



March 22, 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 & DC/Fiber Squid
Property Address: 125 Washington Avenue, North Haven

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 120-foot monopole at the above-referenced address, latitude 41.39694444, longitude -72.85722222. Said monopole is owned by American Tower Corporation. The existing equipment shelter is 26' x 12' totaling 312 square feet.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas, adding three remote-radio heads (“RRHs”) and a DC/Fiber Squid. The centerline height of said antennas is and will remain at 120 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 the First Selectman of the Town of North Haven, Michael J. Freda, the ground owner Candid Associates, LLC, and 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 120 feet on the 120-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 29, 2016).

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

Sincerely,

Sarah Snell

Sarah Snell
Site Acquisition Specialist

cc: Michael J. Freda, First Selectman of the Town of North Haven
Candid Associates, LLC
American Tower Corporation

PROJECT INFORMATION

SCOPE OF WORK:

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

SITE ADDRESS: 127 WASHINGTON AVENUE
NORTH HAVEN, CT 06473

LATITUDE: 41.3978250 41° 23' 52.17"N
LONGITUDE: -72.8566931 -72° 51' 24.09"W

USID: 61197

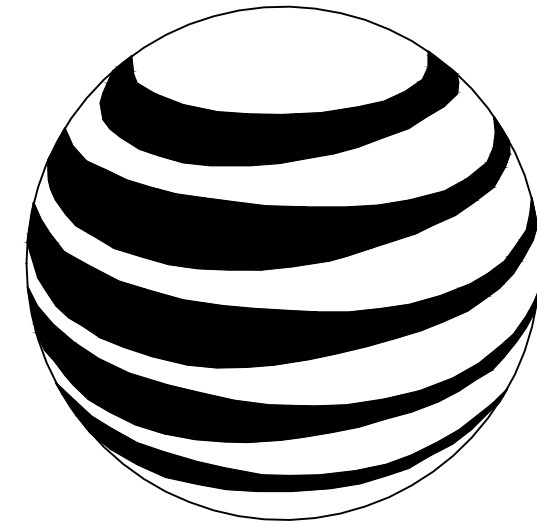
TOWER OWNER: TBD

TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 120'-0"±
RAD CENTER: 123'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



at&t
MOBILITY

FA CODE: 10035221
SITE NUMBER: CT2209
SITE NAME: NORTH HAVEN RAILROAD TRACKS

PROJECT TEAM

CLIENT REPRESENTATIVE

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

SITE ACQUISITION:

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

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

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

RF ENGINEER:

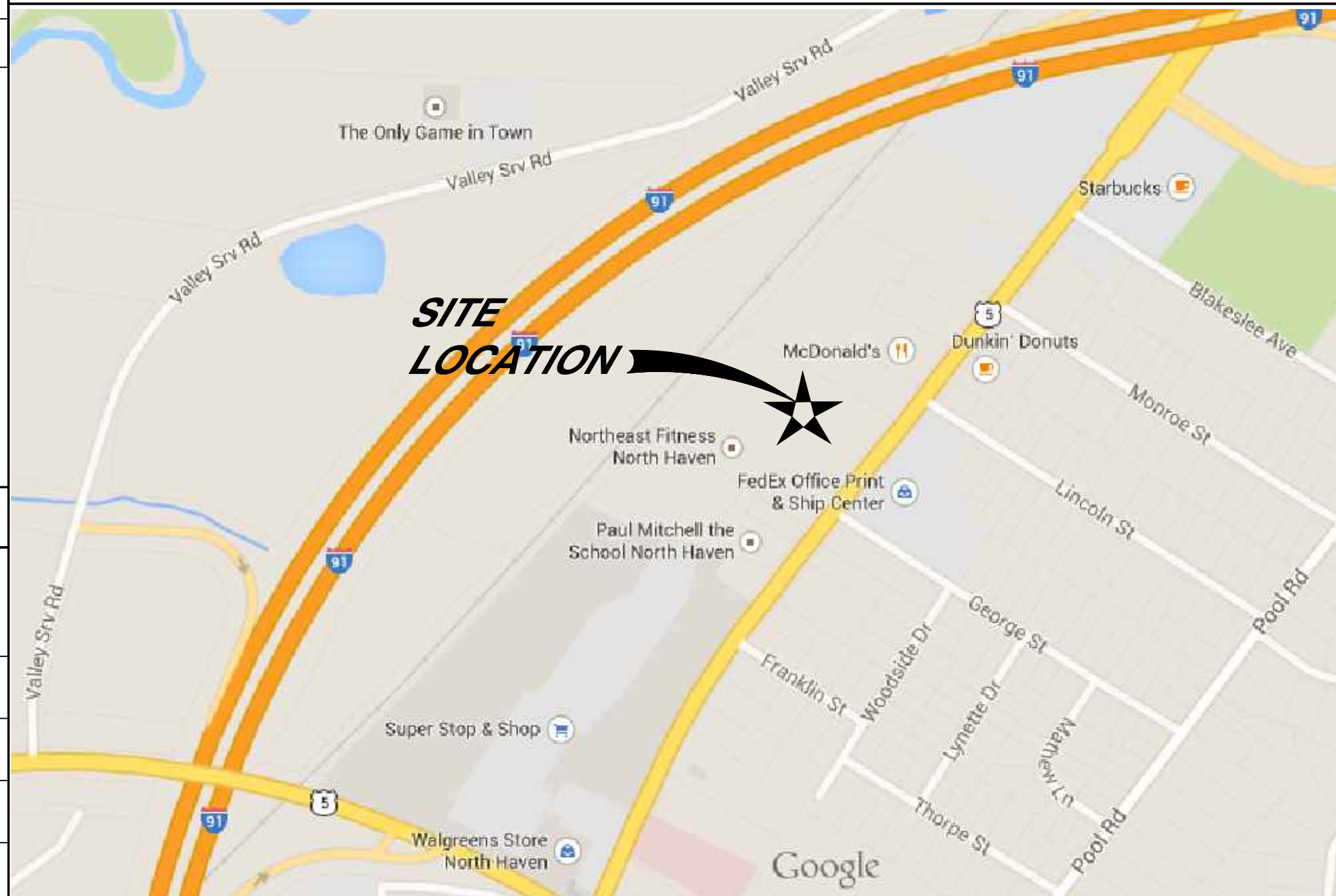
COMPANY: AT&T MOBILITY – NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508-596-7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:

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

VICINITY MAP

HEAD EAST TOWARD MA-30 E. TURN RIGHT ONTO MA-30 W.TAKE THE RAMP TO I-90/MASSPIKE/SPRINGFIELD/BOSTON. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE.MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE. TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. CONTINUE ONTO I-84. TAKE EXIT 57 ON THE LEFT FOR CT-15 S TOWARD I-91 S/CHARTER OAK BRIDGE/N Y. CITY. CONTINUE ONTO CT-15 S. CONTINUE ONTO CT-15 S/US-5 S. TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NEW YORK CITY. TAKE EXIT 12 FOR US-5/WASHINGTON AVE. TURN LEFT ONTO US-5 S/WASHINGTON AVE. TURN RIGHT ONTO LINCOLN ST. SITE WILL BE ON THE RIGHT.



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.

DRAWING INDEX

REV.

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

APPROVALS

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

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



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



SITE NUMBER: CTU2209
SITE NAME: NORTH HAVEN RAILROAD TRACKS
127 WASHINGTON AVENUE
NORTH HAVEN, CT 06473
NEW HAVEN COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/05/15	INITIAL SUBMISSION		NJM	NDB NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		

AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER: 15184-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.
23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK ENGINEERING FOR A RECENT UPGRADE DATED 07/18/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.



SITE NUMBER: CTU2209
SITE NAME: NORTH HAVEN RAILROAD TRACKS
 127 WASHINGTON AVENUE
 NORTH HAVEN, CT 06473
 NEW HAVEN COUNTY

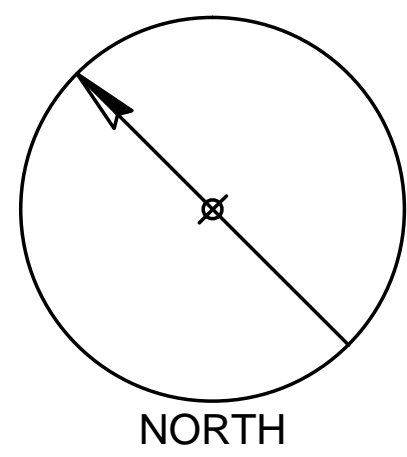
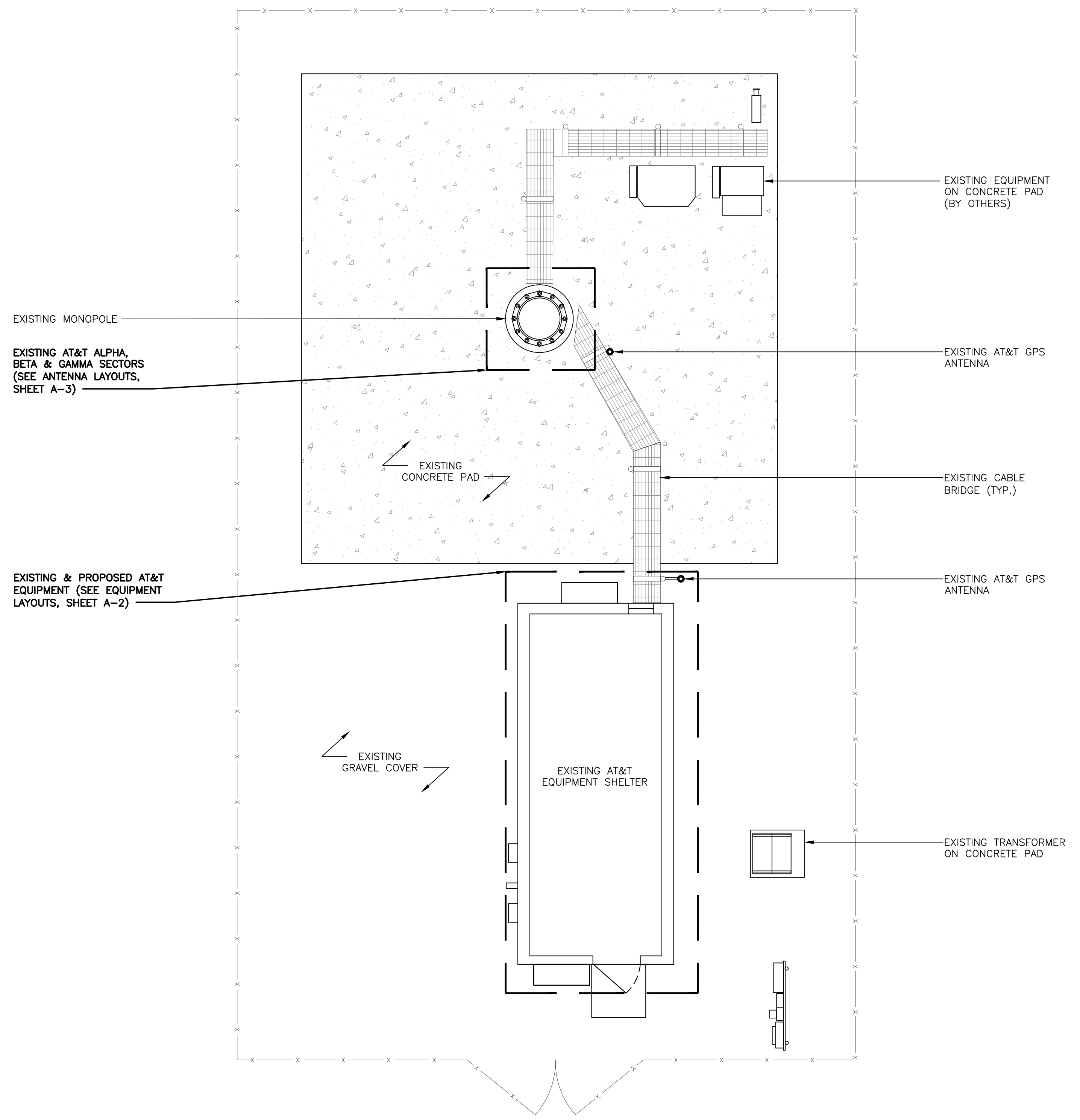


A	11/05/15	INITIAL SUBMISSION	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		

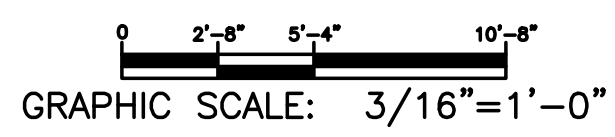
AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15184-EMP	GN-1	A



COMPOUND LAYOUT
SCALE: 3/16" = 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

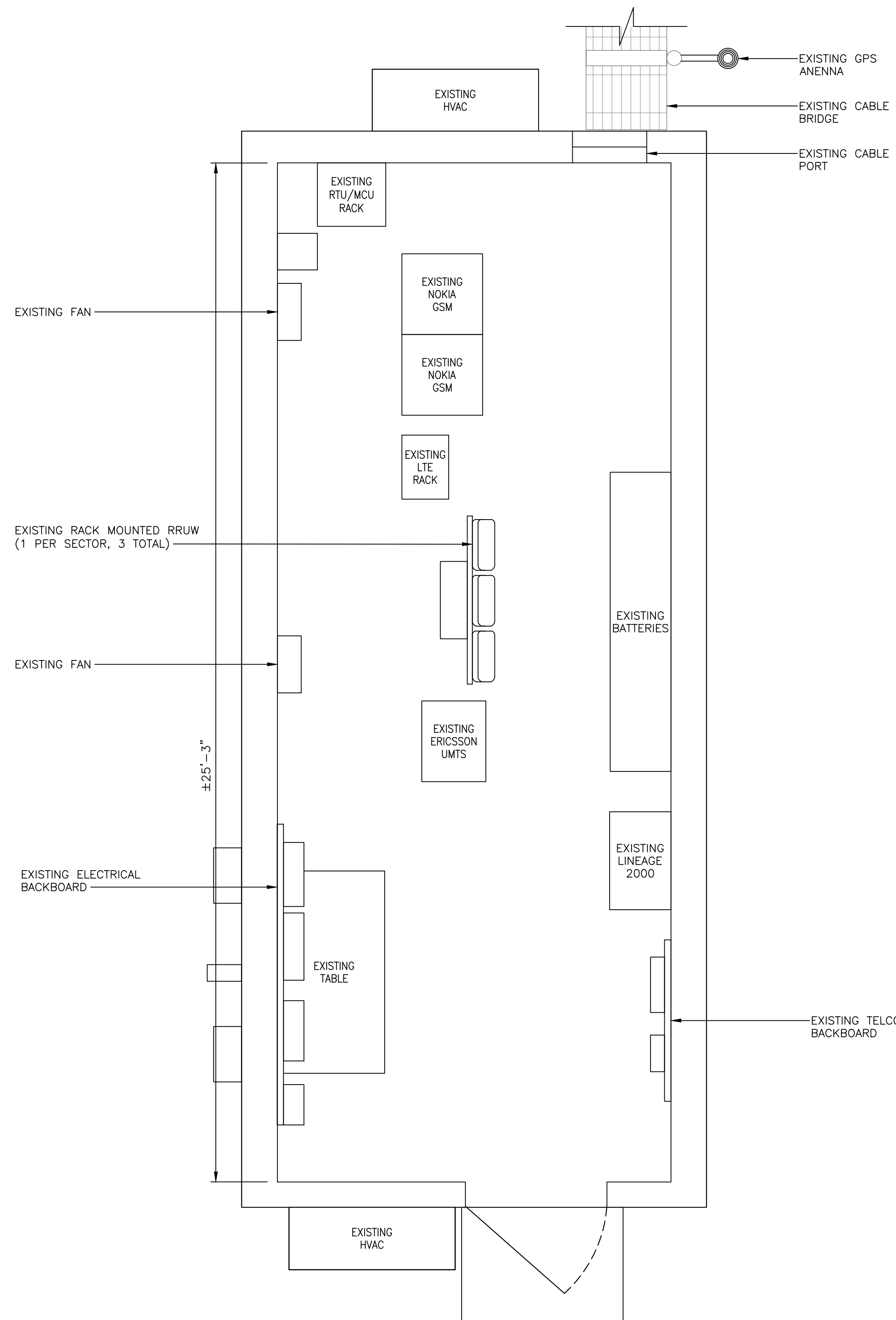
EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTU2209
SITE NAME: NORTH HAVEN RAILROAD TRACKS
127 WASHINGTON AVENUE
NORTH HAVEN, CT 06473
NEW HAVEN COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/05/15	INITIAL SUBMISSION	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		

