.72	161.39	7.030	0.72	0.000	0.000
100.00	Flat Platform w/ Handrails	1	2000.00	39.600	1.00	3,364.04	58.400	1.00	0.000	0.000
100.00	GPS	1	10.00	1.000	0.50	46.34	0.921	0.50	0.000	4.000
100.00	Powerwave Allgon P65-16-	3	33.00	8.130	0.65	205.57	9.371	0.65	0.000	0.000
100.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	1.00	175.07	5.634	1.00	0.000	0.000
100.00	RFS FD9R6004/1C-3L	6	3.10	0.370	0.33	15.39	0.568	0.33	0.000	0.000
100.00	Rymasa MGD3-800TX	3	15.40	3.340	0.69	97.74	4.235	0.69	0.000	0.000
90.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.70	298.51	13.005	0.70	0.000	0.000
90.00	Ericsson AIR 21, 1.3 M, B2A	4	83.00	6.050	0.71	241.54	7.087	0.71	0.000	0.000
90.00	Ericsson AIR 21, 1.3M, B4A	3	81.50	6.090	0.70	240.00	7.132	0.70	0.000	0.000
90.00	Ericsson RRUS 11 B12	3	50.70	2.790	0.50	131.59	3.431	0.50	0.000	0.000
90.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,349.36	62.312	1.00	0.000	0.000
90.00	RFS ATMAA1412D-1A20	4	13.00	1.000	0.33	45.68	1.407	0.33	0.000	0.000
80.00	Diamond X50A	2	2.30	1.120	1.00	56.95	2.427	1.00	0.000	3.000
80.00	Stand-Offs	2	50.00	3.000	0.67	72.87	4.470	0.67	0.000	0.000
70.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	1.00	9.93	0.257	1.00	0.000	0.000
70.00	Stand-Off	1	30.00	1.000	0.67	43.53	1.483	0.67	0.000	0.000
Totals		122	13821.70			31,720.16			Number of Loadings :	41

Site Number: 302511

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Site Name: WSPT - South, CT

Engineering Number: 64785821

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Customer: AT&T MOBILITY

**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	136.00	6	1 5/8" Coax	1.98	0.82	N	1.98	Y	Metro PCS
0.00	136.00	1	3/8" Coax	0.44	0.08	N	0.44	N	Metro PCS
0.00	131.00	1	0.28" RG-6	0.28	0.03	N	0.00	N	AT&T Mobility
0.00	131.00	2	0.65" 8 AWG 2C	0.65	0.31	N	0.00	N	AT&T Mobility
0.00	131.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
0.00	120.00	4	1 1/4" Hybriflex	1.54	1.00	N	0.00	N	Sprint Nextel
0.00	120.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Clearwire
0.00	120.00	1	2" Conduit	2.38	3.65	N	0.00	N	Clearwire
0.00	120.00	6	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
0.00	110.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	100.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	100.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon
0.00	100.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Verizon
0.00	90.00	1	1 1/4" Fiber	1.25	1.05	N	0.00	N	T-Mobile
0.00	90.00	14	1 5/8" Coax	1.98	0.82	N	3.96	Y	T-Mobile
0.00	80.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Senet, Inc.
0.00	70.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	63.00	4	DYWIDAG	4.00	0.00	N	2.50	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	55.68	4	SOL #20 All Thread	80	2.19	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

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Customer: AT&T MOBILITY

**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		0.4375	45.000	62.777	15,912.1	25.42	102.86	77.0	683.1	0.0	0.0	19.64	6,615	0.0
5.00		0.4375	43.937	61.280	14,800.2	24.77	100.43	77.7	650.7	0.0	1,055.3	19.64	6,347	334.0
10.00		0.4375	42.874	59.782	13,741.3	24.11	98.00	78.4	619.2	0.0	1,029.9	19.64	6,084	334.0
15.00		0.4375	41.810	58.284	12,734.1	23.46	95.57	79.1	588.4	0.0	1,004.4	19.64	5,827	334.0
20.00		0.4375	40.747	56.786	11,777.4	22.81	93.14	79.8	558.4	0.0	978.9	19.64	5,576	334.0
25.00		0.4375	39.684	55.289	10,869.9	22.16	90.71	80.5	529.2	0.0	953.4	19.64	5,330	334.0
30.00		0.4375	38.621	53.791	10,010.2	21.51	88.28	81.3	500.7	0.0	927.9	19.64	5,090	334.0
35.00		0.4375	37.558	52.293	9,197.1	20.86	85.85	81.9	473.1	0.0	902.4	19.64	4,855	334.0
40.00		0.4375	36.494	50.795	8,429.2	20.21	83.42	81.9	446.2	0.0	877.0	19.64	4,626	334.0
40.24	Bot - Section 2	0.4375	36.443	50.722	8,392.9	20.18	83.30	81.9	444.9	0.0	42.1	19.64	4,615	16.3
45.00		0.4375	35.431	49.297	7,705.4	19.56	80.99	81.9	420.1	0.0	1,519.0	19.64	4,559	317.7
45.40	Top - Section 1	0.3750	36.096	43.133	7,025.1	23.65	96.26	78.9	376.0	0.0	125.8	19.64	4,542	26.7
50.00		0.3750	35.118	41.952	6,463.7	22.95	93.65	79.7	355.6	0.0	665.9	19.64	4,337	307.3
55.00		0.3750	34.055	40.668	5,888.2	22.19	90.81	80.5	334.0	0.0	702.9	19.64	4,121	334.0
55.68	Reinf. Top	0.3750	33.911	40.495	5,813.1	22.09	90.43	80.6	331.2	0.0	93.5	19.64	4,092	45.2
60.00		0.3750	32.992	39.385	5,348.0	21.43	87.98	81.3	313.2	0.0	587.5			
65.00		0.3750	31.929	38.101	4,841.9	20.67	85.14	81.9	293.0	0.0	659.2			
70.00		0.3750	30.865	36.817	4,368.8	19.91	82.31	81.9	273.4	0.0	637.3			
75.00		0.3750	29.802	35.533	3,927.5	19.15	79.47	81.9	254.6	0.0	615.5			
80.00		0.3750	28.739	34.249	3,517.0	18.39	76.64	81.9	236.4	0.0	593.6			
80.75	Bot - Section 3	0.3750	28.580	34.057	3,458.1	18.28	76.21	81.9	233.8	0.0	87.0			
84.90	Top - Section 2	0.2500	28.197	22.497	2,242.8	28.08	112.79	74.1	153.7	0.0	796.3			
85.00		0.2500	28.176	22.480	2,237.7	28.06	112.70	74.1	153.4	0.0	7.7			
90.00		0.2500	27.113	21.624	1,991.7	26.92	108.45	75.4	141.9	0.0	375.2			
95.00		0.2500	26.049	20.768	1,764.4	25.78	104.20	76.6	130.9	0.0	360.6			
100.0		0.2500	24.986	19.913	1,555.2	24.64	99.94	77.8	120.2	0.0	346.1			
105.0		0.2500	23.923	19.057	1,363.1	23.50	95.69	79.1	110.1	0.0	331.5			
110.0		0.2500	22.860	18.201	1,187.6	22.36	91.44	80.3	100.4	0.0	316.9			
115.0		0.2500	21.797	17.345	1,027.8	21.22	87.19	81.6	91.1	0.0	302.4			
120.0		0.2500	20.733	16.489	883.1	20.08	82.93	81.9	82.3	0.0	287.8			
125.0		0.2500	19.670	15.633	752.6	18.94	78.68	81.9	73.9	0.0	273.3			
125.8	Top - Section 3	0.2500	19.500	15.496	732.9	18.76	78.00	81.9	72.6	0.0	42.4			
125.8	Bot - Section 4	0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4				
130.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	174.7			
131.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	41.6			
135.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	166.4			
136.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	41.6			
140.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	166.4			
142.0		0.3750	10.750	12.223	164.6	0.00	28.67	35.0	30.6	40.4	83.2			
											18,172.5			3,719.2



Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

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Customer: AT&T MOBILITY

<b>Load Case:</b> 1.2D + 1.6W	110 mph with No Ice	25 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		434.6	0.0					0.0	0.0	434.6	0.0	0.0	0.0	
5.00		863.5	1,266.4					0.0	734.9	863.5	2,001.3	0.0	0.0	
10.00		851.8	1,235.8					0.0	734.9	851.8	1,970.7	0.0	0.0	
15.00		840.2	1,205.3					0.0	734.9	840.2	1,940.2	0.0	0.0	
20.00		794.5	1,174.7					0.0	734.9	794.5	1,909.6	0.0	0.0	
25.00		744.7	1,144.1					153.0	734.9	897.7	1,879.0	0.0	0.0	
30.00		733.4	1,113.5					153.0	734.9	886.4	1,848.4	0.0	0.0	
35.00		736.6	1,082.9					156.7	734.9	893.3	1,817.8	0.0	0.0	
40.00		388.7	1,052.4					163.2	734.9	551.9	1,787.3	0.0	0.0	
40.24	Bot - Section 2	380.5	50.5					8.1	35.8	388.6	86.3	0.0	0.0	
45.00		392.9	1,822.9					161.0	699.1	553.9	2,521.9	0.0	0.0	
45.40	Top - Section 1	381.8	150.9					13.7	58.8	395.5	209.7	0.0	0.0	
50.00		732.4	799.1					159.8	676.1	892.1	1,475.2	0.0	0.0	
55.00		432.6	843.4					177.3	734.9	609.9	1,578.3	0.0	0.0	
55.68	Reinf. Top	379.1	112.2					24.3	99.5	403.4	211.7	0.0	0.0	
60.00		703.6	705.0					156.6	288.9	860.2	993.9	0.0	0.0	
65.00		762.6	791.0					161.9	334.1	924.5	1,125.1	0.0	0.0	
70.00	Appertunance(s)	773.8	764.8	35.1	0.0	0.0	36.7	0.0	334.1	809.0	1,135.6	0.0	0.0	
75.00		774.1	738.6					0.0	332.3	774.1	1,070.9	0.0	0.0	
80.00	Appertunance(s)	440.4	712.4	301.7	0.0	326.1	125.5	0.0	332.3	742.1	1,170.2	0.0	0.0	
80.75	Bot - Section 3	351.8	104.4					20.2	49.5	372.0	153.9	0.0	0.0	
84.90	Top - Section 2	305.6	955.6					112.5	274.4	418.1	1,230.0	0.0	0.0	
85.00		359.7	9.2					2.7	6.6	362.4	15.9	0.0	0.0	
90.00	Appertunance(s)	639.5	450.2	4,321.3	0.0	0.0	3,521.4	136.9	330.5	5,097.7	4,302.1	0.0	0.0	
95.00		566.6	432.8					0.0	255.3	566.6	688.1	0.0	0.0	
100.00	Appertunance(s)	551.5	415.3	4,138.3	0.0	77.6	2,938.6	0.0	255.3	4,689.9	3,609.2	0.0	0.0	
105.00		535.5	397.8					0.0	187.6	535.5	585.4	0.0	0.0	
110.00	Appertunance(s)	518.5	380.3	3,340.4	0.0	0.0	2,544.0	0.0	187.6	3,859.0	3,111.9	0.0	0.0	
115.00		500.7	362.9					0.0	128.6	500.7	491.4	0.0	0.0	
120.00	Appertunance(s)	482.1	345.4	4,611.3	0.0	0.0	3,821.4	0.0	128.6	5,093.5	4,295.4	0.0	0.0	
125.00		273.2	327.9					0.0	79.2	273.2	407.2	0.0	0.0	
125.80	Top - Section 3	114.6	50.9					0.0	12.7	114.6	63.6	0.0	0.0	
130.00		96.2	209.6					0.0	66.6	96.2	276.2	0.0	0.0	
131.00	Appertunance(s)	93.4	49.9	4,586.6	0.0	0.0	3,513.8	0.0	15.8	4,679.9	3,579.6	0.0	0.0	
135.00		93.6	199.6					0.0	24.0	93.6	223.6	0.0	0.0	
136.00	Appertunance(s)	79.1	49.9	386.4	0.0	1,159.3	84.6	0.0	6.0	465.5	140.5	0.0	0.0	
140.00		90.7	199.6					0.0	0.0	90.7	199.6	0.0	0.0	
142.00		30.3	99.8					0.0	0.0	30.3	99.8	0.0	0.0	
<b>Totals:</b>											41,706.7	50,206.4	0.00	0.00