AT&T		
DRAWING TITLE: COMPOUND LAYOUT		
JOB NUMBER 15184-EMP	DRAWING NUMBER A-1	REV A

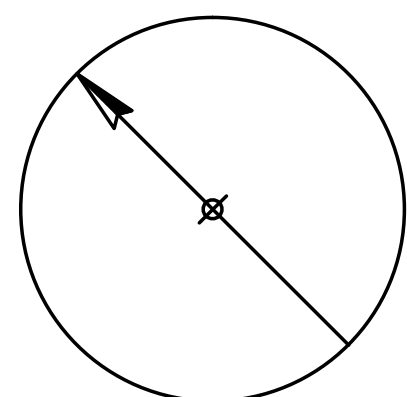


EXISTING EQUIPMENT LAYOUT

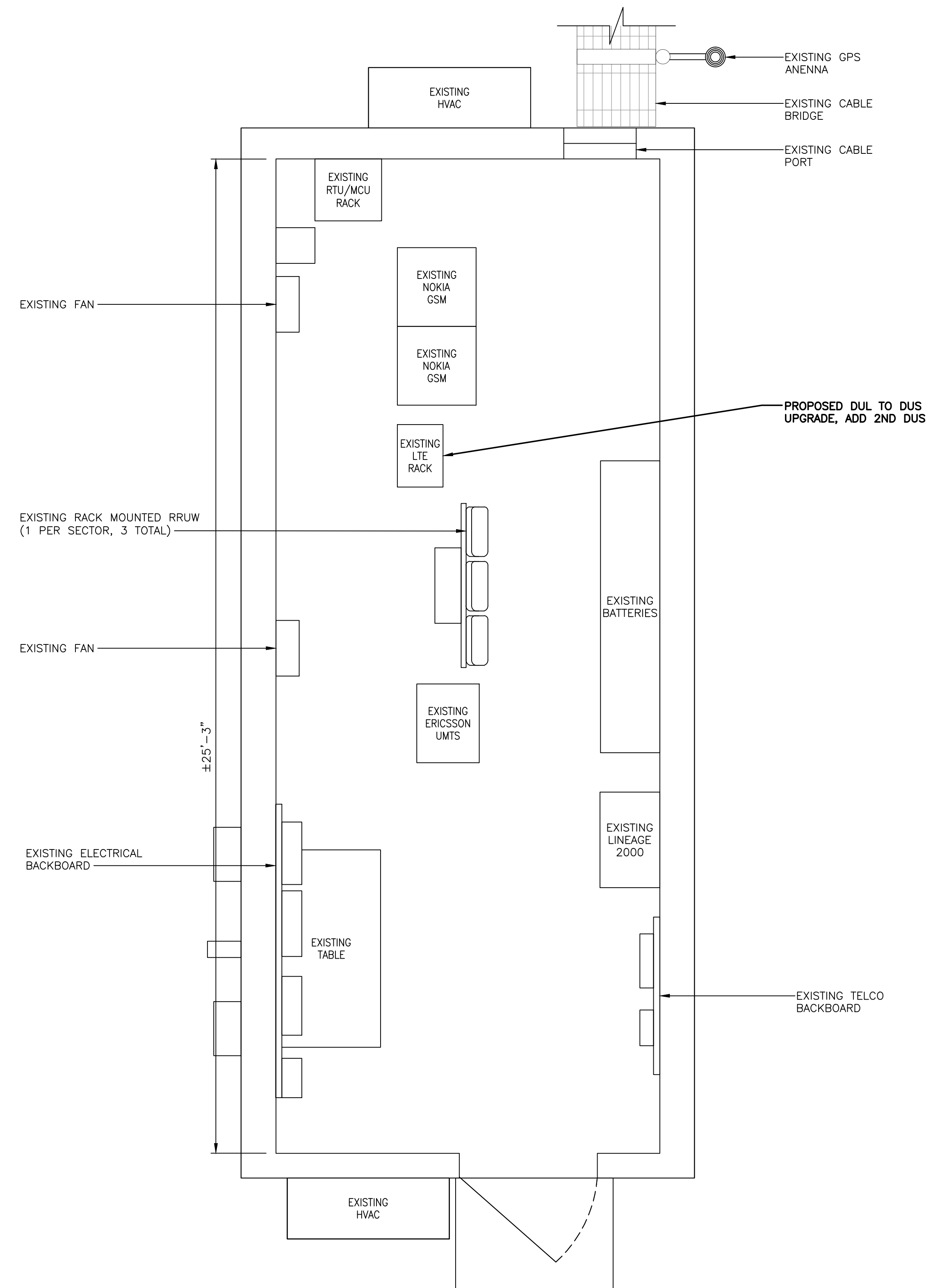
SCALE: 1" = 2'-0"



(IN FEET)
 1/2 Inch = 1 Foot

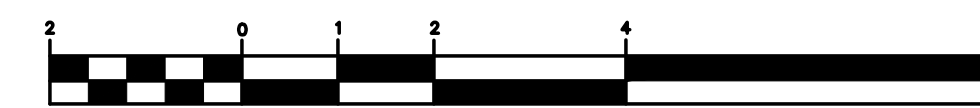


NORTH

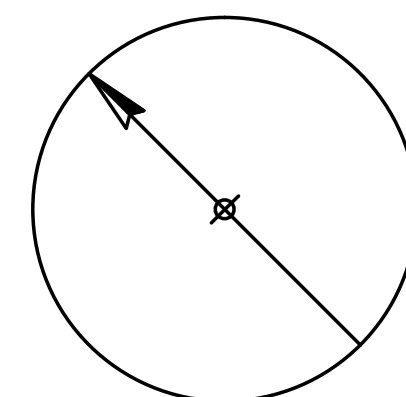


PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"



(IN FEET)
 1/2 Inch = 1 Foot



NORTH

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

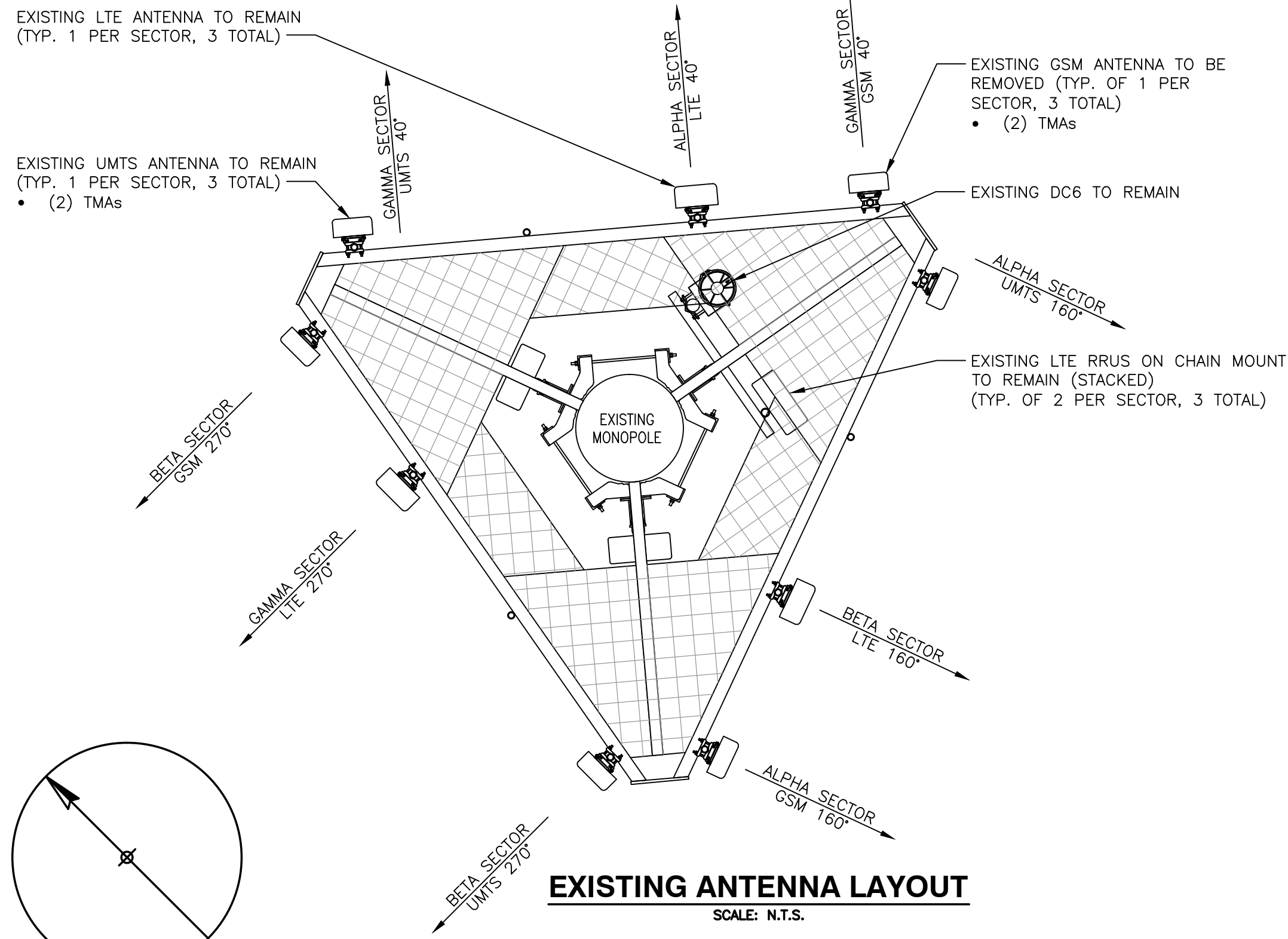
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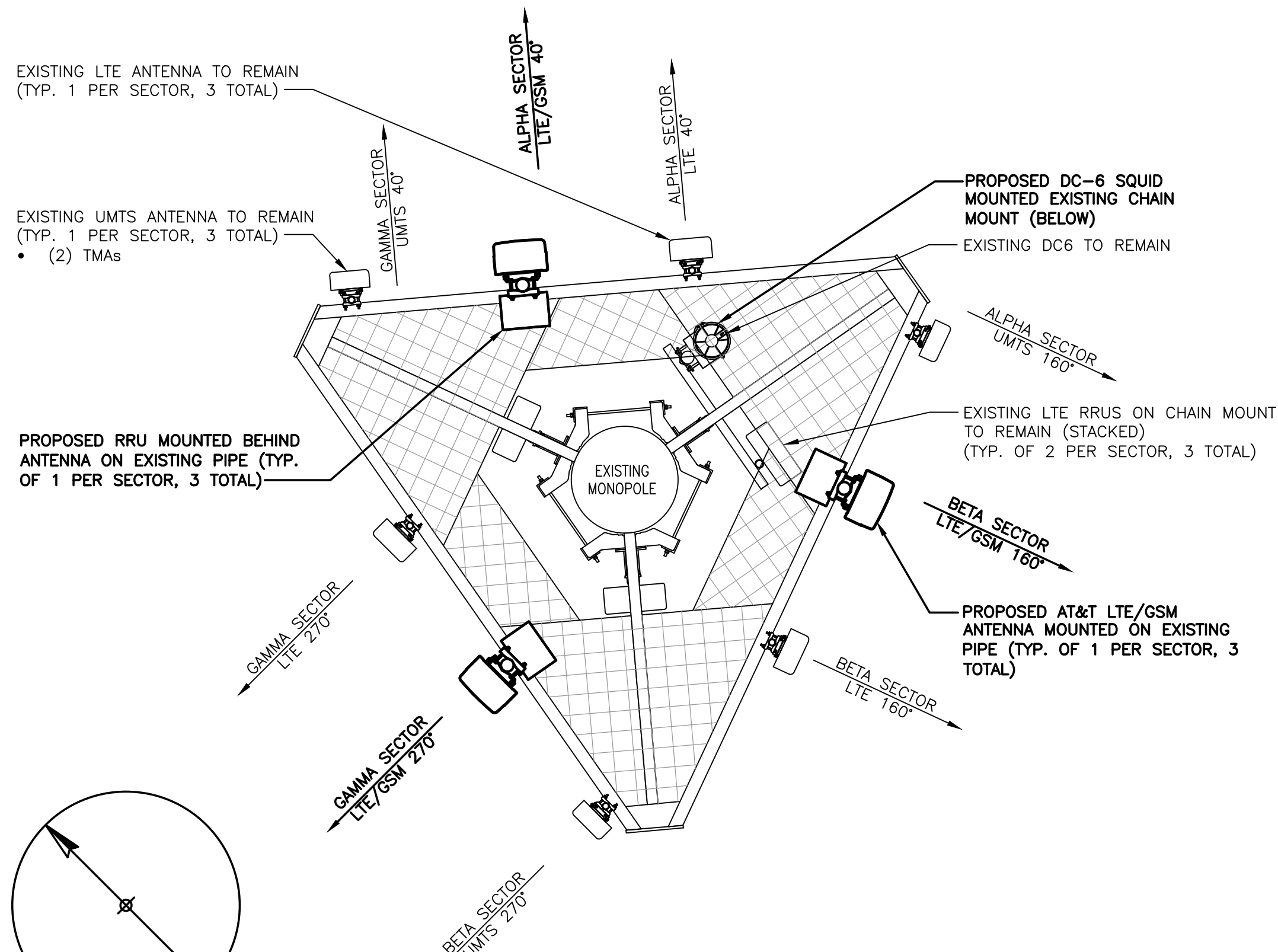
at&t
 MOBILITY
 550 COCHITUATE ROAD
 FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/05/15	INITIAL SUBMISSION	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		