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:03 PM

Customer: AT&T MOBILITY

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

110 mph with No Ice

25 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	-50.12	-41.38	0.00	-3,727.32	0.00	3,727.32	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.677
5.00	-47.96	-40.70	0.00	-3,520.45	0.00	3,520.45	4,285.51	2,142.75	7,679.11	3,792.42	0.12	-0.23	0.658
10.00	-45.83	-40.02	0.00	-3,316.95	0.00	3,316.95	4,218.97	2,109.49	7,373.27	3,641.38	0.49	-0.46	0.640
15.00	-43.74	-39.34	0.00	-3,116.85	0.00	3,116.85	4,150.52	2,075.26	7,070.06	3,491.64	1.09	-0.69	0.621
20.00	-41.69	-38.69	0.00	-2,920.17	0.00	2,920.17	4,080.16	2,040.08	6,769.73	3,343.32	1.94	-0.92	0.601
25.00	-39.67	-37.91	0.00	-2,726.75	0.00	2,726.75	4,007.88	2,003.94	6,472.54	3,196.54	3.03	-1.15	0.580
30.00	-37.70	-37.14	0.00	-2,537.18	0.00	2,537.18	3,933.69	1,966.85	6,178.73	3,051.44	4.36	-1.38	0.559
35.00	-35.76	-36.34	0.00	-2,351.49	0.00	2,351.49	3,854.52	1,927.26	5,883.88	2,905.83	5.94	-1.61	0.537
40.00	-33.91	-35.81	0.00	-2,169.78	0.00	2,169.78	3,744.12	1,872.06	5,549.75	2,740.81	7.75	-1.84	0.518
40.24	-33.77	-35.48	0.00	-2,161.06	0.00	2,161.06	3,738.74	1,869.37	5,533.72	2,732.90	7.84	-1.85	0.517
45.00	-31.20	-34.91	0.00	-1,992.29	0.00	1,992.29	3,633.72	1,816.86	5,225.39	2,580.62	9.80	-2.07	0.492
45.40	-30.93	-34.56	0.00	-1,978.33	0.00	1,978.33	3,063.79	1,531.89	4,506.32	2,225.50	9.98	-2.09	0.547
50.00	-29.37	-33.73	0.00	-1,819.33	0.00	1,819.33	3,008.67	1,504.34	4,302.82	2,125.00	12.09	-2.29	0.519
55.00	-27.74	-33.11	0.00	-1,650.70	0.00	1,650.70	2,946.93	1,473.46	4,084.17	2,017.02	14.62	-2.52	0.488
55.68	-27.48	-32.76	0.00	-1,628.28	0.00	1,628.28	2,938.42	1,469.21	4,054.78	2,002.51	14.98	-2.55	0.484
55.68	-27.48	-32.76	0.00	-1,628.28	0.00	1,628.28	2,938.42	1,469.21	4,054.78	2,002.51	14.98	-2.55	0.823
60.00	-26.37	-31.98	0.00	-1,486.67	0.00	1,486.67	2,883.27	1,441.64	3,868.42	1,910.47	17.38	-2.75	0.788
65.00	-25.09	-31.17	0.00	-1,326.76	0.00	1,326.76	2,808.41	1,404.21	3,643.77	1,799.52	20.45	-3.12	0.747
70.00	-23.81	-30.44	0.00	-1,170.94	0.00	1,170.94	2,713.79	1,356.89	3,400.96	1,679.60	23.92	-3.49	0.706
75.00	-22.61	-29.74	0.00	-1,018.73	0.00	1,018.73	2,619.16	1,309.58	3,166.52	1,563.83	27.76	-3.84	0.661
80.00	-21.40	-28.99	0.00	-869.70	0.00	869.70	2,524.53	1,262.26	2,940.46	1,452.18	31.97	-4.19	0.608
80.75	-21.19	-28.67	0.00	-848.00	0.00	848.00	2,510.36	1,255.18	2,907.34	1,435.82	32.63	-4.24	0.600
84.90	-19.93	-28.20	0.00	-729.00	0.00	729.00	1,500.18	750.09	1,728.96	853.87	36.43	-4.51	0.868
85.00	-19.84	-27.92	0.00	-726.17	0.00	726.17	1,499.54	749.77	1,726.89	852.85	36.53	-4.51	0.866
90.00	-15.81	-22.59	0.00	-586.58	0.00	586.58	1,466.64	733.32	1,624.12	802.09	41.48	-4.93	0.743
95.00	-15.04	-22.06	0.00	-473.61	0.00	473.61	1,431.82	715.91	1,522.23	751.77	46.85	-5.31	0.641
100.00	-11.80	-17.11	0.00	-363.22	0.00	363.22	1,395.09	697.54	1,421.47	702.01	52.59	-5.65	0.526
105.00	-11.20	-16.57	0.00	-277.66	0.00	277.66	1,356.44	678.22	1,322.10	652.93	58.65	-5.94	0.434
110.00	-8.46	-12.44	0.00	-194.79	0.00	194.79	1,315.88	657.94	1,224.36	604.67	65.00	-6.19	0.329
115.00	-8.00	-11.91	0.00	-132.58	0.00	132.58	1,273.40	636.70	1,128.51	557.33	71.58	-6.38	0.245
120.00	-4.29	-6.38	0.00	-73.02	0.00	73.02	1,215.41	607.71	1,023.36	505.40	78.33	-6.52	0.148
125.00	-3.91	-6.06	0.00	-41.13	0.00	41.13	1,152.33	576.16	919.28	454.00	85.20	-6.62	0.094
125.80	-3.86	-5.94	0.00	-36.28	0.00	36.28	1,142.23	571.11	903.13	446.02	86.31	-6.63	0.085
125.80	-3.86	-5.94	0.00	-36.28	0.00	36.28	385.02	192.51	160.54	106.00	86.31	-6.63	0.353
130.00	-3.59	-5.82	0.00	-11.33	0.00	11.33	385.02	192.51	160.54	106.00	92.15	-6.67	0.117
131.00	-0.58	-0.75	0.00	-5.51	0.00	5.51	385.02	192.51	160.54	106.00	93.54	-6.68	0.053
135.00	-0.37	-0.63	0.00	-2.50	0.00	2.50	385.02	192.51	160.54	106.00	99.14	-6.71	0.025
136.00	-0.28	-0.16	0.00	-0.70	0.00	0.70	385.02	192.51	160.54	106.00	100.54	-6.71	0.007
140.00	-0.10	-0.04	0.00	-0.08	0.00	0.08	385.02	192.51	160.54	106.00	106.16	-6.72	0.001
142.00	0.00	-0.03	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	108.96	-6.72	0.000

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:03 PM

Customer: AT&T MOBILITY

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

110 mph with No Ice (Reduced DL)

25 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		347.7	0.0					0.0	0.0	347.7	0.0	0.0	0.0
5.00		687.1	949.8					0.0	551.2	687.1	1,501.0	0.0	0.0
10.00		670.5	926.9					0.0	551.2	670.5	1,478.1	0.0	0.0
15.00		653.9	903.9					0.0	551.2	653.9	1,455.1	0.0	0.0
20.00		700.1	881.0					0.0	551.2	700.1	1,432.2	0.0	0.0
25.00		744.7	858.1					153.0	551.2	897.7	1,409.2	0.0	0.0
30.00		733.4	835.1					153.0	551.2	886.4	1,386.3	0.0	0.0
35.00		736.6	812.2					156.7	551.2	893.3	1,363.4	0.0	0.0
40.00		388.7	789.3					163.2	551.2	551.9	1,340.4	0.0	0.0
40.24	Bot - Section 2	380.5	37.9					8.1	26.9	388.6	64.7	0.0	0.0
45.00		392.9	1,367.1					161.0	524.3	553.9	1,891.5	0.0	0.0
45.40	Top - Section 1	381.8	113.2					13.7	44.1	395.5	157.3	0.0	0.0
50.00		732.4	599.3					159.8	507.1	892.1	1,106.4	0.0	0.0
55.00		432.6	632.6					177.3	551.2	609.9	1,183.7	0.0	0.0
55.68	Reinf. Top	379.1	84.1					24.3	74.6	403.4	158.8	0.0	0.0
60.00		703.6	528.8					156.6	216.6	860.2	745.4	0.0	0.0
65.00		685.7	593.2					161.9	250.6	847.6	843.8	0.0	0.0
70.00	Appertunance(s)	615.2	573.6	35.1	0.0	0.0	27.5	0.0	250.6	650.4	851.7	0.0	0.0
75.00		605.9	553.9					0.0	249.2	605.9	803.2	0.0	0.0
80.00	Appertunance(s)	353.8	534.3	301.7	0.0	326.1	94.1	0.0	249.2	655.6	877.6	0.0	0.0
80.75	Bot - Section 3	351.8	78.3					20.2	37.1	372.0	115.4	0.0	0.0
84.90	Top - Section 2	305.6	716.7					112.5	205.8	418.1	922.5	0.0	0.0
85.00		359.7	6.9					2.7	5.0	362.4	11.9	0.0	0.0
90.00	Appertunance(s)	639.5	337.7	4,321.3	0.0	0.0	2,641.0	136.9	247.9	5,097.7	3,226.6	0.0	0.0
95.00		566.6	324.6					0.0	191.5	566.6	516.1	0.0	0.0
100.00	Appertunance(s)	551.5	311.5	4,138.3	0.0	77.6	2,203.9	0.0	191.5	4,689.9	2,706.9	0.0	0.0
105.00		535.5	298.4					0.0	140.7	535.5	439.1	0.0	0.0
110.00	Appertunance(s)	518.5	285.3	3,340.4	0.0	0.0	1,908.0	0.0	140.7	3,859.0	2,334.0	0.0	0.0
115.00		500.7	272.1					0.0	96.4	500.7	368.6	0.0	0.0
120.00	Appertunance(s)	482.1	259.0	4,611.3	0.0	0.0	2,866.0	0.0	96.4	5,093.5	3,221.5	0.0	0.0
125.00		273.2	245.9					0.0	59.4	273.2	305.4	0.0	0.0
125.80	Top - Section 3	98.9	38.2					0.0	9.5	98.9	47.7	0.0	0.0
130.00		76.8	157.2					0.0	49.9	76.8	207.1	0.0	0.0
131.00	Appertunance(s)	74.5	37.4	4,586.6	0.0	0.0	2,635.4	0.0	11.9	4,661.1	2,684.7	0.0	0.0
135.00		74.7	149.7					0.0	18.0	74.7	167.7	0.0	0.0
136.00	Appertunance(s)	75.3	37.4	386.4	0.0	1,159.3	63.4	0.0	4.5	461.7	105.4	0.0	0.0
140.00		90.7	149.7					0.0	0.0	90.7	149.7	0.0	0.0
142.00		30.3	74.9					0.0	0.0	30.3	74.9	0.0	0.0
<b>Totals:</b>										<b>40,414.5</b>	<b>37,654.8</b>	<b>0.00</b>	<b>0.00</b>

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:05 PM

Customer: AT&T MOBILITY

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

110 mph with No Ice (Reduced DL)

25 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	-37.57	-40.14	0.00	-3,634.78	0.00	3,634.78	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.658
5.00	-35.92	-39.59	0.00	-3,434.07	0.00	3,434.07	4,285.51	2,142.75	7,679.11	3,792.42	0.12	-0.22	0.640
10.00	-34.29	-39.05	0.00	-3,236.11	0.00	3,236.11	4,218.97	2,109.49	7,373.27	3,641.38	0.48	-0.45	0.622
15.00	-32.69	-38.51	0.00	-3,040.87	0.00	3,040.87	4,150.52	2,075.26	7,070.06	3,491.64	1.07	-0.67	0.604
20.00	-31.12	-37.91	0.00	-2,848.33	0.00	2,848.33	4,080.16	2,040.08	6,769.73	3,343.32	1.89	-0.90	0.584
25.00	-29.58	-37.11	0.00	-2,658.77	0.00	2,658.77	4,007.88	2,003.94	6,472.54	3,196.54	2.96	-1.12	0.564
30.00	-28.07	-36.30	0.00	-2,473.24	0.00	2,473.24	3,933.69	1,966.85	6,178.73	3,051.44	4.25	-1.35	0.543
35.00	-26.60	-35.48	0.00	-2,291.74	0.00	2,291.74	3,854.52	1,927.26	5,883.88	2,905.83	5.79	-1.57	0.522
40.00	-25.20	-34.94	0.00	-2,114.35	0.00	2,114.35	3,744.12	1,872.06	5,549.75	2,740.81	7.56	-1.80	0.503
40.24	-25.08	-34.60	0.00	-2,105.84	0.00	2,105.84	3,738.74	1,869.37	5,533.72	2,732.90	7.65	-1.81	0.502
45.00	-23.14	-34.02	0.00	-1,941.30	0.00	1,941.30	3,633.72	1,816.86	5,225.39	2,580.62	9.56	-2.02	0.477
45.40	-22.93	-33.67	0.00	-1,927.69	0.00	1,927.69	3,063.79	1,531.89	4,506.32	2,225.50	9.73	-2.04	0.532
50.00	-21.74	-32.82	0.00	-1,772.82	0.00	1,772.82	3,008.67	1,504.34	4,302.82	2,125.00	11.79	-2.24	0.505
55.00	-20.51	-32.20	0.00	-1,608.74	0.00	1,608.74	2,946.93	1,473.46	4,084.17	2,017.02	14.25	-2.46	0.474
55.68	-20.31	-31.83	0.00	-1,586.94	0.00	1,586.94	2,938.42	1,469.21	4,054.78	2,002.51	14.60	-2.49	0.470
55.68	-20.31	-31.83	0.00	-1,586.94	0.00	1,586.94	2,938.42	1,469.21	4,054.78	2,002.51	14.60	-2.49	0.800
60.00	-19.45	-31.03	0.00	-1,449.34	0.00	1,449.34	2,883.27	1,441.64	3,868.42	1,910.47	16.95	-2.68	0.766
65.00	-18.46	-30.26	0.00	-1,294.17	0.00	1,294.17	2,808.41	1,404.21	3,643.77	1,799.52	19.95	-3.04	0.726
70.00	-17.47	-29.67	0.00	-1,142.86	0.00	1,142.86	2,713.79	1,356.89	3,400.96	1,679.60	23.32	-3.40	0.687
75.00	-16.53	-29.12	0.00	-994.50	0.00	994.50	2,619.16	1,309.58	3,166.52	1,563.83	27.07	-3.75	0.643
80.00	-15.61	-28.45	0.00	-848.59	0.00	848.59	2,524.53	1,262.26	2,940.46	1,452.18	31.18	-4.08	0.591
80.75	-15.44	-28.12	0.00	-827.30	0.00	827.30	2,510.36	1,255.18	2,907.34	1,435.82	31.82	-4.13	0.583
84.90	-14.49	-27.67	0.00	-710.58	0.00	710.58	1,500.18	750.09	1,728.96	853.87	35.53	-4.40	0.843
85.00	-14.40	-27.36	0.00	-707.80	0.00	707.80	1,499.54	749.77	1,726.89	852.85	35.62	-4.40	0.841
90.00	-11.45	-22.09	0.00	-571.01	0.00	571.01	1,466.64	733.32	1,624.12	802.09	40.45	-4.81	0.721
95.00	-10.85	-21.55	0.00	-460.54	0.00	460.54	1,431.82	715.91	1,522.23	751.77	45.68	-5.18	0.621
100.00	-8.50	-16.68	0.00	-352.71	0.00	352.71	1,395.09	697.54	1,421.47	702.01	51.28	-5.50	0.509
105.00	-8.05	-16.14	0.00	-269.33	0.00	269.33	1,356.44	678.22	1,322.10	652.93	57.19	-5.79	0.419
110.00	-6.08	-12.08	0.00	-188.65	0.00	188.65	1,315.88	657.94	1,224.36	604.67	63.38	-6.03	0.317
115.00	-5.73	-11.56	0.00	-128.26	0.00	128.26	1,273.40	636.70	1,128.51	557.33	69.79	-6.22	0.235
120.00	-3.08	-6.15	0.00	-70.46	0.00	70.46	1,215.41	607.71	1,023.36	505.40	76.37	-6.35	0.142
125.00	-2.80	-5.85	0.00	-39.72	0.00	39.72	1,152.33	576.16	919.28	454.00	83.06	-6.44	0.090
125.80	-2.76	-5.74	0.00	-35.04	0.00	35.04	1,142.23	571.11	903.13	446.02	84.14	-6.46	0.081
125.80	-2.76	-5.74	0.00	-35.04	0.00	35.04	385.02	192.51	160.54	106.00	84.14	-6.46	0.339
130.00	-2.56	-5.64	0.00	-10.92	0.00	10.92	385.02	192.51	160.54	106.00	89.82	-6.49	0.111
131.00	-0.42	-0.71	0.00	-5.27	0.00	5.27	385.02	192.51	160.54	106.00	91.18	-6.51	0.051
135.00	-0.26	-0.62	0.00	-2.44	0.00	2.44	385.02	192.51	160.54	106.00	96.64	-6.53	0.024
136.00	-0.21	-0.15	0.00	-0.66	0.00	0.66	385.02	192.51	160.54	106.00	98.00	-6.54	0.007
140.00	-0.07	-0.04	0.00	-0.08	0.00	0.08	385.02	192.51	160.54	106.00	103.47	-6.54	0.001
142.00	0.00	-0.03	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	106.20	-6.54	0.000



Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:06 PM

Customer: AT&T MOBILITY

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice	24 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		56.6	0.0					0.0	0.0	56.6	0.0	0.0	0.0
5.00		112.2	1,604.9					0.0	1,069.5	112.2	2,674.4	0.0	0.0
10.00		110.1	1,605.8					0.0	1,104.7	110.1	2,710.4	0.0	0.0
15.00		107.8	1,585.8					0.0	1,122.6	107.8	2,708.4	0.0	0.0
20.00		105.4	1,558.9					0.0	1,135.0	105.4	2,694.0	0.0	0.0
25.00		103.0	1,528.5					40.0	1,144.7	143.0	2,673.2	0.0	0.0
30.00		101.7	1,495.8					40.4	1,152.6	142.2	2,648.4	0.0	0.0
35.00		102.5	1,461.6					41.8	1,159.3	144.3	2,620.9	0.0	0.0
40.00		54.2	1,426.2					43.8	1,165.1	98.0	2,591.3	0.0	0.0
40.24	Bot - Section 2	53.1	68.8					2.2	56.9	55.3	125.7	0.0	0.0
45.00		54.8	2,180.3					43.5	1,113.4	98.4	3,293.7	0.0	0.0
45.40	Top - Section 1	53.5	181.1					3.7	93.8	57.2	274.9	0.0	0.0
50.00		102.7	1,139.0					43.7	1,081.2	146.5	2,220.2	0.0	0.0
55.00		60.8	1,205.7					49.1	1,179.3	109.9	2,385.0	0.0	0.0
55.68	Reinf. Top	53.4	161.3					6.8	160.0	60.2	321.3	0.0	0.0
60.00		99.4	1,012.0					43.9	676.7	143.2	1,688.7	0.0	0.0
65.00		105.9	1,137.9					45.5	729.4	151.5	1,867.3	0.0	0.0
70.00	Appertunance(s)	105.0	1,103.4	7.5	0.0	0.0	39.6	0.0	646.7	112.5	1,789.7	0.0	0.0
75.00		103.8	1,068.6					0.0	647.1	103.8	1,715.7	0.0	0.0
80.00	Appertunance(s)	59.2	1,033.4	67.6	0.0	91.3	380.6	0.0	649.2	126.8	2,063.2	0.0	0.0
80.75	Bot - Section 3	50.5	152.4					5.8	97.1	56.3	249.5	0.0	0.0
84.90	Top - Section 2	43.8	1,219.2					32.5	539.2	76.4	1,758.5	0.0	0.0
85.00		51.8	15.6					0.8	13.1	52.6	28.7	0.0	0.0
90.00	Appertunance(s)	100.6	758.0	733.5	0.0	0.0	6,645.5	39.9	651.3	874.1	8,054.7	0.0	0.0
95.00		98.7	730.8					0.0	358.9	98.7	1,089.7	0.0	0.0
100.00	Appertunance(s)	96.5	703.5	715.5	0.0	9.2	5,839.0	0.0	359.4	812.1	6,901.9	0.0	0.0
105.00		94.3	676.0					0.0	292.3	94.3	968.3	0.0	0.0
110.00	Appertunance(s)	91.8	648.3	581.8	0.0	0.0	4,627.2	0.0	292.8	673.6	5,568.3	0.0	0.0
115.00		89.3	620.4					0.0	234.3	89.3	854.7	0.0	0.0
120.00	Appertunance(s)	86.6	592.4	801.3	0.0	0.0	7,216.6	0.0	234.8	887.9	8,043.8	0.0	0.0
125.00		49.3	564.3					0.0	185.9	49.3	750.2	0.0	0.0
125.80	Top - Section 3	27.8	88.5					0.0	29.8	27.8	118.3	0.0	0.0
130.00		26.2	319.4					0.0	156.6	26.2	476.0	0.0	0.0
131.00	Appertunance(s)	25.4	76.1	800.4	0.0	0.0	7,052.9	0.0	37.3	825.8	7,166.3	0.0	0.0
135.00		25.5	304.7					0.0	110.1	25.5	414.8	0.0	0.0
136.00	Appertunance(s)	25.7	76.2	62.7	0.0	188.0	378.7	0.0	27.6	88.4	482.5	0.0	0.0
140.00		31.0	305.1					0.0	0.0	31.0	305.1	0.0	0.0
142.00		10.4	152.7					0.0	0.0	10.4	152.7	0.0	0.0
<b>Totals:</b>									6,984.23	82,450.3	0.00	0.00	