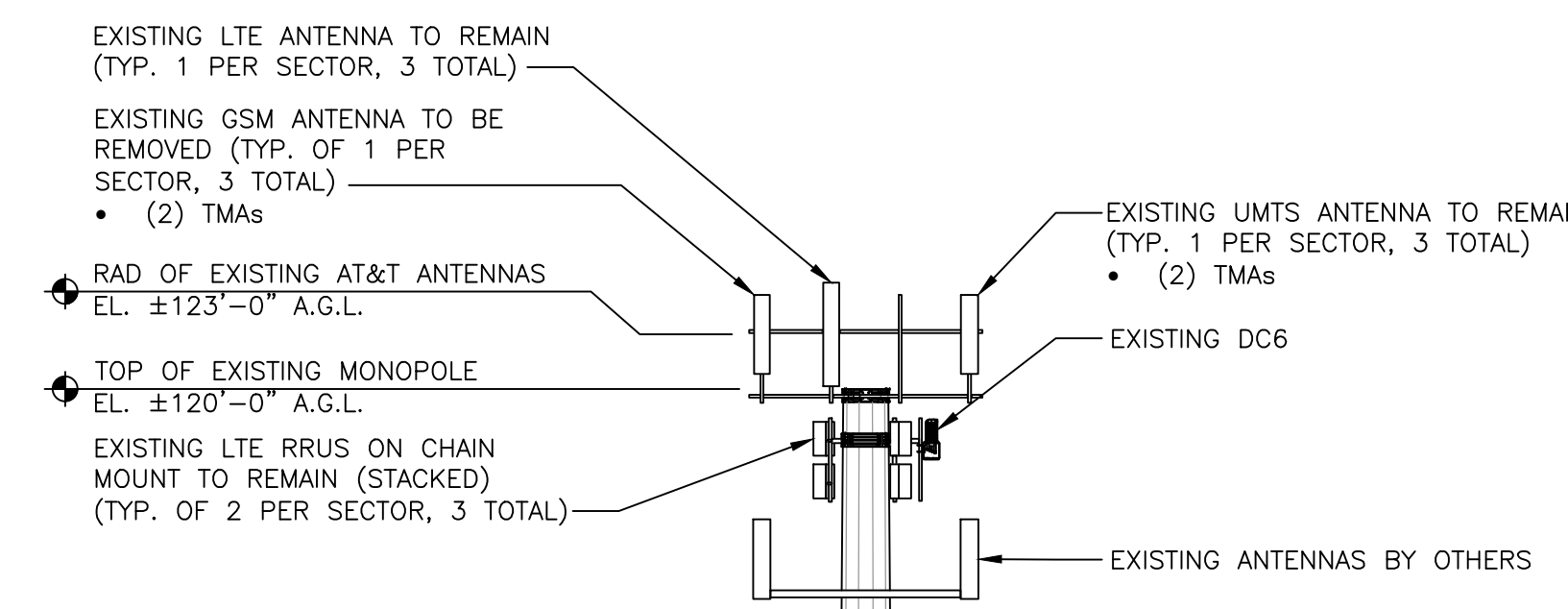
AT&T		
DRAWING TITLE: EQUIPMENT LAYOUT		
JOB NUMBER 15184-EMP	DRAWING NUMBER A-2	REV A



EXISTING ANTENNA LAYOUT
SCALE: N.T.S.

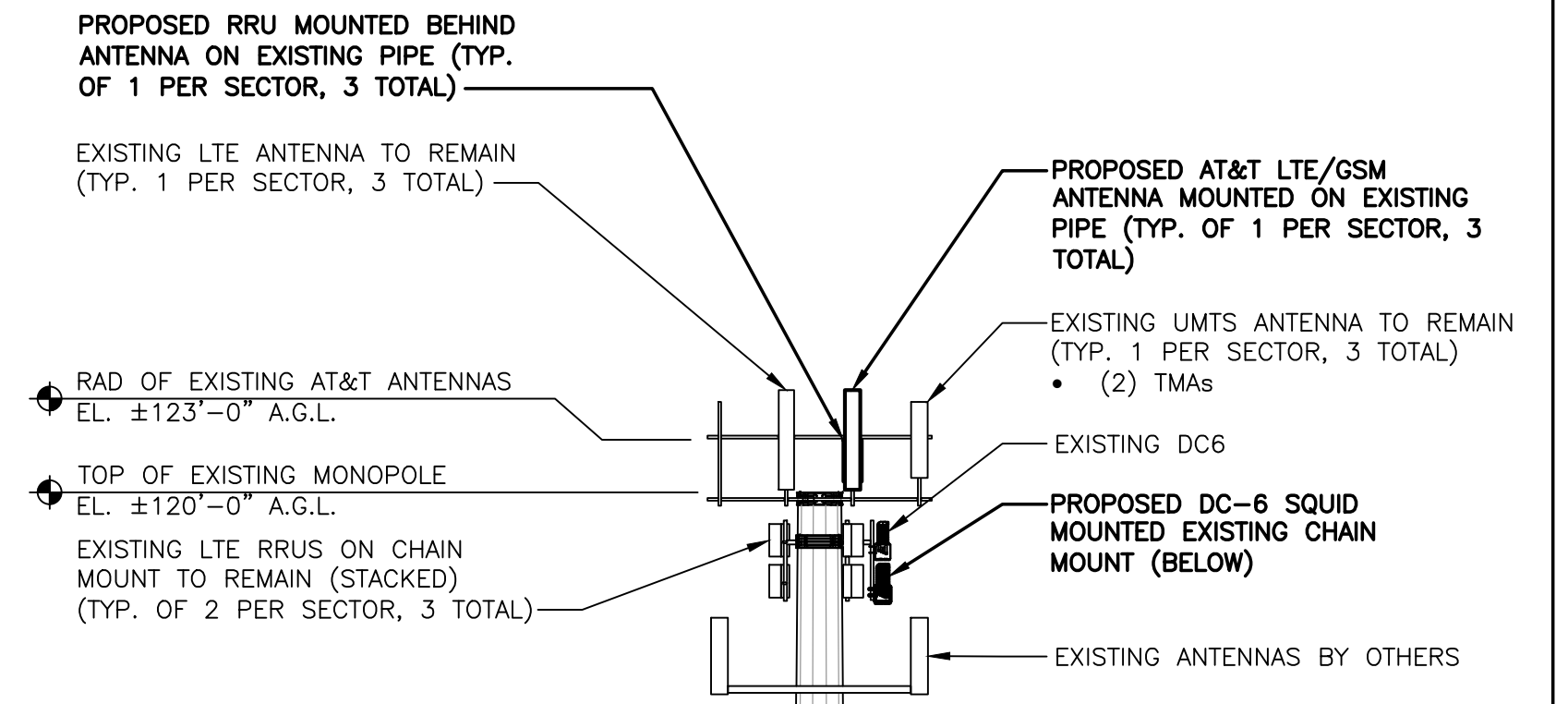


PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.



EXISTING TOWER ELEVATION
SCALE: NTS

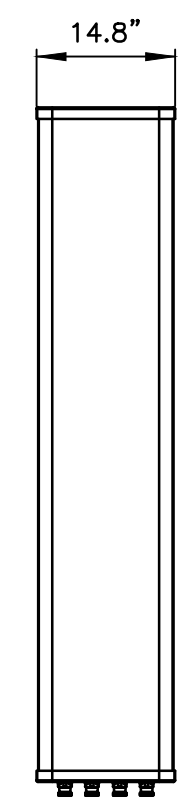
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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



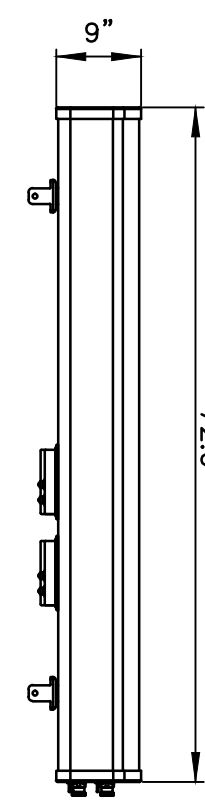
PROPOSED TOWER ELEVATION
SCALE: NTS

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/05/15	INITIAL SUBMISSION	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		

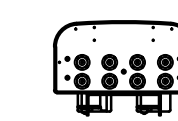
AT&T		
DRAWING TITLE: ANTENNA LAYOUTS & ELEVATIONS		
JOB NUMBER 15184-EMP	DRAWING NUMBER A-3	REV A



FRONT VIEW



SIDE VIEW

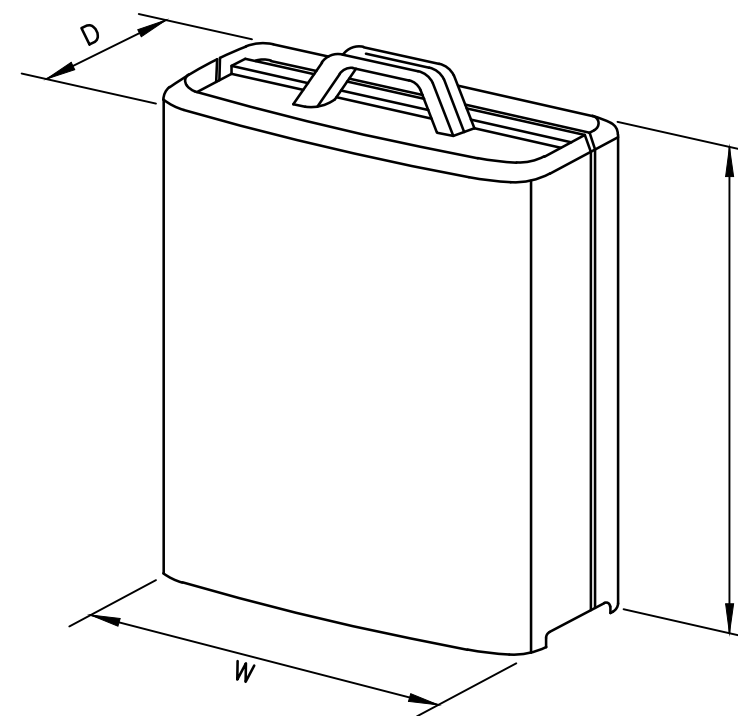


BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	50.7 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.

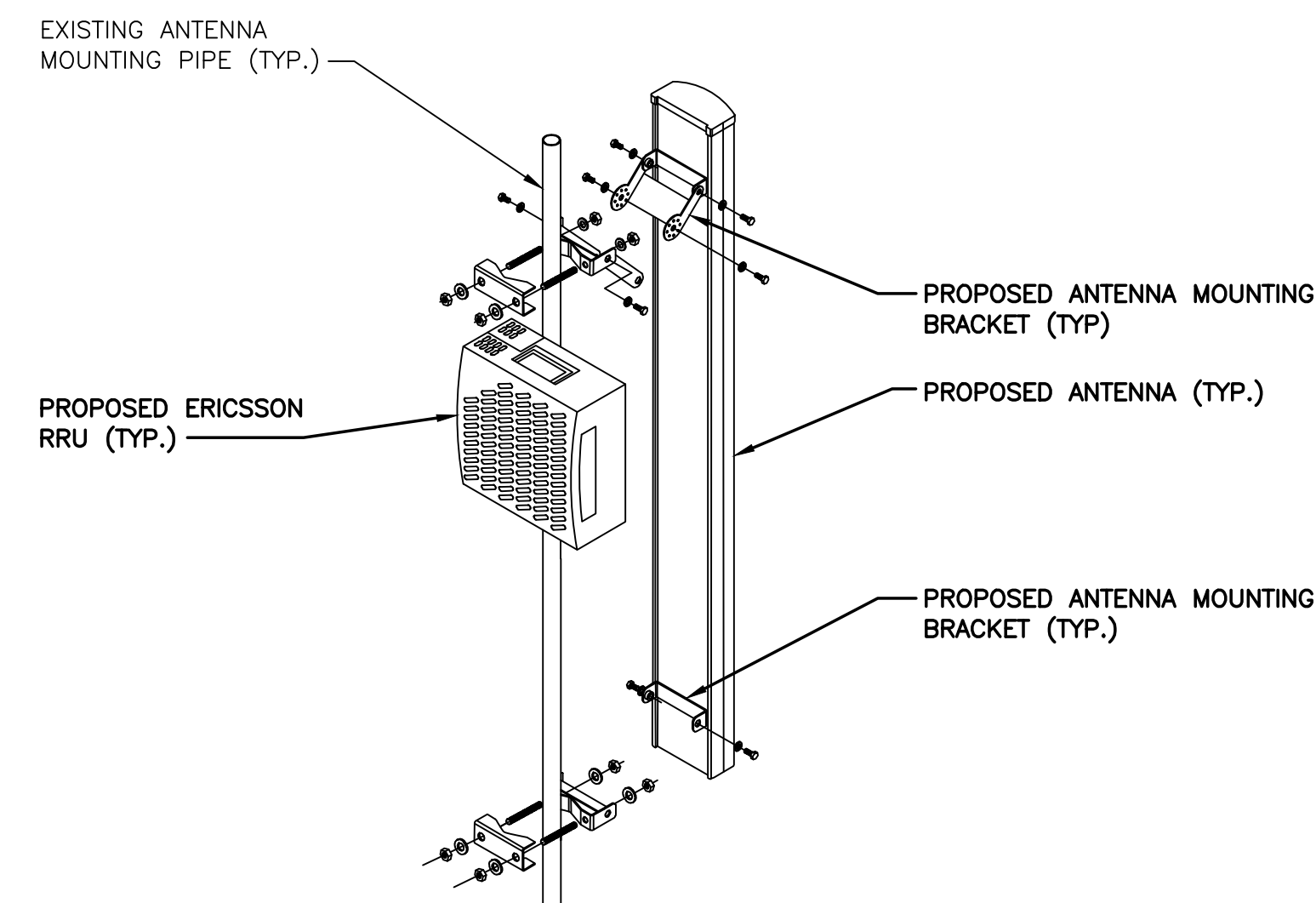


MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-32	29.9"x13.3"x9.5"	77 LBS

*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.