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:08 PM

Customer: AT&T MOBILITY

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

50 mph with 0.75 in Radial Ice

24 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	-82.45	-6.96	0.00	-671.02	0.00	671.02	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.135
5.00	-79.77	-6.90	0.00	-636.23	0.00	636.23	4,285.51	2,142.75	7,679.11	3,792.42	0.02	-0.04	0.132
10.00	-77.05	-6.85	0.00	-601.72	0.00	601.72	4,218.97	2,109.49	7,373.27	3,641.38	0.09	-0.08	0.128
15.00	-74.34	-6.79	0.00	-567.49	0.00	567.49	4,150.52	2,075.26	7,070.06	3,491.64	0.20	-0.12	0.125
20.00	-71.64	-6.73	0.00	-533.56	0.00	533.56	4,080.16	2,040.08	6,769.73	3,343.32	0.35	-0.17	0.121
25.00	-68.96	-6.63	0.00	-499.92	0.00	499.92	4,007.88	2,003.94	6,472.54	3,196.54	0.55	-0.21	0.118
30.00	-66.31	-6.52	0.00	-466.78	0.00	466.78	3,933.69	1,966.85	6,178.73	3,051.44	0.79	-0.25	0.114
35.00	-63.69	-6.41	0.00	-434.17	0.00	434.17	3,854.52	1,927.26	5,883.88	2,905.83	1.08	-0.29	0.110
40.00	-61.09	-6.32	0.00	-402.10	0.00	402.10	3,744.12	1,872.06	5,549.75	2,740.81	1.41	-0.34	0.106
40.24	-60.97	-6.29	0.00	-400.56	0.00	400.56	3,738.74	1,869.37	5,533.72	2,732.90	1.43	-0.34	0.106
45.00	-57.67	-6.19	0.00	-370.63	0.00	370.63	3,633.72	1,816.86	5,225.39	2,580.62	1.78	-0.38	0.102
45.40	-57.39	-6.16	0.00	-368.16	0.00	368.16	3,063.79	1,531.89	4,506.32	2,225.50	1.82	-0.38	0.113
50.00	-55.17	-6.03	0.00	-339.84	0.00	339.84	3,008.67	1,504.34	4,302.82	2,125.00	2.20	-0.42	0.108
55.00	-52.78	-5.93	0.00	-309.67	0.00	309.67	2,946.93	1,473.46	4,084.17	2,017.02	2.67	-0.46	0.102
55.68	-52.46	-5.88	0.00	-305.66	0.00	305.66	2,938.42	1,469.21	4,054.78	2,002.51	2.73	-0.47	0.102
55.68	-52.46	-5.88	0.00	-305.66	0.00	305.66	2,938.42	1,469.21	4,054.78	2,002.51	2.73	-0.47	0.171
60.00	-50.77	-5.77	0.00	-280.23	0.00	280.23	2,883.27	1,441.64	3,868.42	1,910.47	3.17	-0.51	0.164
65.00	-48.89	-5.66	0.00	-251.36	0.00	251.36	2,808.41	1,404.21	3,643.77	1,799.52	3.74	-0.58	0.157
70.00	-47.10	-5.59	0.00	-223.03	0.00	223.03	2,713.79	1,356.89	3,400.96	1,679.60	4.38	-0.65	0.150
75.00	-45.38	-5.52	0.00	-195.09	0.00	195.09	2,619.16	1,309.58	3,166.52	1,563.83	5.10	-0.71	0.142
80.00	-43.31	-5.39	0.00	-167.40	0.00	167.40	2,524.53	1,262.26	2,940.46	1,452.18	5.88	-0.78	0.132
80.75	-43.06	-5.36	0.00	-163.36	0.00	163.36	2,510.36	1,255.18	2,907.34	1,435.82	6.00	-0.79	0.131
84.90	-41.30	-5.27	0.00	-141.13	0.00	141.13	1,500.18	750.09	1,728.96	853.87	6.71	-0.84	0.193
85.00	-41.27	-5.25	0.00	-140.60	0.00	140.60	1,499.54	749.77	1,726.89	852.85	6.73	-0.84	0.192
90.00	-33.23	-4.30	0.00	-114.34	0.00	114.34	1,466.64	733.32	1,624.12	802.09	7.66	-0.92	0.165
95.00	-32.13	-4.22	0.00	-92.85	0.00	92.85	1,431.82	715.91	1,522.23	751.77	8.67	-1.00	0.146
100.00	-25.24	-3.31	0.00	-71.73	0.00	71.73	1,395.09	697.54	1,421.47	702.01	9.75	-1.06	0.120
105.00	-24.27	-3.22	0.00	-55.17	0.00	55.17	1,356.44	678.22	1,322.10	652.93	10.89	-1.12	0.102
110.00	-18.72	-2.45	0.00	-39.06	0.00	39.06	1,315.88	657.94	1,224.36	604.67	12.10	-1.17	0.079
115.00	-17.86	-2.36	0.00	-26.80	0.00	26.80	1,273.40	636.70	1,128.51	557.33	13.35	-1.21	0.062
120.00	-9.84	-1.30	0.00	-15.03	0.00	15.03	1,215.41	607.71	1,023.36	505.40	14.63	-1.24	0.038
125.00	-9.09	-1.24	0.00	-8.53	0.00	8.53	1,152.33	576.16	919.28	454.00	15.94	-1.26	0.027
125.80	-8.97	-1.21	0.00	-7.55	0.00	7.55	1,142.23	571.11	903.13	446.02	16.15	-1.26	0.025
125.80	-8.97	-1.21	0.00	-7.55	0.00	7.55	385.02	192.51	160.54	106.00	16.15	-1.26	0.095
130.00	-8.50	-1.17	0.00	-2.48	0.00	2.48	385.02	192.51	160.54	106.00	17.27	-1.27	0.046
131.00	-1.35	-0.19	0.00	-1.31	0.00	1.31	385.02	192.51	160.54	106.00	17.53	-1.27	0.016
135.00	-0.94	-0.15	0.00	-0.57	0.00	0.57	385.02	192.51	160.54	106.00	18.60	-1.28	0.008
136.00	-0.46	-0.05	0.00	-0.23	0.00	0.23	385.02	192.51	160.54	106.00	18.87	-1.28	0.003
140.00	-0.15	-0.01	0.00	-0.03	0.00	0.03	385.02	192.51	160.54	106.00	19.94	-1.28	0.001
142.00	0.00	-0.01	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	20.48	-1.28	0.000

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:08 PM

Customer: AT&T MOBILITY

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

23 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		64.7	0.0					0.0	0.0	64.7	0.0	0.0	0.0
5.00		127.8	1,055.3					0.0	612.4	127.8	1,667.8	0.0	0.0
10.00		124.7	1,029.9					0.0	612.4	124.7	1,642.3	0.0	0.0
15.00		121.6	1,004.4					0.0	612.4	121.6	1,616.8	0.0	0.0
20.00		130.2	978.9					0.0	612.4	130.2	1,591.3	0.0	0.0
25.00		138.5	953.4					28.4	612.4	166.9	1,565.8	0.0	0.0
30.00		136.4	927.9					28.4	612.4	164.8	1,540.3	0.0	0.0
35.00		137.0	902.4					29.1	612.4	166.1	1,514.9	0.0	0.0
40.00		72.3	877.0					30.3	612.4	102.6	1,489.4	0.0	0.0
40.24	Bot - Section 2	70.7	42.1					1.5	29.8	72.3	71.9	0.0	0.0
45.00		73.1	1,519.0					29.9	582.6	103.0	2,101.6	0.0	0.0
45.40	Top - Section 1	71.0	125.8					2.6	49.0	73.5	174.7	0.0	0.0
50.00		136.2	665.9					29.9	563.4	166.1	1,229.4	0.0	0.0
55.00		80.4	702.9					33.4	612.4	113.9	1,315.3	0.0	0.0
55.68	Reinf. Top	70.5	93.5					4.6	82.9	75.1	176.4	0.0	0.0
60.00		130.8	587.5					29.7	240.7	160.5	828.2	0.0	0.0
65.00		127.5	659.2					31.0	278.4	158.5	937.6	0.0	0.0
70.00	Appertunance(s)	114.4	637.3	6.5	0.0	0.0	30.6	0.0	278.4	120.9	946.3	0.0	0.0
75.00		112.7	615.5					0.0	276.9	112.7	892.4	0.0	0.0
80.00	Appertunance(s)	65.8	593.6	56.1	0.0	60.6	104.6	0.0	276.9	121.9	975.2	0.0	0.0
80.75	Bot - Section 3	65.4	87.0					4.0	41.2	69.4	128.2	0.0	0.0
84.90	Top - Section 2	56.8	796.3					22.2	228.7	79.1	1,025.0	0.0	0.0
85.00		66.9	7.7					0.5	5.5	67.4	13.2	0.0	0.0
90.00	Appertunance(s)	118.9	375.2	803.5	0.0	0.0	2,934.5	27.2	275.4	949.7	3,585.1	0.0	0.0
95.00		105.4	360.6					0.0	212.8	105.4	573.4	0.0	0.0
100.00	Appertunance(s)	102.6	346.1	769.5	0.0	14.4	2,448.8	0.0	212.8	872.1	3,007.6	0.0	0.0
105.00		99.6	331.5					0.0	156.3	99.6	487.8	0.0	0.0
110.00	Appertunance(s)	96.4	316.9	621.2	0.0	0.0	2,120.0	0.0	156.3	717.6	2,593.3	0.0	0.0
115.00		93.1	302.4					0.0	107.1	93.1	409.5	0.0	0.0
120.00	Appertunance(s)	89.7	287.8	857.5	0.0	0.0	3,184.5	0.0	107.1	947.1	3,579.5	0.0	0.0
125.00		50.8	273.3					0.0	66.0	50.8	339.3	0.0	0.0
125.80	Top - Section 3	20.2	42.4					0.0	10.6	20.2	53.0	0.0	0.0
130.00		16.5	174.7					0.0	55.5	16.5	230.1	0.0	0.0
131.00	Appertunance(s)	15.9	41.6	852.9	0.0	0.0	2,928.2	0.0	13.2	868.8	2,983.0	0.0	0.0
135.00		16.0	166.4					0.0	20.0	16.0	186.4	0.0	0.0
136.00	Appertunance(s)	16.0	41.6	71.9	0.0	215.6	70.5	0.0	5.0	87.9	117.1	0.0	0.0
140.00		19.3	166.4					0.0	0.0	19.3	166.4	0.0	0.0
142.00		6.4	83.2					0.0	0.0	6.4	83.2	0.0	0.0
<b>Totals:</b>									7,533.98	41,838.6	0.00	0.00	

Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

1/25/2016 2:40:10 PM

Customer: AT&T MOBILITY

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

23 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	-41.84	-7.48	0.00	-681.48	0.00	681.48	4,350.13	2,175.06	7,987.32	3,944.64	0.00	0.00	0.129
5.00	-40.16	-7.39	0.00	-644.05	0.00	644.05	4,285.51	2,142.75	7,679.11	3,792.42	0.02	-0.04	0.126
10.00	-38.52	-7.29	0.00	-607.13	0.00	607.13	4,218.97	2,109.49	7,373.27	3,641.38	0.09	-0.08	0.122
15.00	-36.89	-7.19	0.00	-570.69	0.00	570.69	4,150.52	2,075.26	7,070.06	3,491.64	0.20	-0.13	0.119
20.00	-35.30	-7.08	0.00	-534.74	0.00	534.74	4,080.16	2,040.08	6,769.73	3,343.32	0.36	-0.17	0.115
25.00	-33.73	-6.93	0.00	-499.34	0.00	499.34	4,007.88	2,003.94	6,472.54	3,196.54	0.55	-0.21	0.111
30.00	-32.18	-6.79	0.00	-464.66	0.00	464.66	3,933.69	1,966.85	6,178.73	3,051.44	0.80	-0.25	0.107
35.00	-30.66	-6.64	0.00	-430.73	0.00	430.73	3,854.52	1,927.26	5,883.88	2,905.83	1.09	-0.30	0.103
40.00	-29.17	-6.54	0.00	-397.55	0.00	397.55	3,744.12	1,872.06	5,549.75	2,740.81	1.42	-0.34	0.099
40.24	-29.10	-6.47	0.00	-395.96	0.00	395.96	3,738.74	1,869.37	5,533.72	2,732.90	1.44	-0.34	0.099
45.00	-26.99	-6.37	0.00	-365.16	0.00	365.16	3,633.72	1,816.86	5,225.39	2,580.62	1.79	-0.38	0.094
45.40	-26.82	-6.30	0.00	-362.61	0.00	362.61	3,063.79	1,531.89	4,506.32	2,225.50	1.83	-0.38	0.105
50.00	-25.59	-6.15	0.00	-333.62	0.00	333.62	3,008.67	1,504.34	4,302.82	2,125.00	2.21	-0.42	0.100
55.00	-24.27	-6.03	0.00	-302.89	0.00	302.89	2,946.93	1,473.46	4,084.17	2,017.02	2.68	-0.46	0.094
55.68	-24.09	-5.96	0.00	-298.80	0.00	298.80	2,938.42	1,469.21	4,054.78	2,002.51	2.74	-0.47	0.093
55.68	-24.09	-5.96	0.00	-298.80	0.00	298.80	2,938.42	1,469.21	4,054.78	2,002.51	2.74	-0.47	0.157
60.00	-23.26	-5.82	0.00	-273.02	0.00	273.02	2,883.27	1,441.64	3,868.42	1,910.47	3.18	-0.50	0.151
65.00	-22.32	-5.68	0.00	-243.93	0.00	243.93	2,808.41	1,404.21	3,643.77	1,799.52	3.75	-0.57	0.144
70.00	-21.36	-5.57	0.00	-215.54	0.00	215.54	2,713.79	1,356.89	3,400.96	1,679.60	4.38	-0.64	0.136
75.00	-20.47	-5.47	0.00	-187.68	0.00	187.68	2,619.16	1,309.58	3,166.52	1,563.83	5.09	-0.70	0.128
80.00	-19.49	-5.35	0.00	-160.26	0.00	160.26	2,524.53	1,262.26	2,940.46	1,452.18	5.86	-0.77	0.118
80.75	-19.36	-5.29	0.00	-156.26	0.00	156.26	2,510.36	1,255.18	2,907.34	1,435.82	5.98	-0.78	0.117
84.90	-18.33	-5.20	0.00	-134.31	0.00	134.31	1,500.18	750.09	1,728.96	853.87	6.68	-0.83	0.170
85.00	-18.32	-5.15	0.00	-133.79	0.00	133.79	1,499.54	749.77	1,726.89	852.85	6.70	-0.83	0.169
90.00	-14.74	-4.16	0.00	-108.05	0.00	108.05	1,466.64	733.32	1,624.12	802.09	7.61	-0.91	0.145
95.00	-14.17	-4.06	0.00	-87.23	0.00	87.23	1,431.82	715.91	1,522.23	751.77	8.59	-0.97	0.126
100.00	-11.17	-3.15	0.00	-66.89	0.00	66.89	1,395.09	697.54	1,421.47	702.01	9.65	-1.04	0.103
105.00	-10.68	-3.05	0.00	-51.14	0.00	51.14	1,356.44	678.22	1,322.10	652.93	10.76	-1.09	0.086
110.00	-8.10	-2.29	0.00	-35.88	0.00	35.88	1,315.88	657.94	1,224.36	604.67	11.93	-1.14	0.066
115.00	-7.69	-2.19	0.00	-24.43	0.00	24.43	1,273.40	636.70	1,128.51	557.33	13.14	-1.17	0.050
120.00	-4.13	-1.17	0.00	-13.47	0.00	13.47	1,215.41	607.71	1,023.36	505.40	14.39	-1.20	0.030
125.00	-3.80	-1.12	0.00	-7.61	0.00	7.61	1,152.33	576.16	919.28	454.00	15.65	-1.22	0.020
125.80	-3.74	-1.09	0.00	-6.71	0.00	6.71	1,142.23	571.11	903.13	446.02	15.86	-1.22	0.018
125.80	-3.74	-1.09	0.00	-6.71	0.00	6.71	385.02	192.51	160.54	106.00	15.86	-1.22	0.073
130.00	-3.51	-1.07	0.00	-2.12	0.00	2.12	385.02	192.51	160.54	106.00	16.93	-1.23	0.029
131.00	-0.55	-0.14	0.00	-1.04	0.00	1.04	385.02	192.51	160.54	106.00	17.19	-1.23	0.011
135.00	-0.36	-0.12	0.00	-0.48	0.00	0.48	385.02	192.51	160.54	106.00	18.22	-1.23	0.005
136.00	-0.25	-0.03	0.00	-0.14	0.00	0.14	385.02	192.51	160.54	106.00	18.48	-1.23	0.002
140.00	-0.08	-0.01	0.00	-0.02	0.00	0.02	385.02	192.51	160.54	106.00	19.51	-1.23	0.000
142.00	0.00	-0.01	0.00	0.00	0.00	0.00	385.02	192.51	160.54	106.00	20.03	-1.23	0.000



Site Number: 302511

Code: ANSI/TIA-222-G

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Site Name: WSPT - South, CT

Engineering Number: 64785821

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Customer: AT&T MOBILITY

### Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.22
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.07
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 ( $S_{ds}$ ):	0.24
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.11
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):	2.15
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.82
Total Unfactored Dead Load:	41.84 k
Seismic Base Shear (E):	1.78 k

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Customer: AT&T MOBILITY

### Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.22
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.07
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 ( $S_{ds}$ ):	0.24
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.11
Period Based on Rayleigh Method (sec):	2.15
Redundancy Factor ( $\rho$ ):	1.30

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

#### Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
37	141.00	83	1.863	1.843	1.090	0.426	31	71
36	138.00	166	1.785	1.471	0.952	0.366	53	142
35	135.50	47	1.721	1.203	0.847	0.319	13	40
34	133.00	186	1.658	0.969	0.752	0.275	44	159
33	130.50	55	1.596	0.767	0.665	0.234	11	47
32	127.90	230	1.533	0.586	0.583	0.194	39	196
31	125.40	53	1.474	0.439	0.512	0.159	7	45
30	122.50	339	1.407	0.296	0.439	0.121	36	289
29	117.50	395	1.294	0.112	0.331	0.065	22	337
28	112.50	410	1.186	-0.008	0.245	0.019	7	349
27	107.50	473	1.083	-0.079	0.177	-0.016	-7	404
26	102.50	488	0.985	-0.113	0.124	-0.041	-17	416
25	97.50	559	0.891	-0.122	0.084	-0.055	-27	477
24	92.50	573	0.802	-0.112	0.054	-0.058	-29	489
23	87.50	651	0.718	-0.092	0.033	-0.052	-29	555
22	84.95	13	0.676	-0.079	0.025	-0.045	-1	11
21	82.82	1,025	0.643	-0.068	0.020	-0.038	-33	874
20	80.37	128	0.606	-0.055	0.015	-0.028	-3	109
19	77.50	871	0.563	-0.039	0.011	-0.015	-11	742
18	72.50	892	0.493	-0.013	0.007	0.008	6	761
17	67.50	916	0.427	0.009	0.006	0.030	23	781
16	62.50	938	0.366	0.028	0.008	0.046	37	800
15	57.84	828	0.314	0.042	0.011	0.056	40	706
14	55.34	176	0.287	0.048	0.013	0.060	9	150
13	52.50	1,315	0.258	0.054	0.016	0.063	72	1,122
12	47.70	1,229	0.213	0.061	0.021	0.065	69	1,048
11	45.20	175	0.191	0.064	0.024	0.065	10	149
10	42.62	2,102	0.170	0.066	0.027	0.065	119	1,792
9	40.12	72	0.151	0.068	0.030	0.065	4	61
8	37.50	1,489	0.132	0.069	0.033	0.064	83	1,270
7	32.50	1,515	0.099	0.071	0.037	0.062	82	1,292
6	27.50	1,540	0.071	0.072	0.041	0.061	81	1,314
5	22.50	1,566	0.047	0.071	0.042	0.059	80	1,335
4	17.50	1,591	0.029	0.068	0.040	0.056	78	1,357