ANTENNA AND RRU MOUNTING DETAIL

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	-	-	-
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7750	57"x11"x5"
	B2	-	-	-
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	POWERWAVE	7750	57"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	POWERWAVE	7770	55"x11"x5"

FINAL ANTENNA SCHEDULE

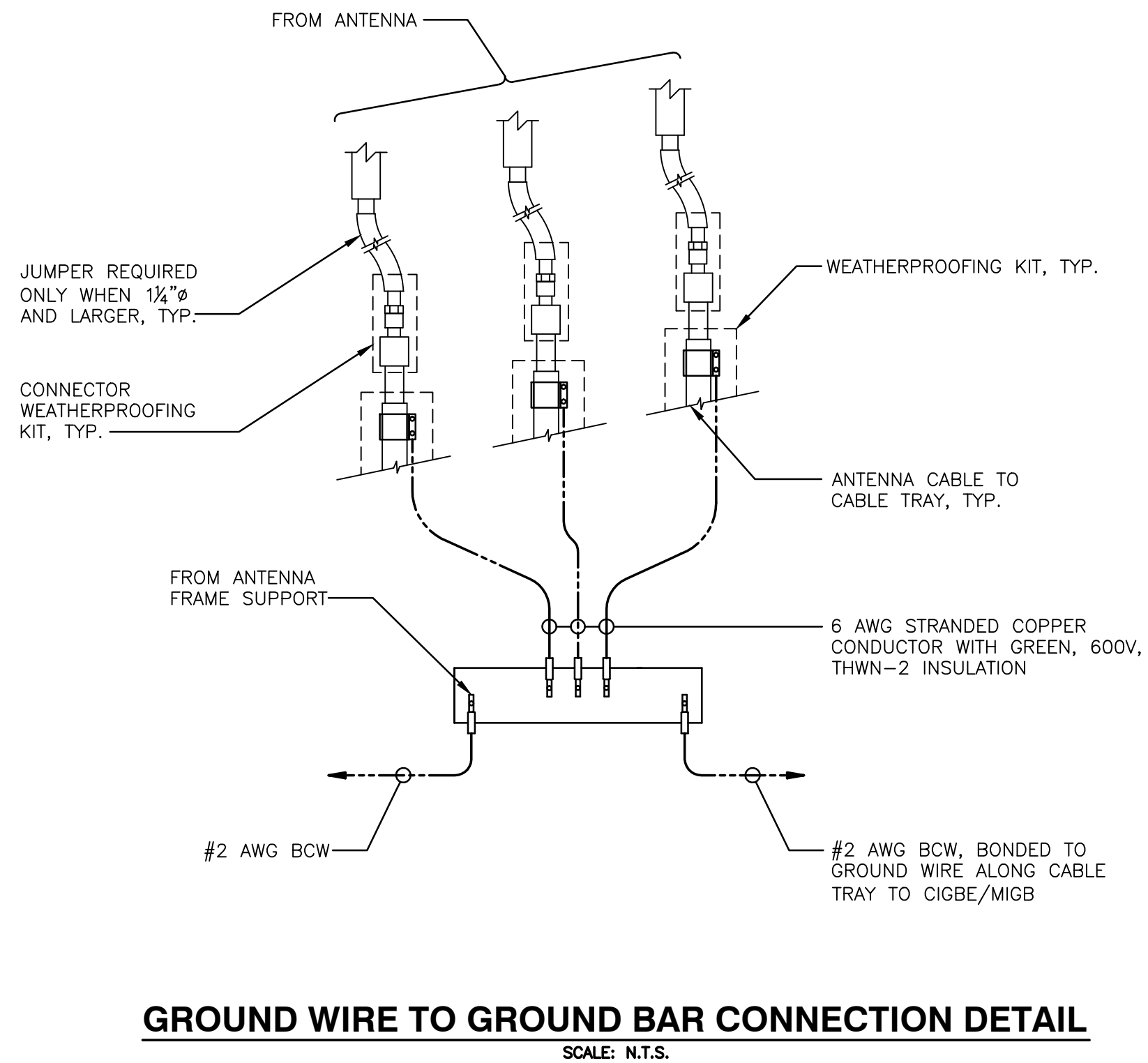
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	CCI	HPA-65R-BUU-H6	72"x14.8"x9"
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	-	-	-
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	CCI	HPA-65R-BUU-H6	72"x14.8"x9"
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	-	-	-
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	CCI	HPA-65R-BUU-H6	72"x14.8"x9"
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	-	-	-

PROPOSED RRU SCHEDULE

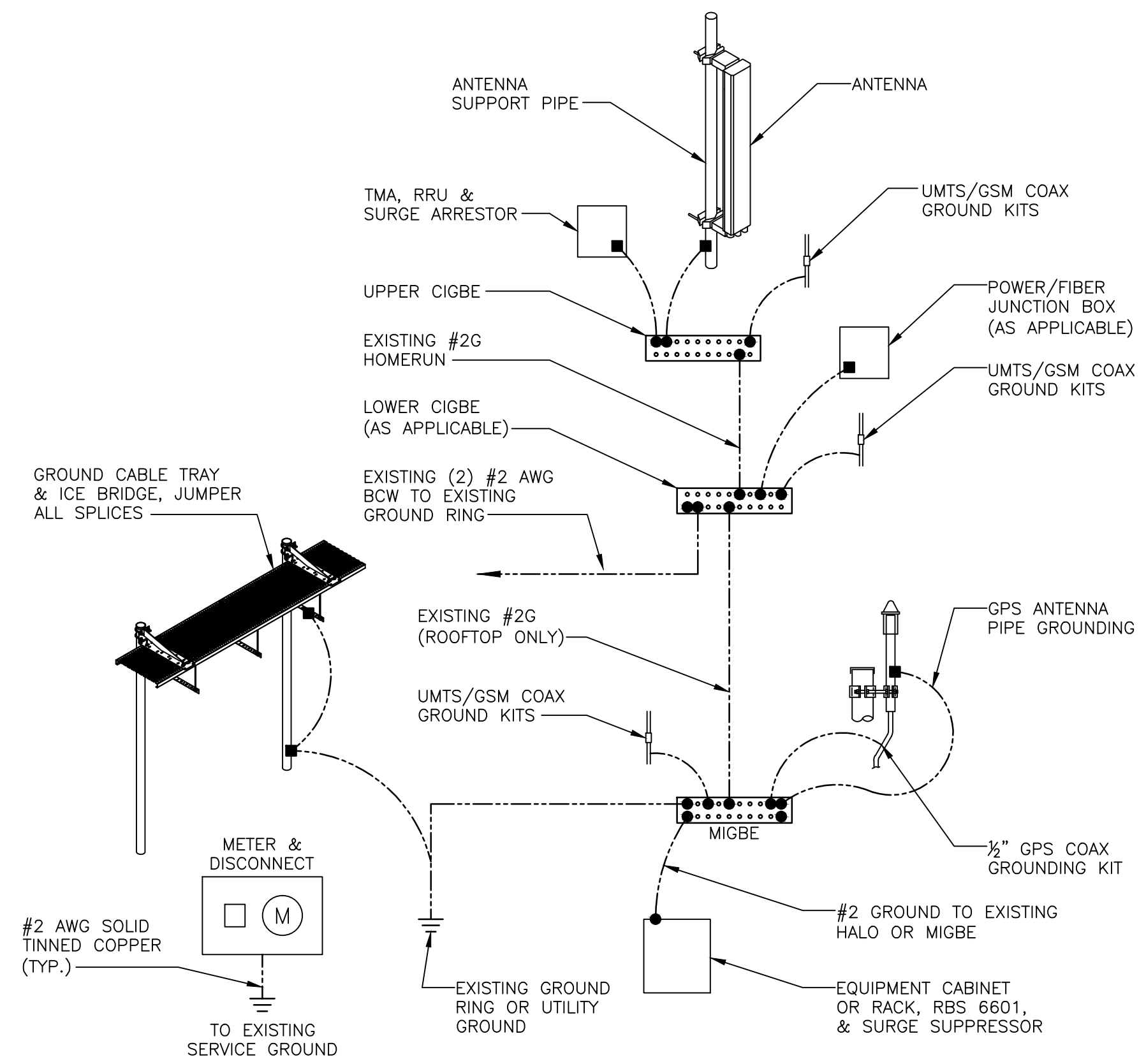
SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
BETA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
GAMMA	ERICSSON	RRUS-32	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-

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

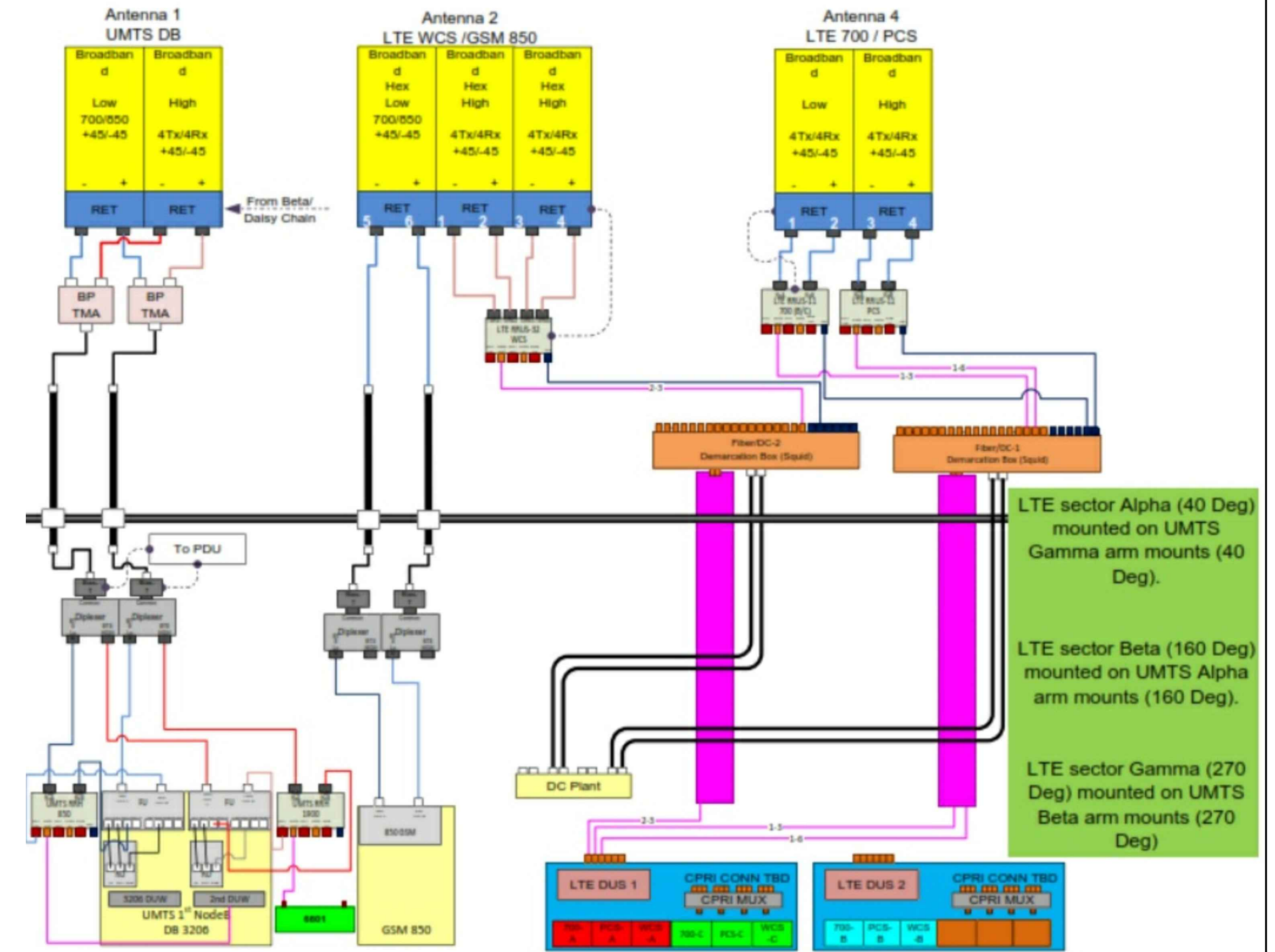
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/05/15	INITIAL SUBMISSION	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		



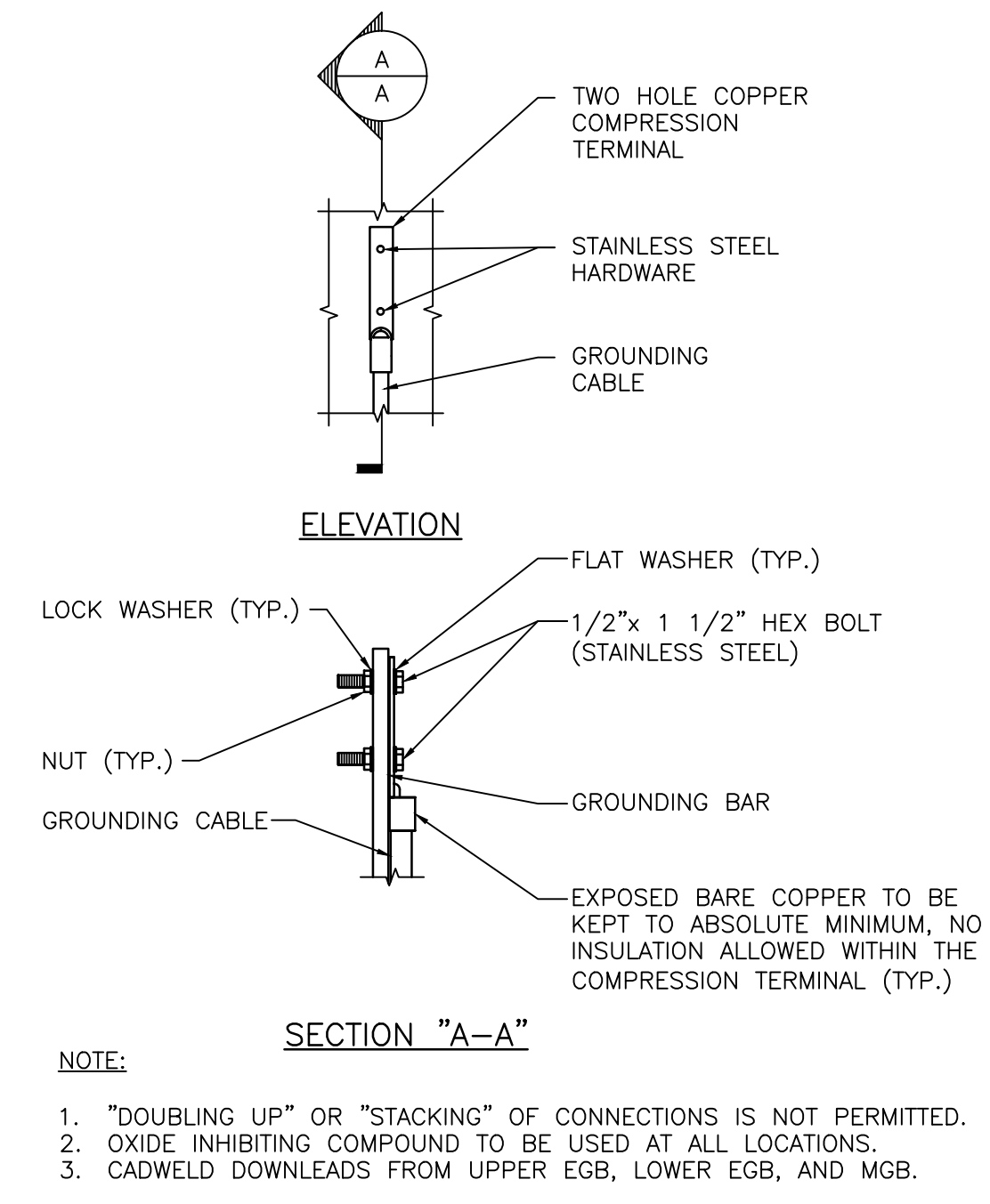
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



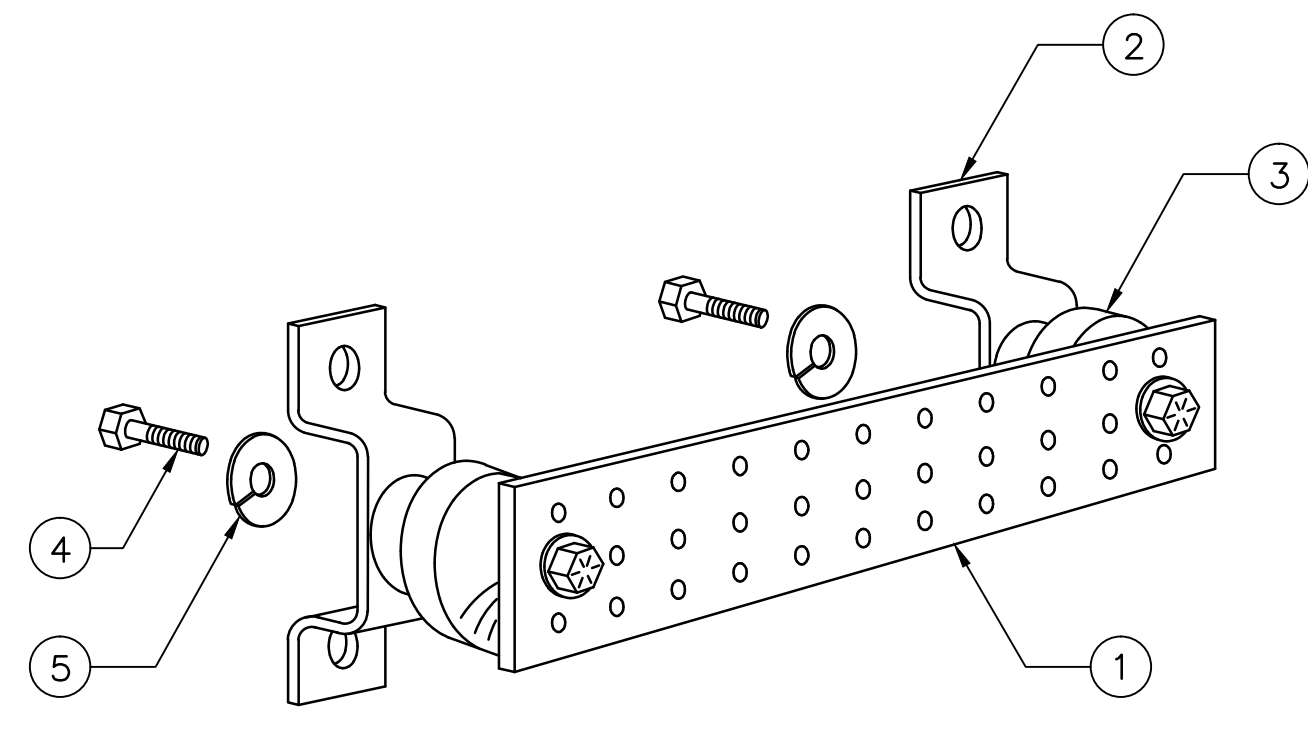
GROUNDING RISER DIAGRAM
SCALE: N.T.S.



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.

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/05/15	INITIAL SUBMISSION	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: JMW		



AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by



Structural Analysis Report

Structure : 120 ft Monopole
ATC Site Name : Northhaven I, CT
ATC Site Number : 370629
Engineering Number : 64759321
Proposed Carrier : AT&T Mobility
Carrier Site Name : North Haven Railroad Tracks
Carrier Site Number : CT2209/FA#10035221
Site Location : 125 Washington Ave
North Haven, CT 06473-0000
41.397833, -72.856667
County : New Haven
Date : January 29, 2016
Max Usage : 46%
Result : Pass

Prepared By:
Courtney Fuhrer
SES Structural Engineer





AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by



Structural Analysis Report

Structure : 120 ft Monopole

ATC Site Name : Northhaven I, CT

ATC Site Number : 370629

Engineering Number : 64759321

Proposed Carrier : AT&T Mobility

Carrier Site Name : North Haven Railroad Tracks

Carrier Site Number : CT2209/FA#10035221

Site Location : 125 Washington Ave
North Haven, CT 06473-0000
41.397833, -72.856667

County : New Haven

Date : January 29, 2016

Max Usage : 46%

Result : Pass

Prepared By:
Courtney Fuhrer
SES Structural Engineer



Table of Contents

Introduction 1

Supporting Documents 1

Analysis 1

Conclusion..... 1

Existing and Reserved Equipment..... 2

Equipment to be Removed..... 2

Proposed Equipment 2

Structure Usages 3

Foundations 3

Deflection, Twist, and Sway..... 3

Standard Conditions 4

Calculations Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 120 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Valmont Project #F177, dated September 30, 1998
Foundation Drawing	Valmont Drawing #2652-F, dated October 9, 1998
Geotechnical Report	CTB Project #98143, dated September 30, 1998

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.

Basic Wind Speed:	110 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.18, S_1 = 0.06$
Site Class:	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. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
120.0	120.0	3	KMW AM-X-CD-17-65-00T-RET	Platform w/ Handrails	(12) 1 5/8" Coax (2) 3/8" Coax	AT&T Mobility
		3	Powerwave Allgon 7770.00			
118.0	118.0	1	Raycap DC6-48-60-18-8F	Flush		
		6	Ericsson RRUS 11 (Band 12)			
107.0	107.0	3	Ericsson KRY 112 144/1	Platform w/ Handrails	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-VTM			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
122.0	122.0	3	Powerwave Allgon 7770.00	-	(1) 0.39" Cable	AT&T Mobility
		12	TTA			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
120.0	120.0	3	Ericsson RRUS-32	Existing Platform w/ Handrails	(2) 0.39" Fiber Trunk (2) 0.78" 8 AWG 6 (2) 3" Conduit	AT&T Mobility
		6	Powerwave Allgon LGP21401			
		3	CCI HPA-65R-BUU-H6			
118.0	118.0	1	Raycap DC6-48-60-18-8F	Flush		

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

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	37%	Pass
Shaft	46%	Pass
Base Plate	25%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	4,149.0	5,601.2	2,393.8	43%
Shear (Kips)	37.1	50.1	29.4	59%

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

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
120.0	Ericsson RRUS-32	AT&T Mobility	0.472	0.371
	CCI HPA-65R-BUU-H6			

*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:

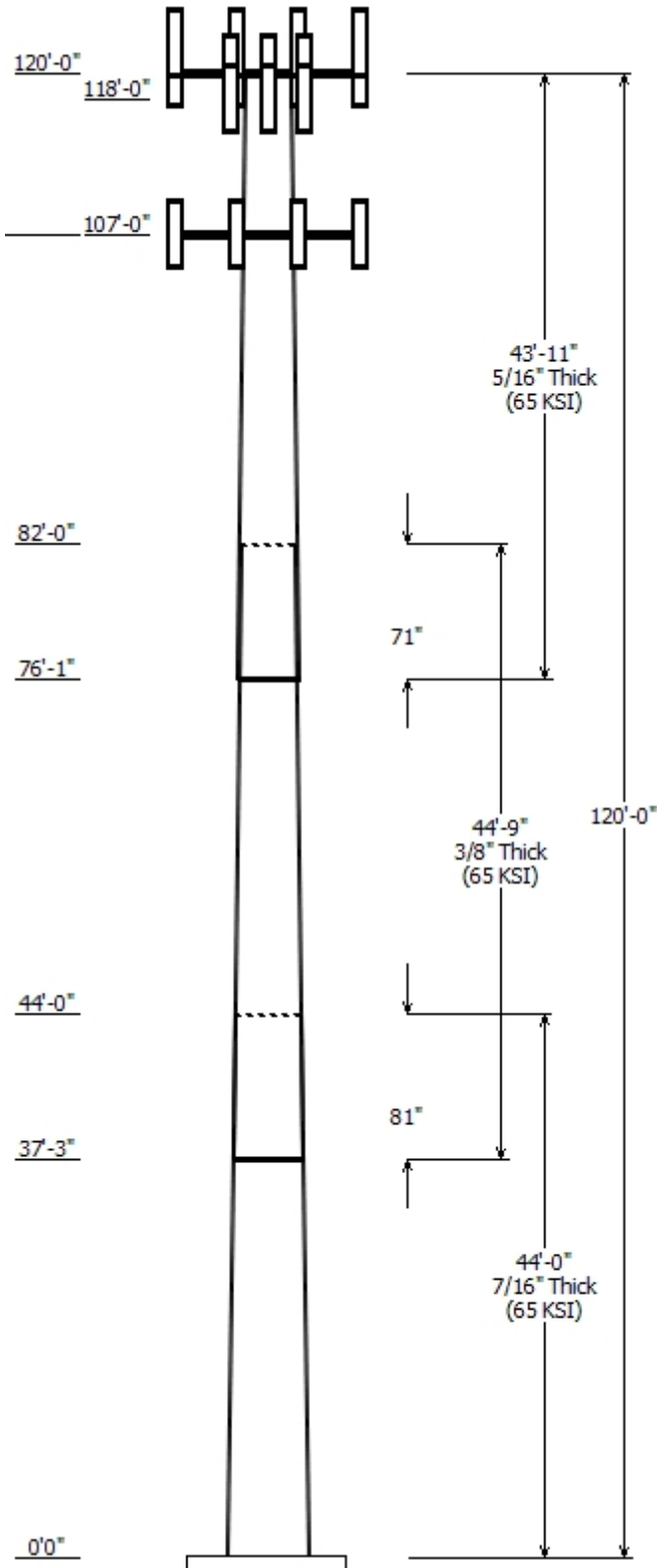
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements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

It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings, Inc. 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 American Tower Corporation and Semaan Engineering Solutions, 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. Semaan Engineering Solutions Holdings, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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Job Information	
Pole :	370629
Code :	ANSI/TIA-222-G
Description :	120 ft expandable Monopole
Client :	AT&T Mobility
Struct Class :	II
Location :	Northhaven I, CT
Shape :	12 Sides
Exposure :	B
Height :	120.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.19996(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap		Steel Grade (ksi)
		Top	Bottom			Length (in)	Taper (in/ft)	
1	44.000	45.70	54.50	0.438		0.000	0.200000	65
2	44.750	38.85	47.80	0.375	Slip Joint	81.000	0.200000	65
3	43.917	31.88	40.66	0.313	Slip Joint	71.000	0.200000	65

Discrete Appurtenance				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	
120.000	122.000	3	CCI HPA-65R-BUU-H6	
120.000	122.000	3	Ericsson RRUS-32	
120.000	122.000	3	Powerwave 7770.00	
120.000	122.000	3	KMW AM-X-CD-17-65-00T-RET	
120.000	120.000	6	Powerwave LGP21401	
120.000	120.000	1	Flat Platform w/ Handrails	
118.000	118.000	6	Ericsson RRUS 11 (Band 12)	
118.000	119.000	2	Raycap DC6-48-60-18-8F	
107.000	107.000	3	Andrew LNX-6515DS-VTM	
107.000	107.000	3	Ericsson AIR 21, 1.3M, B4A B2P	
107.000	107.000	3	Ericsson AIR 21, 1.3M, B2A B4P	
107.000	107.000	3	Ericsson RRUS 11 B12	
107.000	107.000	3	Ericsson KRY 112 144/1	
107.000	107.000	1	Flat Platform w/ Handrails	

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
5.000	107.0	1 1/4" Hybriflex	No
5.000	107.0	1 5/8" Coax	No
5.000	118.0	0.39" Fiber Trunk	No
5.000	118.0	0.78" 8 AWG 6	No
5.000	118.0	3" Conduit	No
5.000	118.0	3/8" Coax	No
5.000	120.0	1 5/8" Coax	No