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3	12.50	1,617	0.015	0.060	0.035	0.051	72	1,379
2	7.50	1,642	0.005	0.045	0.026	0.041	58	1,401
1	2.50	1,668	0.001	0.019	0.010	0.019	28	1,422
Generic RCU (Remote	136.00	3	1.734	1.254	0.867	0.328	1	3
Kathrein Scala 742-2	136.00	68	1.734	1.254	0.867	0.328	19	58
Powerwave Allgon LGP	131.00	85	1.609	0.805	0.682	0.242	18	72
Powerwave Allgon LGP	131.00	85	1.609	0.805	0.682	0.242	18	72
Raycap DC6-48-60-18-	131.00	32	1.609	0.805	0.682	0.242	7	27
Ericsson RRUS-11 (50	131.00	150	1.609	0.805	0.682	0.242	31	128
Ericsson RRUS 12 w/	131.00	214	1.609	0.805	0.682	0.242	45	183
Powerwave Allgon 777	131.00	210	1.609	0.805	0.682	0.242	44	179
CCI HPA-65R-BUU-H6	131.00	153	1.609	0.805	0.682	0.242	32	130
Flat Platform w/ Han	131.00	2,000	1.609	0.805	0.682	0.242	420	1,706
DragonWave Horizon C	120.00	21	1.350	0.195	0.382	0.092	2	18
NextNet BTS-2500	120.00	105	1.350	0.195	0.382	0.092	8	90
Alcatel-Lucent 800 M	120.00	192	1.350	0.195	0.382	0.092	15	164
Alcatel-Lucent 1900	120.00	180	1.350	0.195	0.382	0.092	14	154
Alcatel-Lucent TD-RR	120.00	210	1.350	0.195	0.382	0.092	17	179
Argus LLPX310R	120.00	86	1.350	0.195	0.382	0.092	7	73
DragonWave A-ANT-18G	120.00	54	1.350	0.195	0.382	0.092	4	46
RFS RFS APXV9TM14-	120.00	165	1.350	0.195	0.382	0.092	13	141
RFS APXVSP18-C-A20	120.00	171	1.350	0.195	0.382	0.092	14	146
Flat Platform w/ Han	120.00	2,000	1.350	0.195	0.382	0.092	159	1,706
Swedcom ALP 9011-Din	110.00	120	1.134	-0.049	0.209	0.000	0	102
Flat Platform w/ Han	110.00	2,000	1.134	-0.049	0.209	0.000	0	1,706
RFS FD9R6004/1C-3L	100.00	19	0.937	-0.120	0.102	-0.049	-1	16
GPS	100.00	10	0.937	-0.120	0.102	-0.049	0	9
Alcatel-Lucent RRH2x	100.00	132	0.937	-0.120	0.102	-0.049	-6	113
Ryma MGD3-800TX	100.00	46	0.937	-0.120	0.102	-0.049	-2	39
Antel BXA-171063/12C	100.00	45	0.937	-0.120	0.102	-0.049	-2	38
RFS DB-T1-6Z-8AB-0Z	100.00	44	0.937	-0.120	0.102	-0.049	-2	38
Antel BXA-70080/6CF_	100.00	54	0.937	-0.120	0.102	-0.049	-2	46
Powerwave Allgon P65	100.00	99	0.937	-0.120	0.102	-0.049	-4	84
Flat Platform w/ Han	100.00	2,000	0.937	-0.120	0.102	-0.049	-85	1,706
RFS ATMAA1412D-1A20	90.00	52	0.759	-0.103	0.043	-0.056	-3	44
Ericsson RRUS 11 B12	90.00	152	0.759	-0.103	0.043	-0.056	-7	130
Ericsson AIR 21, 1.3	90.00	332	0.759	-0.103	0.043	-0.056	-16	283
Ericsson AIR 21, 1.3	90.00	244	0.759	-0.103	0.043	-0.056	-12	209
Andrew LNX-6515DS-VT	90.00	154	0.759	-0.103	0.043	-0.056	-8	131
Flat Platform w/ Han	90.00	2,000	0.759	-0.103	0.043	-0.056	-98	1,706
Diamond X50A	80.00	5	0.600	-0.053	0.015	-0.026	0	4
Stand-Offs	80.00	100	0.600	-0.053	0.015	-0.026	-2	85
PCTEL GPS-TMG-HR-	70.00	1	0.459	-0.002	0.006	0.019	0	1
Stand-Off	70.00	30	0.459	-0.002	0.006	0.019	1	26
		41,839	72.964	16.818	20.032	5.490	1,697	35,682

**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)
37	141.00	83	1.863	1.843	1.090	0.426	31	71
36	138.00	166	1.785	1.471	0.952	0.366	53	142
35	135.50	47	1.721	1.203	0.847	0.319	13	40
34	133.00	186	1.658	0.969	0.752	0.275	44	159
33	130.50	55	1.596	0.767	0.665	0.234	11	47
32	127.90	230	1.533	0.586	0.583	0.194	39	196
31	125.40	53	1.474	0.439	0.512	0.159	7	45
30	122.50	339	1.407	0.296	0.439	0.121	36	289
29	117.50	395	1.294	0.112	0.331	0.065	22	337
28	112.50	410	1.186	-0.008	0.245	0.019	7	349

Site Number: 302511

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27	107.50	473	1.083	-0.079	0.177	-0.016	-7	404
26	102.50	488	0.985	-0.113	0.124	-0.041	-17	416
25	97.50	559	0.891	-0.122	0.084	-0.055	-27	477
24	92.50	573	0.802	-0.112	0.054	-0.058	-29	489
23	87.50	651	0.718	-0.092	0.033	-0.052	-29	555
22	84.95	13	0.676	-0.079	0.025	-0.045	-1	11
21	82.82	1,025	0.643	-0.068	0.020	-0.038	-33	874
20	80.37	128	0.606	-0.055	0.015	-0.028	-3	109
19	77.50	871	0.563	-0.039	0.011	-0.015	-11	742
18	72.50	892	0.493	-0.013	0.007	0.008	6	761
17	67.50	916	0.427	0.009	0.006	0.030	23	781
16	62.50	938	0.366	0.028	0.008	0.046	37	800
15	57.84	828	0.314	0.042	0.011	0.056	40	706
14	55.34	176	0.287	0.048	0.013	0.060	9	150
13	52.50	1,315	0.258	0.054	0.016	0.063	72	1,122
12	47.70	1,229	0.213	0.061	0.021	0.065	69	1,048
11	45.20	175	0.191	0.064	0.024	0.065	10	149
10	42.62	2,102	0.170	0.066	0.027	0.065	119	1,792
9	40.12	72	0.151	0.068	0.030	0.065	4	61
8	37.50	1,489	0.132	0.069	0.033	0.064	83	1,270
7	32.50	1,515	0.099	0.071	0.037	0.062	82	1,292
6	27.50	1,540	0.071	0.072	0.041	0.061	81	1,314
5	22.50	1,566	0.047	0.071	0.042	0.059	80	1,335
4	17.50	1,591	0.029	0.068	0.040	0.056	78	1,357
3	12.50	1,617	0.015	0.060	0.035	0.051	72	1,379
2	7.50	1,642	0.005	0.045	0.026	0.041	58	1,401
1	2.50	1,668	0.001	0.019	0.010	0.019	28	1,422
Generic RCU (Remote	136.00	3	1.734	1.254	0.867	0.328	1	3
Kathrein Scala 742-2	136.00	68	1.734	1.254	0.867	0.328	19	58
Powerwave Allgon LGP	131.00	85	1.609	0.805	0.682	0.242	18	72
Powerwave Allgon LGP	131.00	85	1.609	0.805	0.682	0.242	18	72
Raycap DC6-48-60-18-	131.00	32	1.609	0.805	0.682	0.242	7	27
Ericsson RRUS-11 (50	131.00	150	1.609	0.805	0.682	0.242	31	128
Ericsson RRUS 12 w/	131.00	214	1.609	0.805	0.682	0.242	45	183
Powerwave Allgon 777	131.00	210	1.609	0.805	0.682	0.242	44	179
CCI HPA-65R-BUU-H6	131.00	153	1.609	0.805	0.682	0.242	32	130
Flat Platform w/ Han	131.00	2,000	1.609	0.805	0.682	0.242	420	1,706
DragonWave Horizon C	120.00	21	1.350	0.195	0.382	0.092	2	18
NextNet BTS-2500	120.00	105	1.350	0.195	0.382	0.092	8	90
Alcatel-Lucent 800 M	120.00	192	1.350	0.195	0.382	0.092	15	164
Alcatel-Lucent 1900	120.00	180	1.350	0.195	0.382	0.092	14	154
Alcatel-Lucent TD-RR	120.00	210	1.350	0.195	0.382	0.092	17	179
Argus LLPX310R	120.00	86	1.350	0.195	0.382	0.092	7	73
DragonWave A-ANT-18G	120.00	54	1.350	0.195	0.382	0.092	4	46
RFS RFS APXV9TM14-	120.00	165	1.350	0.195	0.382	0.092	13	141
RFS APXVSP18-C-A20	120.00	171	1.350	0.195	0.382	0.092	14	146
Flat Platform w/ Han	120.00	2,000	1.350	0.195	0.382	0.092	159	1,706
Swedcom ALP 9011-Din	110.00	120	1.134	-0.049	0.209	0.000	0	102
Flat Platform w/ Han	110.00	2,000	1.134	-0.049	0.209	0.000	0	1,706
RFS FD9R6004/1C-3L	100.00	19	0.937	-0.120	0.102	-0.049	-1	16
GPS	100.00	10	0.937	-0.120	0.102	-0.049	0	9
Alcatel-Lucent RRH2x	100.00	132	0.937	-0.120	0.102	-0.049	-6	113
Rymosa MGD3-800TX	100.00	46	0.937	-0.120	0.102	-0.049	-2	39
Antel BXA-171063/12C	100.00	45	0.937	-0.120	0.102	-0.049	-2	38
RFS DB-T1-6Z-8AB-OZ	100.00	44	0.937	-0.120	0.102	-0.049	-2	38
Antel BXA-70080/6CF_	100.00	54	0.937	-0.120	0.102	-0.049	-2	46
Powerwave Allgon P65	100.00	99	0.937	-0.120	0.102	-0.049	-4	84
Flat Platform w/ Han	100.00	2,000	0.937	-0.120	0.102	-0.049	-85	1,706
RFS ATMAA1412D-1A20	90.00	52	0.759	-0.103	0.043	-0.056	-3	44
Ericsson RRUS 11 B12	90.00	152	0.759	-0.103	0.043	-0.056	-7	130
Ericsson AIR 21, 1.3	90.00	332	0.759	-0.103	0.043	-0.056	-16	283
Ericsson AIR 21, 1.3	90.00	244	0.759	-0.103	0.043	-0.056	-12	209
Andrew LNX-6515DS-VT	90.00	154	0.759	-0.103	0.043	-0.056	-8	131
Flat Platform w/ Han	90.00	2,000	0.759	-0.103	0.043	-0.056	-98	1,706