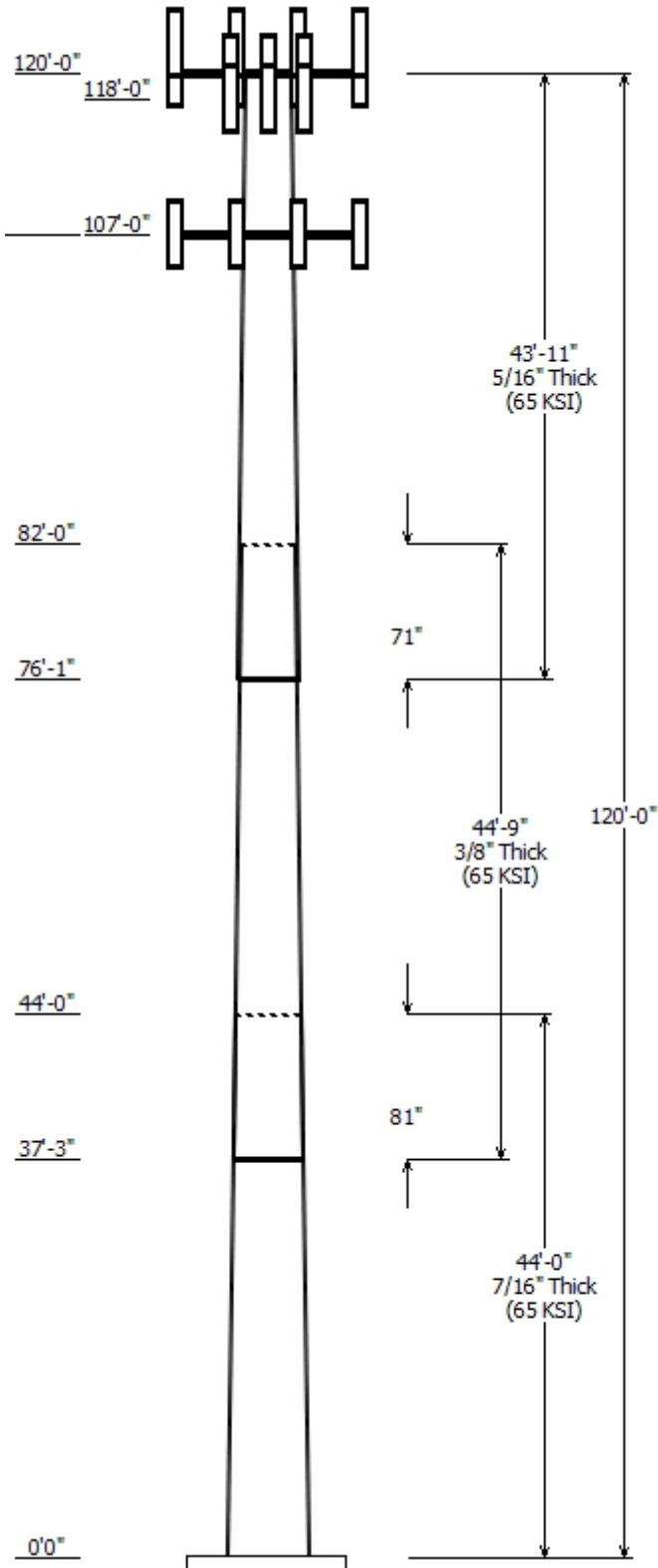
Load Cases	
1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

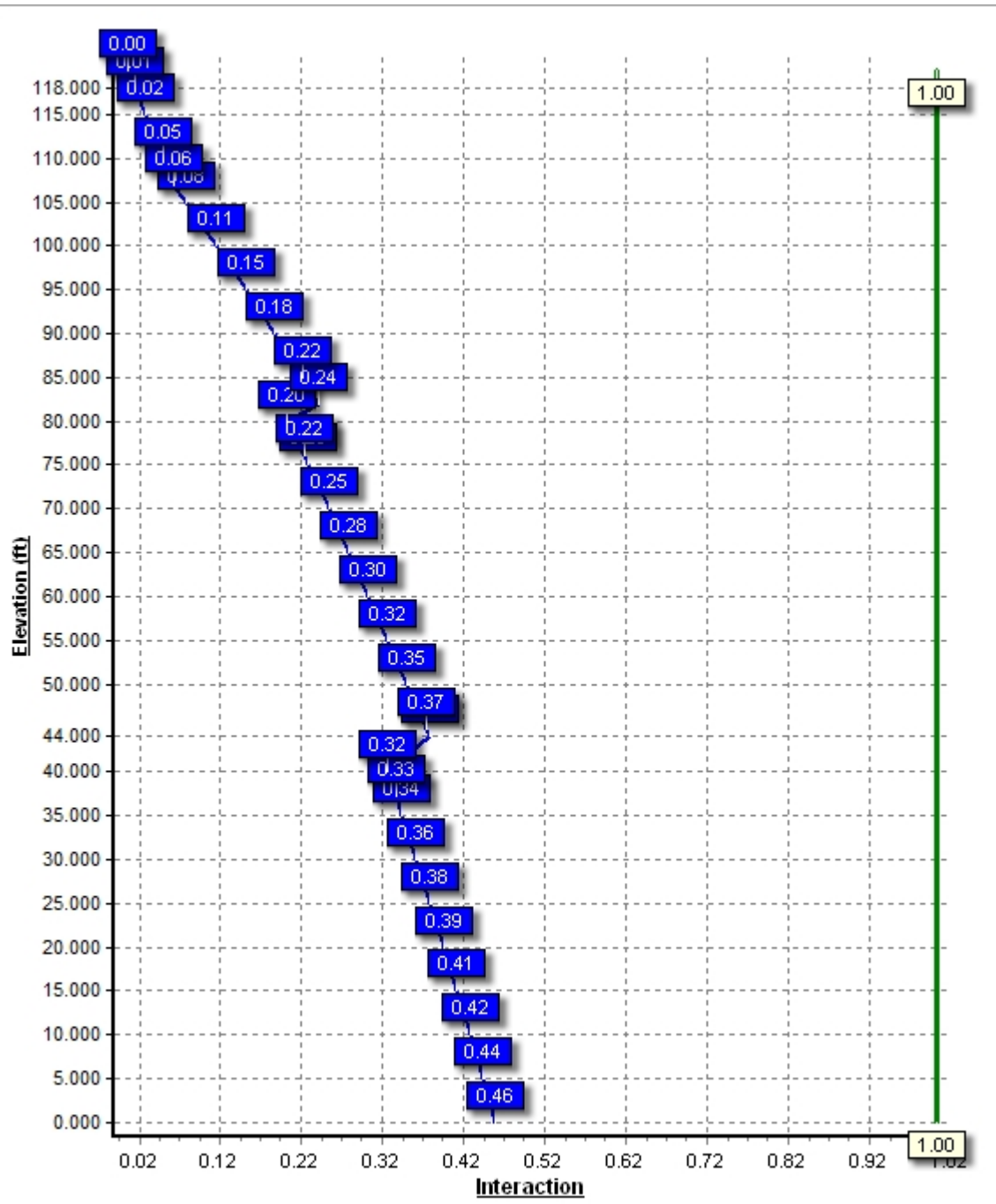
Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)

1.2D + 1.6W	2393.80	29.42	40.53
0.9D + 1.6W	2383.17	29.41	30.39
1.2D + 1.0Di + 1.0Wi	408.72	4.93	57.59
(1.2 + 0.2Sds) * DL + E ELFM	199.08	2.18	40.30
(1.2 + 0.2Sds) * DL + E EMAM	257.20	2.62	40.30
(0.9 - 0.2Sds) * DL + E ELFM	198.02	2.18	27.99
(0.9 - 0.2Sds) * DL + E EMAM	255.73	2.62	27.99
1.0D + 1.0W	443.84	5.47	33.80

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000





Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:50 AM

Customer: AT&T Mobility

Analysis Parameters

Location:	New Haven County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	120
Shape:	12 Sides	Base Diameter (in):	54.50
Pole Type:	Taper	Top Diameter (in):	31.88
Pole Manufacturer:	Valmont	Taper (in/ft) :	0.200

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):	1.33		
T _L (sec):	6	p:	1.3
S _s :	0.184	S ₁ :	0.062
F _a :	1.600	F _v :	2.400
S _{ds} :	0.196	S _{d1} :	0.099
		C _s :	0.050
		C _s Max:	0.050
		C _s 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: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:50 AM

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 ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	44.000	0.4380	65		0.00	10,487	54.50	0.00	76.25	28444.1	31.20	124.43	45.70	44.00	63.84	16694.0	25.81	104.34	0.199967
2-12	44.750	0.3750	65	Slip	81.00	7,898	47.80	37.25	57.27	16441.0	32.01	127.47	38.85	82.00	46.46	8780.1	25.62	103.61	0.199967
3-12	43.917	0.3130	65	Slip	71.00	5,416	40.66	76.08	40.67	8450.4	32.67	129.91	31.88	120.00	31.82	4046.5	25.15	101.85	0.199967
Shaft Weight						23,800													

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		
120.00	CCI HPA-65R-BUU-H6	3	51.00	9.660	0.83	292.52	10.993	0.83	0.000	2.000
120.00	Ericsson RRUS-32	3	77.00	3.310	0.67	172.22	4.565	0.67	0.000	2.000
120.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,391.49	62.934	1.00	0.000	0.000
120.00	KMW AM-X-CD-17-65-00T-	3	30.80	4.990	0.79	159.15	5.951	0.79	0.000	2.000
120.00	Powerwave 7770.00	3	35.00	5.510	0.77	166.39	6.539	0.77	0.000	2.000
120.00	Powerwave LGP21401	6	14.10	1.100	0.50	46.69	1.552	0.50	0.000	0.000
118.00	Ericsson RRUS 11 (Band 12)	6	50.00	2.570	1.00	128.99	3.203	1.00	0.000	0.000
118.00	Raycap DC6-48-60-18-8F	2	31.80	2.200	1.00	121.92	2.835	1.00	0.000	1.000
107.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.84	304.15	13.036	0.84	0.000	0.000
107.00	Ericsson AIR 21, 1.3M, B2A	3	91.50	6.040	0.85	251.83	7.092	0.85	0.000	0.000
107.00	Ericsson AIR 21, 1.3M, B4A	3	81.50	6.090	0.85	243.65	7.153	0.85	0.000	0.000
107.00	Ericsson KRY 112 144/1	3	11.00	0.410	0.50	26.54	0.623	0.50	0.000	0.000
107.00	Ericsson RRUS 11 B12	3	50.70	2.790	0.67	133.51	3.444	0.67	0.000	0.000
107.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,375.49	62.698	1.00	0.000	0.000
Totals		43	5887.60			13,314.76			Number of Loadings : 14	

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
5.00	120.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
5.00	118.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
5.00	118.00	2	0.78" 8 AWG6	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	118.00	2	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
5.00	118.00	2	3/8" Coax	0.44	0.08	N	0.00	N	AT&T Mobility
5.00	107.00	1	1 1/4" Hybriflex	1.54	1.00	N	0.00	N	T-Mobile
5.00	107.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:50 AM

Customer: AT&T Mobility

Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.4380	54.500	76.247	28,444.1	31.20	124.43	70.7	1008.	0.0	0.0
5.00		0.4380	53.500	74.837	26,895.0	30.59	122.15	71.4	971.2	0.0	1,285.3
10.00		0.4380	52.500	73.427	25,403.1	29.97	119.86	72.0	934.8	0.0	1,261.3
15.00		0.4380	51.500	72.017	23,967.5	29.36	117.58	72.7	899.1	0.0	1,237.3
20.00		0.4380	50.501	70.606	22,587.0	28.75	115.30	73.4	864.0	0.0	1,213.3
25.00		0.4380	49.501	69.196	21,260.5	28.14	113.02	74.0	829.7	0.0	1,189.3
30.00		0.4380	48.501	67.786	19,987.0	27.53	110.73	74.7	796.1	0.0	1,165.3
35.00		0.4380	47.501	66.376	18,765.5	26.92	108.45	75.4	763.2	0.0	1,141.3
37.25	Bot - Section 2	0.4380	47.051	65.741	18,232.4	26.64	107.42	75.7	748.6	0.0	505.8
40.00		0.4380	46.501	64.966	17,594.7	26.30	106.17	76.0	731.0	0.0	1,144.3
44.00	Top - Section 1	0.3750	46.451	55.637	15,076.8	31.05	123.87	70.9	627.0	0.0	1,640.4
45.00		0.3750	46.251	55.396	14,881.4	30.90	123.34	71.0	621.6	0.0	188.9
50.00		0.3750	45.252	54.189	13,929.5	30.19	120.67	71.8	594.7	0.0	932.2
55.00		0.3750	44.252	52.981	13,019.0	29.48	118.00	72.6	568.4	0.0	911.7
60.00		0.3750	43.252	51.774	12,149.2	28.76	115.34	73.3	542.6	0.0	891.1
65.00		0.3750	42.252	50.567	11,318.9	28.05	112.67	74.1	517.5	0.0	870.6
70.00		0.3750	41.252	49.359	10,527.4	27.33	110.01	74.9	493.0	0.0	850.1
75.00		0.3750	40.252	48.152	9,773.6	26.62	107.34	75.7	469.1	0.0	829.5
76.08	Bot - Section 3	0.3750	40.036	47.890	9,615.2	26.46	106.76	75.9	464.0	0.0	177.0
80.00		0.3750	39.253	46.945	9,056.8	25.90	104.67	76.5	445.7	0.0	1,168.7
82.00	Top - Section 2	0.3130	39.479	39.474	7,728.7	31.65	126.13	70.2	378.2	0.0	587.9
85.00		0.3130	38.879	38.869	7,378.9	31.14	124.21	70.8	366.7	0.0	399.9
90.00		0.3130	37.879	37.861	6,819.8	30.28	121.02	71.7	347.8	0.0	652.7
95.00		0.3130	36.879	36.854	6,289.6	29.43	117.82	72.6	329.5	0.0	635.6
100.0		0.3130	35.879	35.846	5,787.7	28.57	114.63	73.6	311.6	0.0	618.4
105.0		0.3130	34.879	34.838	5,313.1	27.72	111.44	74.5	294.3	0.0	601.3
107.0		0.3130	34.480	34.435	5,130.9	27.37	110.16	74.9	287.5	0.0	235.7
110.0		0.3130	33.880	33.830	4,865.3	26.86	108.24	75.4	277.4	0.0	348.4
115.0		0.3130	32.880	32.823	4,443.4	26.00	105.05	76.4	261.1	0.0	567.0
118.0		0.3130	32.280	32.218	4,202.3	25.49	103.13	76.9	251.5	0.0	332.0
120.0		0.3130	31.880	31.815	4,046.6	25.15	101.85	77.3	245.2	0.0	217.9
											23,800.3

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:50 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

110 mph with No Ice

18 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		422.2	0.0					0.0	0.0	422.2	0.0	0.0	0.0
5.00		836.7	1,542.3					0.0	0.0	836.7	1,542.3	0.0	0.0
10.00		821.0	1,513.5					0.0	223.8	821.0	1,737.3	0.0	0.0
15.00		805.4	1,484.7					0.0	223.8	805.4	1,708.5	0.0	0.0
20.00		789.8	1,455.9					0.0	223.8	789.8	1,679.7	0.0	0.0
25.00		774.1	1,427.2					0.0	223.8	774.1	1,651.0	0.0	0.0
30.00		767.5	1,398.4					0.0	223.8	767.5	1,622.2	0.0	0.0
35.00		559.9	1,369.6					0.0	223.8	559.9	1,593.4	0.0	0.0
37.25	Bot - Section 2	395.5	606.9					0.0	100.7	395.5	707.6	0.0	0.0
40.00		542.8	1,373.2					0.0	123.1	542.8	1,496.3	0.0	0.0
44.00	Top - Section 1	404.1	1,968.5					0.0	179.0	404.1	2,147.6	0.0	0.0
45.00		489.5	226.7					0.0	44.8	489.5	271.5	0.0	0.0
50.00		819.2	1,118.7					0.0	223.8	819.2	1,342.5	0.0	0.0
55.00		823.3	1,094.0					0.0	223.8	823.3	1,317.8	0.0	0.0
60.00		825.0	1,069.4					0.0	223.8	825.0	1,293.2	0.0	0.0
65.00		824.6	1,044.7					0.0	223.8	824.6	1,268.5	0.0	0.0
70.00		822.3	1,020.1					0.0	223.8	822.3	1,243.9	0.0	0.0
75.00		499.0	995.4					0.0	223.8	499.0	1,219.2	0.0	0.0
76.08	Bot - Section 3	413.0	212.4					0.0	48.5	413.0	260.9	0.0	0.0
80.00		489.4	1,402.4					0.0	175.3	489.4	1,577.7	0.0	0.0
82.00	Top - Section 2	411.4	705.4					0.0	89.5	411.4	794.9	0.0	0.0
85.00		654.3	479.8					0.0	134.3	654.3	614.1	0.0	0.0
90.00		811.4	783.3					0.0	223.8	811.4	1,007.1	0.0	0.0
95.00		802.2	762.7					0.0	223.8	802.2	986.5	0.0	0.0
100.00		792.0	742.1					0.0	223.8	792.0	965.9	0.0	0.0
105.00		549.0	721.6					0.0	223.8	549.0	945.4	0.0	0.0
107.00	Appertunance(s)	387.4	282.9	4,793.8	0.0	0.0	3,429.6	0.0	89.5	5,181.2	3,802.0	0.0	0.0
110.00		612.8	418.1					0.0	95.3	612.8	513.4	0.0	0.0
115.00		606.5	680.4					0.0	158.8	606.5	839.2	0.0	0.0
118.00	Appertunance(s)	374.3	398.4	1,064.1	0.0	236.7	436.3	0.0	95.3	1,438.4	930.0	0.0	0.0
120.00	Appertunance(s)	148.9	261.5	4,664.9	0.0	4,490.6	3,199.2	0.0	23.6	4,813.8	3,484.3	0.0	0.0
Totals:										29,797.6	40,563.8	0.00	0.00

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:51 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

110 mph with No Ice

18 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	-40.53	-29.42	0.00	-2,393.80	0.00	2,393.80	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.456
5.00	-38.93	-28.66	0.00	-2,246.72	0.00	2,246.72	4,806.09	2,403.05	10,523.9	5,197.39	0.06	-0.12	0.441
10.00	-37.14	-27.91	0.00	-2,103.44	0.00	2,103.44	4,759.62	2,379.81	10,224.2	5,049.35	0.25	-0.23	0.425
15.00	-35.39	-27.16	0.00	-1,963.92	0.00	1,963.92	4,711.45	2,355.72	9,924.75	4,901.46	0.55	-0.34	0.408
20.00	-33.66	-26.43	0.00	-1,828.11	0.00	1,828.11	4,661.59	2,330.79	9,625.81	4,753.82	0.97	-0.46	0.392
25.00	-31.97	-25.70	0.00	-1,695.99	0.00	1,695.99	4,610.03	2,305.02	9,327.59	4,606.54	1.51	-0.57	0.375
30.00	-30.31	-24.97	0.00	-1,567.50	0.00	1,567.50	4,556.79	2,278.39	9,030.30	4,459.73	2.17	-0.68	0.358
35.00	-28.69	-24.43	0.00	-1,442.65	0.00	1,442.65	4,501.84	2,250.92	8,734.16	4,313.47	2.94	-0.78	0.341
37.25	-27.96	-24.05	0.00	-1,387.69	0.00	1,387.69	4,476.57	2,238.28	8,601.32	4,247.87	3.32	-0.83	0.333
40.00	-26.45	-23.52	0.00	-1,321.56	0.00	1,321.56	4,445.21	2,222.61	8,439.37	4,167.89	3.81	-0.89	0.323
44.00	-24.28	-23.10	0.00	-1,227.49	0.00	1,227.49	3,547.86	1,773.93	6,746.79	3,331.99	4.60	-0.97	0.375
45.00	-24.00	-22.63	0.00	-1,204.40	0.00	1,204.40	3,540.23	1,770.11	6,702.83	3,310.28	4.80	-0.99	0.371
50.00	-22.63	-21.83	0.00	-1,091.24	0.00	1,091.24	3,501.07	1,750.54	6,483.06	3,201.74	5.91	-1.10	0.347
55.00	-21.29	-21.02	0.00	-982.08	0.00	982.08	3,460.22	1,730.11	6,263.48	3,093.30	7.12	-1.21	0.324
60.00	-19.98	-20.20	0.00	-876.98	0.00	876.98	3,417.68	1,708.84	6,044.31	2,985.06	8.44	-1.31	0.300
65.00	-18.70	-19.38	0.00	-775.98	0.00	775.98	3,373.45	1,686.72	5,825.75	2,877.12	9.87	-1.41	0.275
70.00	-17.45	-18.55	0.00	-679.09	0.00	679.09	3,327.52	1,663.76	5,608.02	2,769.59	11.39	-1.50	0.251
75.00	-16.23	-18.03	0.00	-586.34	0.00	586.34	3,279.90	1,639.95	5,391.32	2,662.57	13.01	-1.59	0.225
76.08	-15.96	-17.62	0.00	-566.80	0.00	566.80	3,269.36	1,634.68	5,344.53	2,639.46	13.37	-1.60	0.220
80.00	-14.39	-17.10	0.00	-497.77	0.00	497.77	3,230.58	1,615.29	5,175.88	2,556.17	14.72	-1.67	0.199
82.00	-13.59	-16.68	0.00	-463.57	0.00	463.57	2,493.67	1,246.84	4,031.45	1,990.98	15.42	-1.70	0.238
85.00	-12.98	-16.02	0.00	-413.54	0.00	413.54	2,475.07	1,237.54	3,939.60	1,945.62	16.50	-1.74	0.218
90.00	-11.98	-15.19	0.00	-333.45	0.00	333.45	2,442.71	1,221.36	3,786.49	1,870.00	18.36	-1.81	0.183
95.00	-11.01	-14.37	0.00	-257.51	0.00	257.51	2,408.66	1,204.33	3,633.51	1,794.45	20.29	-1.87	0.148
100.00	-10.06	-13.55	0.00	-185.68	0.00	185.68	2,372.92	1,186.46	3,480.88	1,719.08	22.28	-1.92	0.112
105.00	-9.13	-12.97	0.00	-117.93	0.00	117.93	2,335.48	1,167.74	3,328.81	1,643.98	24.31	-1.96	0.076
107.00	-5.51	-7.67	0.00	-91.98	0.00	91.98	2,320.03	1,160.02	3,268.19	1,614.04	25.14	-1.97	0.059
110.00	-5.01	-7.04	0.00	-68.98	0.00	68.98	2,296.35	1,148.18	3,177.52	1,569.26	26.38	-1.98	0.046
115.00	-4.19	-6.40	0.00	-33.80	0.00	33.80	2,255.53	1,127.76	3,027.21	1,495.02	28.47	-2.00	0.024
118.00	-3.31	-4.93	0.00	-14.36	0.00	14.36	2,230.22	1,115.11	2,937.58	1,450.76	29.72	-2.00	0.011
120.00	0.00	-4.81	0.00	-4.49	0.00	4.49	2,213.01	1,106.51	2,878.09	1,421.38	30.56	-2.00	0.003

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:51 AM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

110 mph with No Ice (Reduced DL)

18 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		422.2	0.0					0.0	0.0	422.2	0.0	0.0	0.0
5.00		836.7	1,156.7					0.0	0.0	836.7	1,156.7	0.0	0.0
10.00		821.0	1,135.1					0.0	167.8	821.0	1,303.0	0.0	0.0
15.00		805.4	1,113.5					0.0	167.8	805.4	1,281.4	0.0	0.0
20.00		789.8	1,092.0					0.0	167.8	789.8	1,259.8	0.0	0.0
25.00		774.1	1,070.4					0.0	167.8	774.1	1,238.2	0.0	0.0
30.00		767.5	1,048.8					0.0	167.8	767.5	1,216.6	0.0	0.0
35.00		559.9	1,027.2					0.0	167.8	559.9	1,195.0	0.0	0.0
37.25	Bot - Section 2	395.5	455.2					0.0	75.5	395.5	530.7	0.0	0.0
40.00		542.8	1,029.9					0.0	92.3	542.8	1,122.2	0.0	0.0
44.00	Top - Section 1	404.1	1,476.4					0.0	134.3	404.1	1,610.7	0.0	0.0
45.00		489.5	170.0					0.0	33.6	489.5	203.6	0.0	0.0
50.00		819.2	839.0					0.0	167.8	819.2	1,006.9	0.0	0.0
55.00		823.3	820.5					0.0	167.8	823.3	988.4	0.0	0.0
60.00		825.0	802.0					0.0	167.8	825.0	969.9	0.0	0.0
65.00		824.6	783.5					0.0	167.8	824.6	951.4	0.0	0.0
70.00		822.3	765.1					0.0	167.8	822.3	932.9	0.0	0.0
75.00		499.0	746.6					0.0	167.8	499.0	914.4	0.0	0.0
76.08	Bot - Section 3	413.0	159.3					0.0	36.4	413.0	195.7	0.0	0.0
80.00		489.4	1,051.8					0.0	131.5	489.4	1,183.3	0.0	0.0
82.00	Top - Section 2	411.4	529.1					0.0	67.1	411.4	596.2	0.0	0.0
85.00		654.3	359.9					0.0	100.7	654.3	460.6	0.0	0.0
90.00		811.4	587.5					0.0	167.8	811.4	755.3	0.0	0.0
95.00		802.2	572.0					0.0	167.8	802.2	739.9	0.0	0.0
100.00		792.0	556.6					0.0	167.8	792.0	724.5	0.0	0.0
105.00		549.0	541.2					0.0	167.8	549.0	709.0	0.0	0.0
107.00	Appertunance(s)	387.4	212.1	4,793.8	0.0	0.0	2,572.2	0.0	67.1	5,181.2	2,851.5	0.0	0.0
110.00		612.8	313.6					0.0	71.4	612.8	385.0	0.0	0.0
115.00		606.5	510.3					0.0	119.1	606.5	629.4	0.0	0.0
118.00	Appertunance(s)	374.3	298.8	1,064.1	0.0	236.7	327.2	0.0	71.4	1,438.4	697.5	0.0	0.0
120.00	Appertunance(s)	148.9	196.1	4,664.9	0.0	4,490.6	2,399.4	0.0	17.7	4,813.8	2,613.2	0.0	0.0
Totals:										29,797.6	30,422.8	0.00	0.00

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:52 AM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

110 mph with No Ice (Reduced DL)

18 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	-30.39	-29.41	0.00	-2,383.17	0.00	2,383.17	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.452
5.00	-29.18	-28.63	0.00	-2,236.14	0.00	2,236.14	4,806.09	2,403.05	10,523.9	5,197.39	0.06	-0.12	0.436
10.00	-27.82	-27.86	0.00	-2,093.01	0.00	2,093.01	4,759.62	2,379.81	10,224.2	5,049.35	0.25	-0.23	0.420
15.00	-26.49	-27.10	0.00	-1,953.72	0.00	1,953.72	4,711.45	2,355.72	9,924.75	4,901.46	0.55	-0.34	0.404
20.00	-25.19	-26.35	0.00	-1,818.23	0.00	1,818.23	4,661.59	2,330.79	9,625.81	4,753.82	0.97	-0.46	0.388
25.00	-23.91	-25.61	0.00	-1,686.50	0.00	1,686.50	4,610.03	2,305.02	9,327.59	4,606.54	1.51	-0.57	0.371
30.00	-22.65	-24.87	0.00	-1,558.45	0.00	1,558.45	4,556.79	2,278.39	9,030.30	4,459.73	2.16	-0.67	0.355
35.00	-21.43	-24.32	0.00	-1,434.10	0.00	1,434.10	4,501.84	2,250.92	8,734.16	4,313.47	2.92	-0.78	0.337
37.25	-20.88	-23.94	0.00	-1,379.38	0.00	1,379.38	4,476.57	2,238.28	8,601.32	4,247.87	3.30	-0.83	0.330
40.00	-19.74	-23.41	0.00	-1,313.54	0.00	1,313.54	4,445.21	2,222.61	8,439.37	4,167.89	3.80	-0.89	0.320
44.00	-18.12	-22.99	0.00	-1,219.92	0.00	1,219.92	3,547.86	1,773.93	6,746.79	3,331.99	4.57	-0.97	0.371
45.00	-17.90	-22.52	0.00	-1,196.93	0.00	1,196.93	3,540.23	1,770.11	6,702.83	3,310.28	4.78	-0.99	0.367
50.00	-16.86	-21.71	0.00	-1,084.34	0.00	1,084.34	3,501.07	1,750.54	6,483.06	3,201.74	5.87	-1.10	0.344
55.00	-15.86	-20.90	0.00	-975.78	0.00	975.78	3,460.22	1,730.11	6,263.48	3,093.30	7.08	-1.20	0.320
60.00	-14.87	-20.08	0.00	-871.29	0.00	871.29	3,417.68	1,708.84	6,044.31	2,985.06	8.40	-1.30	0.296
65.00	-13.91	-19.25	0.00	-770.90	0.00	770.90	3,373.45	1,686.72	5,825.75	2,877.12	9.82	-1.40	0.272
70.00	-12.97	-18.43	0.00	-674.63	0.00	674.63	3,327.52	1,663.76	5,608.02	2,769.59	11.33	-1.49	0.248
75.00	-12.05	-17.92	0.00	-582.49	0.00	582.49	3,279.90	1,639.95	5,391.32	2,662.57	12.94	-1.58	0.223
76.08	-11.85	-17.51	0.00	-563.08	0.00	563.08	3,269.36	1,634.68	5,344.53	2,639.46	13.30	-1.59	0.217
80.00	-10.67	-16.99	0.00	-494.52	0.00	494.52	3,230.58	1,615.29	5,175.88	2,556.17	14.63	-1.66	0.197
82.00	-10.08	-16.57	0.00	-460.54	0.00	460.54	2,493.67	1,246.84	4,031.45	1,990.98	15.33	-1.69	0.236
85.00	-9.62	-15.91	0.00	-410.83	0.00	410.83	2,475.07	1,237.54	3,939.60	1,945.62	16.41	-1.73	0.215
90.00	-8.87	-15.09	0.00	-331.28	0.00	331.28	2,442.71	1,221.36	3,786.49	1,870.00	18.26	-1.80	0.181
95.00	-8.14	-14.27	0.00	-255.84	0.00	255.84	2,408.66	1,204.33	3,633.51	1,794.45	20.18	-1.86	0.146
100.00	-7.44	-13.46	0.00	-184.50	0.00	184.50	2,372.92	1,186.46	3,480.88	1,719.08	22.15	-1.91	0.111
105.00	-6.74	-12.89	0.00	-117.20	0.00	117.20	2,335.48	1,167.74	3,328.81	1,643.98	24.18	-1.95	0.074
107.00	-4.07	-7.62	0.00	-91.42	0.00	91.42	2,320.03	1,160.02	3,268.19	1,614.04	24.99	-1.96	0.058
110.00	-3.70	-6.99	0.00	-68.57	0.00	68.57	2,296.35	1,148.18	3,177.52	1,569.26	26.23	-1.97	0.045
115.00	-3.09	-6.36	0.00	-33.62	0.00	33.62	2,255.53	1,127.76	3,027.21	1,495.02	28.30	-1.99	0.024
118.00	-2.44	-4.90	0.00	-14.29	0.00	14.29	2,230.22	1,115.11	2,937.58	1,450.76	29.55	-1.99	0.011
120.00	0.00	-4.81	0.00	-4.49	0.00	4.49	2,213.01	1,106.51	2,878.09	1,421.38	30.39	-1.99	0.003