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Diamond X50A	80.00	5	0.600	-0.053	0.015	-0.026	0	4
Stand-Offs	80.00	100	0.600	-0.053	0.015	-0.026	-2	85
PCTEL GPS-TMG-HR- Stand-Off	70.00	1	0.459	-0.002	0.006	0.019	0	1
	70.00	30	0.459	-0.002	0.006	0.019	1	26
		41,839	72.964	16.818	20.032	5.490	1,697	35,682

**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)
37	141.00	83	1.863	1.843	1.090	0.426	31	71
36	138.00	166	1.785	1.471	0.952	0.366	53	142
35	135.50	47	1.721	1.203	0.847	0.319	13	40
34	133.00	186	1.658	0.969	0.752	0.275	44	159
33	130.50	55	1.596	0.767	0.665	0.234	11	47
32	127.90	230	1.533	0.586	0.583	0.194	39	196
31	125.40	53	1.474	0.439	0.512	0.159	7	45
30	122.50	339	1.407	0.296	0.439	0.121	36	289
29	117.50	395	1.294	0.112	0.331	0.065	22	337
28	112.50	410	1.186	-0.008	0.245	0.019	7	349
27	107.50	473	1.083	-0.079	0.177	-0.016	-7	404
26	102.50	488	0.985	-0.113	0.124	-0.041	-17	416
25	97.50	559	0.891	-0.122	0.084	-0.055	-27	477
24	92.50	573	0.802	-0.112	0.054	-0.058	-29	489
23	87.50	651	0.718	-0.092	0.033	-0.052	-29	555
22	84.95	13	0.676	-0.079	0.025	-0.045	-1	11
21	82.82	1,025	0.643	-0.068	0.020	-0.038	-33	874
20	80.37	128	0.606	-0.055	0.015	-0.028	-3	109
19	77.50	871	0.563	-0.039	0.011	-0.015	-11	742
18	72.50	892	0.493	-0.013	0.007	0.008	6	761
17	67.50	916	0.427	0.009	0.006	0.030	23	781
16	62.50	938	0.366	0.028	0.008	0.046	37	800
15	57.84	828	0.314	0.042	0.011	0.056	40	706
14	55.34	176	0.287	0.048	0.013	0.060	9	150
13	52.50	1,315	0.258	0.054	0.016	0.063	72	1,122
12	47.70	1,229	0.213	0.061	0.021	0.065	69	1,048
11	45.20	175	0.191	0.064	0.024	0.065	10	149
10	42.62	2,102	0.170	0.066	0.027	0.065	119	1,792
9	40.12	72	0.151	0.068	0.030	0.065	4	61
8	37.50	1,489	0.132	0.069	0.033	0.064	83	1,270
7	32.50	1,515	0.099	0.071	0.037	0.062	82	1,292
6	27.50	1,540	0.071	0.072	0.041	0.061	81	1,314
5	22.50	1,566	0.047	0.071	0.042	0.059	80	1,335
4	17.50	1,591	0.029	0.068	0.040	0.056	78	1,357
3	12.50	1,617	0.015	0.060	0.035	0.051	72	1,379
2	7.50	1,642	0.005	0.045	0.026	0.041	58	1,401
1	2.50	1,668	0.001	0.019	0.010	0.019	28	1,422
Generic RCU (Remote	136.00	3	1.734	1.254	0.867	0.328	1	3
Kathrein Scala 742-2	136.00	68	1.734	1.254	0.867	0.328	19	58
Powerwave Allgon LGP	131.00	85	1.609	0.805	0.682	0.242	18	72
Powerwave Allgon LGP	131.00	85	1.609	0.805	0.682	0.242	18	72
Raycap DC6-48-60-18-	131.00	32	1.609	0.805	0.682	0.242	7	27
Ericsson RRUS-11 (50	131.00	150	1.609	0.805	0.682	0.242	31	128
Ericsson RRUS 12 w/	131.00	214	1.609	0.805	0.682	0.242	45	183
Powerwave Allgon 777	131.00	210	1.609	0.805	0.682	0.242	44	179
CCI HPA-65R-BUU-H6	131.00	153	1.609	0.805	0.682	0.242	32	130
Flat Platform w/ Han	131.00	2,000	1.609	0.805	0.682	0.242	420	1,706
DragonWave Horizon C	120.00	21	1.350	0.195	0.382	0.092	2	18
NextNet BTS-2500	120.00	105	1.350	0.195	0.382	0.092	8	90
Alcatel-Lucent 800 M	120.00	192	1.350	0.195	0.382	0.092	15	164



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Alcatel-Lucent 1900	120.00	180	1.350	0.195	0.382	0.092	14	154
Alcatel-Lucent TD-RR	120.00	210	1.350	0.195	0.382	0.092	17	179
Argus LLPX310R	120.00	86	1.350	0.195	0.382	0.092	7	73
DragonWave A-ANT-18G	120.00	54	1.350	0.195	0.382	0.092	4	46
RFS RFS APXV9TM14-	120.00	165	1.350	0.195	0.382	0.092	13	141
RFS APXVSPP18-C-A20	120.00	171	1.350	0.195	0.382	0.092	14	146
Flat Platform w/ Han	120.00	2,000	1.350	0.195	0.382	0.092	159	1,706
Swedcom ALP 9011-Din	110.00	120	1.134	-0.049	0.209	0.000	0	102
Flat Platform w/ Han	110.00	2,000	1.134	-0.049	0.209	0.000	0	1,706
RFS FD9R6004/1C-3L	100.00	19	0.937	-0.120	0.102	-0.049	-1	16
GPS	100.00	10	0.937	-0.120	0.102	-0.049	0	9
Alcatel-Lucent RRH2x	100.00	132	0.937	-0.120	0.102	-0.049	-6	113
Rymosa MGD3-800TX	100.00	46	0.937	-0.120	0.102	-0.049	-2	39
Antel BXA-171063/12C	100.00	45	0.937	-0.120	0.102	-0.049	-2	38
RFS DB-T1-6Z-8AB-0Z	100.00	44	0.937	-0.120	0.102	-0.049	-2	38
Antel BXA-70080/6CF_	100.00	54	0.937	-0.120	0.102	-0.049	-2	46
Powerwave Allgon P65	100.00	99	0.937	-0.120	0.102	-0.049	-4	84
Flat Platform w/ Han	100.00	2,000	0.937	-0.120	0.102	-0.049	-85	1,706
RFS ATMAA1412D-1A20	90.00	52	0.759	-0.103	0.043	-0.056	-3	44
Ericsson RRUS 11 B12	90.00	152	0.759	-0.103	0.043	-0.056	-7	130
Ericsson AIR 21, 1.3	90.00	332	0.759	-0.103	0.043	-0.056	-16	283
Ericsson AIR 21, 1.3	90.00	244	0.759	-0.103	0.043	-0.056	-12	209
Andrew LNX-6515DS-VT	90.00	154	0.759	-0.103	0.043	-0.056	-8	131
Flat Platform w/ Han	90.00	2,000	0.759	-0.103	0.043	-0.056	-98	1,706
Diamond X50A	80.00	5	0.600	-0.053	0.015	-0.026	0	4
Stand-Offs	80.00	100	0.600	-0.053	0.015	-0.026	-2	85
PCTEL GPS-TMG-HR-	70.00	1	0.459	-0.002	0.006	0.019	0	1
Stand-Off	70.00	30	0.459	-0.002	0.006	0.019	1	26
		41,839	72.964	16.818	20.032	5.490	1,697	35,682

**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)
37	141.00	83	1.863	1.843	1.090	0.426	31	71
36	138.00	166	1.785	1.471	0.952	0.366	53	142
35	135.50	47	1.721	1.203	0.847	0.319	13	40
34	133.00	186	1.658	0.969	0.752	0.275	44	159
33	130.50	55	1.596	0.767	0.665	0.234	11	47
32	127.90	230	1.533	0.586	0.583	0.194	39	196
31	125.40	53	1.474	0.439	0.512	0.159	7	45
30	122.50	339	1.407	0.296	0.439	0.121	36	289
29	117.50	395	1.294	0.112	0.331	0.065	22	337
28	112.50	410	1.186	-0.008	0.245	0.019	7	349
27	107.50	473	1.083	-0.079	0.177	-0.016	-7	404
26	102.50	488	0.985	-0.113	0.124	-0.041	-17	416
25	97.50	559	0.891	-0.122	0.084	-0.055	-27	477
24	92.50	573	0.802	-0.112	0.054	-0.058	-29	489
23	87.50	651	0.718	-0.092	0.033	-0.052	-29	555
22	84.95	13	0.676	-0.079	0.025	-0.045	-1	11
21	82.82	1,025	0.643	-0.068	0.020	-0.038	-33	874
20	80.37	128	0.606	-0.055	0.015	-0.028	-3	109
19	77.50	871	0.563	-0.039	0.011	-0.015	-11	742
18	72.50	892	0.493	-0.013	0.007	0.008	6	761
17	67.50	916	0.427	0.009	0.006	0.030	23	781
16	62.50	938	0.366	0.028	0.008	0.046	37	800
15	57.84	828	0.314	0.042	0.011	0.056	40	706
14	55.34	176	0.287	0.048	0.013	0.060	9	150
13	52.50	1,315	0.258	0.054	0.016	0.063	72	1,122
12	47.70	1,229	0.213	0.061	0.021	0.065	69	1,048

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11	45.20	175	0.191	0.064	0.024	0.065	10	149
10	42.62	2,102	0.170	0.066	0.027	0.065	119	1,792
9	40.12	72	0.151	0.068	0.030	0.065	4	61
8	37.50	1,489	0.132	0.069	0.033	0.064	83	1,270
7	32.50	1,515	0.099	0.071	0.037	0.062	82	1,292
6	27.50	1,540	0.071	0.072	0.041	0.061	81	1,314
5	22.50	1,566	0.047	0.071	0.042	0.059	80	1,335
4	17.50	1,591	0.029	0.068	0.040	0.056	78	1,357
3	12.50	1,617	0.015	0.060	0.035	0.051	72	1,379
2	7.50	1,642	0.005	0.045	0.026	0.041	58	1,401
1	2.50	1,668	0.001	0.019	0.010	0.019	28	1,422
Generic RCU (Remote	136.00	3	1.734	1.254	0.867	0.328	1	3
Kathrein Scala 742-2	136.00	68	1.734	1.254	0.867	0.328	19	58
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Ericsson RRUS 12 w/	131.00	214	1.609	0.805	0.682	0.242	45	183
Powerwave Allgon 777	131.00	210	1.609	0.805	0.682	0.242	44	179
CCI HPA-65R-BUU-H6	131.00	153	1.609	0.805	0.682	0.242	32	130
Flat Platform w/ Han	131.00	2,000	1.609	0.805	0.682	0.242	420	1,706
DragonWave Horizon C	120.00	21	1.350	0.195	0.382	0.092	2	18
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Flat Platform w/ Han	120.00	2,000	1.350	0.195	0.382	0.092	159	1,706
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GPS	100.00	10	0.937	-0.120	0.102	-0.049	0	9
Alcatel-Lucent RRH2x	100.00	132	0.937	-0.120	0.102	-0.049	-6	113
Rymsa MGD3-800TX	100.00	46	0.937	-0.120	0.102	-0.049	-2	39
Antel BXA-171063/12C	100.00	45	0.937	-0.120	0.102	-0.049	-2	38
RFS DB-T1-6Z-8AB-0Z	100.00	44	0.937	-0.120	0.102	-0.049	-2	38
Antel BXA-70080/6CF_	100.00	54	0.937	-0.120	0.102	-0.049	-2	46
Powerwave Allgon P65	100.00	99	0.937	-0.120	0.102	-0.049	-4	84
Flat Platform w/ Han	100.00	2,000	0.937	-0.120	0.102	-0.049	-85	1,706
RFS ATMAA1412D-1A20	90.00	52	0.759	-0.103	0.043	-0.056	-3	44
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Flat Platform w/ Han	90.00	2,000	0.759	-0.103	0.043	-0.056	-98	1,706
Diamond X50A	80.00	5	0.600	-0.053	0.015	-0.026	0	4
Stand-Offs	80.00	100	0.600	-0.053	0.015	-0.026	-2	85
PCTEL GPS-TMG-HR-	70.00	1	0.459	-0.002	0.006	0.019	0	1
Stand-Off	70.00	30	0.459	-0.002	0.006	0.019	1	26
		41,839	72.964	16.818	20.032	5.490	1,697	35,682

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**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	41.38	0.00	50.12	0.00	0.00	3727.32	84.90	0.87
0.9D + 1.6W	40.14	0.00	37.57	0.00	0.00	3634.78	84.90	0.84
1.2D + 1.0Di + 1.0Wi	6.96	0.00	82.45	0.00	0.00	671.02	84.90	0.19
(1.2 + 0.2Sds) * DL + E ELFM	1.79	0.00	50.10	0.00	0.00	191.09	84.90	0.07
(1.2 + 0.2Sds) * DL + E EMAM	1.67	0.00	50.10	0.00	0.00	147.26	84.90	0.07
(0.9 - 0.2Sds) * DL + E ELFM	1.78	0.00	34.26	0.00	0.00	188.43	84.90	0.06
(0.9 - 0.2Sds) * DL + E EMAM	1.67	0.00	34.26	0.00	0.00	145.01	84.90	0.07
1.0D + 1.0W	7.48	0.00	41.84	0.00	0.00	681.48	84.90	0.17

**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	55.6	(4) SOL-#20 All Thre	332.5	10.0	16.8	197.5	12.0	17	22	0.0	12.0	0	0	255.9	330.5	0.774

<b>Base/Flange Plate</b>	Plate Type	<b>Baseplate</b>
	Pole Diameter	45 in
	Pole Thickness	0.4375 in
	Plate Diameter	60 in
	Plate Thickness	2 in
	Plate Fy	60 ksi
	Weld Length	0.4375 in
	$\phi_s$ Resistance	942.65 k-in
	Applied	410.17 k-in
<b>Stiffeners</b>	#	<b>16</b> Show
	Thickness	0.5 in
	Length	4 in
	Height	10 in
	Chamfer	0 in
	Offset Angle	0°
	Fy	36 ksi

<b>Bolts</b>	#	<b>16</b>
	Bolt Circle (R)adial / (S)quare	54 in R
	Diameter	2.25 in
	Hole Diameter	2.625 in
	Type	18J
	Fy	75 ksi
	Fu	100 ksi
	$\phi_s$ Resistance	259.82 k
	Applied	149.15 k

<b>Reinforcement</b>	#	<b>4</b>
	DYW. Circle	52 in
	Offset Angle	11.25°
	Type	#20
	Diameter	2.5 in
	Fu	100 ksi
$\phi_s$ Resistance	392.70 k	
Applied	256.25 k	

<b>Extra Bolts O</b>	#	<b>0</b>
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Code Rev. **G**

Date 1/25/2016  
 Engineer Nathaniel Ober  
 Site # 302511  
 Carrier AT&T Mobility

Moment 3727.3 k-ft  
 Axial 82.5 k

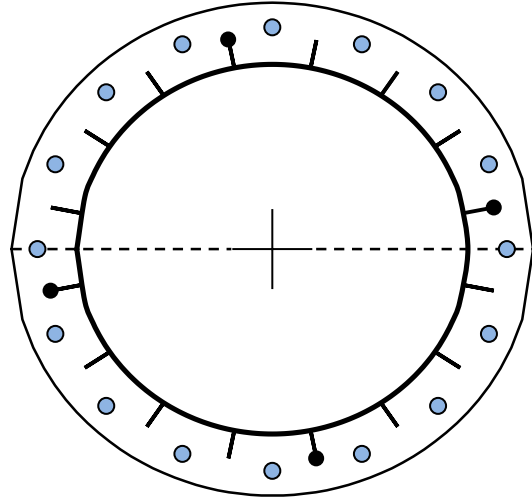


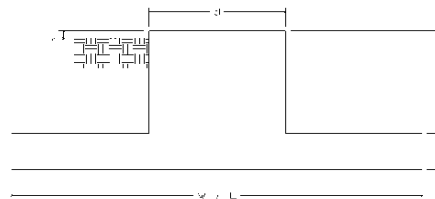
Plate Stress Ratio:  
**0.44** (Pass)

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

Reinforcement Stress Ratio:  
**0.65** (Pass)

Site Name: WSPT - South, CT, CT  
 Site Number: 302511  
 Engineering Number: 64785821  
 Engineer: Nathaniel Ober  
 Date: 01/25/16  
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:	Mapping
Compression/Leg:	82.5 k
Uplift/Leg:	0.0 k
Total Shear:	41.4 k
Moment:	3727.3 k-ft
Tower + Appurtenance Weight:	81.1 k
Depth to Base of Foundation (l + t - h):	7.00 ft
Diameter of Pier (d):	7.33 ft
Height of Pier above Ground (h):	0.50
Width of Pad (W):	22.50 ft
Length of Pad (L):	26.50 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:	9.50 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	120.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	60.0 pcf
Friction Angle of Uplift:	34.0 Degrees
Ultimate Coefficient of Shear Friction:	0.35
Ultimate Compressive Bearing Pressure:	20000.0 psf
Ultimate Passive Pressure on Pad Face:	500.0 psf
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9
$\phi_{\text{Soil}}$ :	0.75

**Overturning Moment Usage**

Design OTM:	4037.7 k-ft
OTM Resistance:	6864.8 k-ft
Design OTM / OTM Resistance:	0.59 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	2978 psf
Factored Nominal Bearing Pressure:	15000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.20 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

**Sliding Factor of Safety**

Total Factored Sliding Resistance:	192.3 k
Sliding Design / Sliding Resistance:	0.22 Result: OK

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

AT&T Existing Facility

Site ID: CT2103

Westport South  
20 Post Office Lane  
Westport, CT 06880

**March 10, 2016**

**EBI Project Number: 6216001532**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>12.00 %</b>



March 10, 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: **CT2103 – Westport South**

EBI Consulting was directed to analyze the proposed AT&T facility located at **20 Post Office Lane, Westport, 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 **20 Post Office Lane, Westport, 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 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 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.
- 5) 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.

- 6) 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.
- 7) 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.
- 8) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6 and the Powerwave 7770.00** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerline of the proposed antennas is **131 feet** above ground level (AGL).
- 10) 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	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	131 feet	Height (AGL):	131 feet	Height (AGL):	131 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>0.64</b>	Antenna B1 MPE%	<b>0.64</b>	Antenna C1 MPE%	<b>0.64</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Powerwave 7770	Make / Model:	7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 15.55 dBd	Gain:	11.4 / 15.55 dBd	Gain:	11.4 / 15.55 dBd
Height (AGL):	131 feet	Height (AGL):	131 feet	Height (AGL):	131 feet
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	828.23	ERP (W):	828.23	ERP (W):	828.23
Antenna A2 MPE%	<b>0.34</b>	Antenna B2 MPE%	<b>0.34</b>	Antenna C2 MPE%	<b>0.34</b>
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 11.95 dBd
Height (AGL):	131 feet	Height (AGL):	131 feet	Height (AGL):	131 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A3 MPE%	<b>1.75</b>	Antenna B3 MPE%	<b>1.75</b>	Antenna C3 MPE%	<b>1.75</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>2.72 %</b>
Enertrac	0.00 %
Verizon Wireless	6.23 %
MetroPCS	1.24 %
T-Mobile	0.05 %
Clearwire	0.08 %
Sprint	1.15 %
Nextel	0.53 %
<b>Site Total MPE %:</b>	<b>12.00 %</b>

AT&T Sector 1 Total:	2.72 %
AT&T Sector 2 Total:	2.72 %
AT&T Sector 3 Total:	2.72 %
<b>Site Total:</b>	<b>12.00 %</b>

AT&T _ Max Per Sector	# 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	131	1.91	850	567	0.34 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	131	3.02	1900	1000	0.30 %
AT&T 850 MHz GSM	2	414.12	131	1.91	850	567	0.34 %
AT&T 7000 MHz LTE	2	940.05	131	4.33	700	467	0.93 %
AT&T 1900 MHz (PCS) LTE	2	1791.23	131	8.24	1900	1000	0.82 %
						<b>Total:</b>	<b>2.72 %</b>

## 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:	2.72 %
Sector 2:	2.72 %
Sector 3 :	2.72 %
AT&T Maximum Total (per sector):	2.72 %
Site Total:	12.00 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **12.00%** 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.



Scott Heffernan  
RF Engineering Director

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