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:52 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice	17 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		68.1	0.0					0.0	0.0	68.1	0.0	0.0	0.0
5.00		135.4	1,952.6					0.0	0.0	135.4	1,952.6	0.0	0.0
10.00		133.4	1,964.2					0.0	223.8	133.4	2,188.0	0.0	0.0
15.00		131.3	1,950.7					0.0	223.8	131.3	2,174.5	0.0	0.0
20.00		129.1	1,929.2					0.0	223.8	129.1	2,153.0	0.0	0.0
25.00		126.8	1,903.4					0.0	223.8	126.8	2,127.2	0.0	0.0
30.00		126.0	1,875.0					0.0	223.8	126.0	2,098.8	0.0	0.0
35.00		92.0	1,844.8					0.0	223.8	92.0	2,068.6	0.0	0.0
37.25	Bot - Section 2	65.1	821.1					0.0	100.7	65.1	921.8	0.0	0.0
40.00		89.4	1,637.9					0.0	123.1	89.4	1,761.0	0.0	0.0
44.00	Top - Section 1	66.6	2,350.5					0.0	179.0	66.6	2,529.5	0.0	0.0
45.00		80.8	322.4					0.0	44.8	80.8	367.1	0.0	0.0
50.00		135.4	1,590.1					0.0	223.8	135.4	1,813.9	0.0	0.0
55.00		136.4	1,560.2					0.0	223.8	136.4	1,784.0	0.0	0.0
60.00		136.9	1,529.7					0.0	223.8	136.9	1,753.5	0.0	0.0
65.00		137.2	1,498.6					0.0	223.8	137.2	1,722.4	0.0	0.0
70.00		137.1	1,467.2					0.0	223.8	137.1	1,691.0	0.0	0.0
75.00		83.3	1,435.3					0.0	223.8	83.3	1,659.1	0.0	0.0
76.08	Bot - Section 3	69.0	307.7					0.0	48.5	69.0	356.1	0.0	0.0
80.00		81.8	1,746.6					0.0	175.3	81.8	1,921.9	0.0	0.0
82.00	Top - Section 2	68.9	880.1					0.0	89.5	68.9	969.7	0.0	0.0
85.00		109.7	738.9					0.0	134.3	109.7	873.2	0.0	0.0
90.00		136.4	1,206.4					0.0	223.8	136.4	1,430.2	0.0	0.0
95.00		135.2	1,177.5					0.0	223.8	135.2	1,401.3	0.0	0.0
100.00		133.8	1,148.4					0.0	223.8	133.8	1,372.2	0.0	0.0
105.00		92.9	1,119.1					0.0	223.8	92.9	1,342.9	0.0	0.0
107.00	Appertunance(s)	65.7	440.7	811.8	0.0	0.0	6,376.1	0.0	89.5	877.5	6,906.3	0.0	0.0
110.00		104.2	651.5					0.0	95.3	104.2	746.7	0.0	0.0
115.00		103.3	1,059.8					0.0	158.8	103.3	1,218.6	0.0	0.0
118.00	Appertunance(s)	63.9	622.9	172.6	0.0	39.4	1,090.5	0.0	95.3	236.5	1,808.7	0.0	0.0
120.00	Appertunance(s)	25.4	409.7	807.5	0.0	690.0	6,042.0	0.0	23.6	833.0	6,475.3	0.0	0.0
Totals:										4,992.44	57,589.0	0.00	0.00

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:53 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

17 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	-57.59	-4.93	0.00	-408.72	0.00	408.72	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.088
5.00	-55.63	-4.82	0.00	-384.05	0.00	384.05	4,806.09	2,403.05	10,523.9	5,197.39	0.01	-0.02	0.085
10.00	-53.44	-4.70	0.00	-359.96	0.00	359.96	4,759.62	2,379.81	10,224.2	5,049.35	0.04	-0.04	0.083
15.00	-51.27	-4.59	0.00	-336.46	0.00	336.46	4,711.45	2,355.72	9,924.75	4,901.46	0.09	-0.06	0.080
20.00	-49.11	-4.47	0.00	-313.53	0.00	313.53	4,661.59	2,330.79	9,625.81	4,753.82	0.17	-0.08	0.076
25.00	-46.99	-4.36	0.00	-291.19	0.00	291.19	4,610.03	2,305.02	9,327.59	4,606.54	0.26	-0.10	0.073
30.00	-44.89	-4.24	0.00	-269.41	0.00	269.41	4,556.79	2,278.39	9,030.30	4,459.73	0.37	-0.12	0.070
35.00	-42.82	-4.15	0.00	-248.21	0.00	248.21	4,501.84	2,250.92	8,734.16	4,313.47	0.50	-0.13	0.067
37.25	-41.89	-4.09	0.00	-238.87	0.00	238.87	4,476.57	2,238.28	8,601.32	4,247.87	0.57	-0.14	0.066
40.00	-40.13	-4.01	0.00	-227.61	0.00	227.61	4,445.21	2,222.61	8,439.37	4,167.89	0.65	-0.15	0.064
44.00	-37.60	-3.94	0.00	-211.58	0.00	211.58	3,547.86	1,773.93	6,746.79	3,331.99	0.79	-0.17	0.074
45.00	-37.23	-3.86	0.00	-207.64	0.00	207.64	3,540.23	1,770.11	6,702.83	3,310.28	0.82	-0.17	0.073
50.00	-35.42	-3.74	0.00	-188.32	0.00	188.32	3,501.07	1,750.54	6,483.06	3,201.74	1.01	-0.19	0.069
55.00	-33.64	-3.60	0.00	-169.64	0.00	169.64	3,460.22	1,730.11	6,263.48	3,093.30	1.22	-0.21	0.065
60.00	-31.88	-3.47	0.00	-151.63	0.00	151.63	3,417.68	1,708.84	6,044.31	2,985.06	1.45	-0.23	0.060
65.00	-30.16	-3.33	0.00	-134.28	0.00	134.28	3,373.45	1,686.72	5,825.75	2,877.12	1.69	-0.24	0.056
70.00	-28.47	-3.20	0.00	-117.61	0.00	117.61	3,327.52	1,663.76	5,608.02	2,769.59	1.96	-0.26	0.051
75.00	-26.81	-3.11	0.00	-101.63	0.00	101.63	3,279.90	1,639.95	5,391.32	2,662.57	2.23	-0.27	0.046
76.08	-26.45	-3.04	0.00	-98.26	0.00	98.26	3,269.36	1,634.68	5,344.53	2,639.46	2.30	-0.28	0.045
80.00	-24.53	-2.95	0.00	-86.34	0.00	86.34	3,230.58	1,615.29	5,175.88	2,556.17	2.53	-0.29	0.041
82.00	-23.56	-2.88	0.00	-80.43	0.00	80.43	2,493.67	1,246.84	4,031.45	1,990.98	2.65	-0.29	0.050
85.00	-22.69	-2.77	0.00	-71.78	0.00	71.78	2,475.07	1,237.54	3,939.60	1,945.62	2.83	-0.30	0.046
90.00	-21.26	-2.63	0.00	-57.92	0.00	57.92	2,442.71	1,221.36	3,786.49	1,870.00	3.15	-0.31	0.040
95.00	-19.86	-2.49	0.00	-44.75	0.00	44.75	2,408.66	1,204.33	3,633.51	1,794.45	3.49	-0.32	0.033
100.00	-18.48	-2.36	0.00	-32.28	0.00	32.28	2,372.92	1,186.46	3,480.88	1,719.08	3.83	-0.33	0.027
105.00	-17.14	-2.26	0.00	-20.50	0.00	20.50	2,335.48	1,167.74	3,328.81	1,643.98	4.18	-0.34	0.020
107.00	-10.24	-1.34	0.00	-15.99	0.00	15.99	2,320.03	1,160.02	3,268.19	1,614.04	4.32	-0.34	0.014
110.00	-9.50	-1.23	0.00	-11.98	0.00	11.98	2,296.35	1,148.18	3,177.52	1,569.26	4.54	-0.34	0.012
115.00	-8.28	-1.12	0.00	-5.83	0.00	5.83	2,255.53	1,127.76	3,027.21	1,495.02	4.90	-0.34	0.008
118.00	-6.47	-0.87	0.00	-2.43	0.00	2.43	2,230.22	1,115.11	2,937.58	1,450.76	5.11	-0.35	0.005
120.00	0.00	-0.83	0.00	-0.69	0.00	0.69	2,213.01	1,106.51	2,878.09	1,421.38	5.26	-0.35	0.000

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:53 AM

Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

17 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		78.5	0.0					0.0	0.0	78.5	0.0	0.0	0.0
5.00		155.6	1,285.3					0.0	0.0	155.6	1,285.3	0.0	0.0
10.00		152.7	1,261.3					0.0	186.5	152.7	1,447.8	0.0	0.0
15.00		149.8	1,237.3					0.0	186.5	149.8	1,423.8	0.0	0.0
20.00		146.9	1,213.3					0.0	186.5	146.9	1,399.8	0.0	0.0
25.00		144.0	1,189.3					0.0	186.5	144.0	1,375.8	0.0	0.0
30.00		142.7	1,165.3					0.0	186.5	142.7	1,351.8	0.0	0.0
35.00		104.1	1,141.3					0.0	186.5	104.1	1,327.8	0.0	0.0
37.25	Bot - Section 2	73.5	505.8					0.0	83.9	73.5	589.7	0.0	0.0
40.00		100.9	1,144.3					0.0	102.6	100.9	1,246.9	0.0	0.0
44.00	Top - Section 1	75.1	1,640.4					0.0	149.2	75.1	1,789.6	0.0	0.0
45.00		91.0	188.9					0.0	37.3	91.0	226.2	0.0	0.0
50.00		152.3	932.2					0.0	186.5	152.3	1,118.7	0.0	0.0
55.00		153.1	911.7					0.0	186.5	153.1	1,098.2	0.0	0.0
60.00		153.4	891.1					0.0	186.5	153.4	1,077.6	0.0	0.0
65.00		153.3	870.6					0.0	186.5	153.3	1,057.1	0.0	0.0
70.00		152.9	850.1					0.0	186.5	152.9	1,036.6	0.0	0.0
75.00		92.8	829.5					0.0	186.5	92.8	1,016.0	0.0	0.0
76.08	Bot - Section 3	76.8	177.0					0.0	40.4	76.8	217.4	0.0	0.0
80.00		91.0	1,168.7					0.0	146.1	91.0	1,314.8	0.0	0.0
82.00	Top - Section 2	76.5	587.9					0.0	74.6	76.5	662.5	0.0	0.0
85.00		121.7	399.9					0.0	111.9	121.7	511.8	0.0	0.0
90.00		150.9	652.7					0.0	186.5	150.9	839.2	0.0	0.0
95.00		149.2	635.6					0.0	186.5	149.2	822.1	0.0	0.0
100.00		147.3	618.4					0.0	186.5	147.3	804.9	0.0	0.0
105.00		102.1	601.3					0.0	186.5	102.1	787.8	0.0	0.0
107.00	Appertunance(s)	72.0	235.7	891.4	0.0	0.0	2,858.0	0.0	74.6	963.5	3,168.3	0.0	0.0
110.00		114.0	348.4					0.0	79.4	114.0	427.8	0.0	0.0
115.00		112.8	567.0					0.0	132.3	112.8	699.3	0.0	0.0
118.00	Appertunance(s)	69.6	332.0	197.9	0.0	44.0	363.6	0.0	79.4	267.5	775.0	0.0	0.0
120.00	Appertunance(s)	27.7	217.9	867.4	0.0	835.0	2,666.0	0.0	19.7	895.1	2,903.6	0.0	0.0
Totals:										5,540.88	33,803.2	0.00	0.00

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

17 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	-33.80	-5.47	0.00	-443.84	0.00	443.84	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.090
5.00	-32.51	-5.32	0.00	-416.50	0.00	416.50	4,806.09	2,403.05	10,523.9	5,197.39	0.01	-0.02	0.087
10.00	-31.07	-5.18	0.00	-389.88	0.00	389.88	4,759.62	2,379.81	10,224.2	5,049.35	0.05	-0.04	0.084
15.00	-29.64	-5.04	0.00	-363.96	0.00	363.96	4,711.45	2,355.72	9,924.75	4,901.46	0.10	-0.06	0.081
20.00	-28.24	-4.90	0.00	-338.75	0.00	338.75	4,661.59	2,330.79	9,625.81	4,753.82	0.18	-0.08	0.077
25.00	-26.86	-4.77	0.00	-314.23	0.00	314.23	4,610.03	2,305.02	9,327.59	4,606.54	0.28	-0.11	0.074
30.00	-25.51	-4.63	0.00	-290.40	0.00	290.40	4,556.79	2,278.39	9,030.30	4,459.73	0.40	-0.13	0.071
35.00	-24.18	-4.53	0.00	-267.25	0.00	267.25	4,501.84	2,250.92	8,734.16	4,313.47	0.54	-0.15	0.067
37.25	-23.59	-4.46	0.00	-257.06	0.00	257.06	4,476.57	2,238.28	8,601.32	4,247.87	0.61	-0.15	0.066
40.00	-22.34	-4.36	0.00	-244.80	0.00	244.80	4,445.21	2,222.61	8,439.37	4,167.89	0.71	-0.17	0.064
44.00	-20.55	-4.28	0.00	-227.36	0.00	227.36	3,547.86	1,773.93	6,746.79	3,331.99	0.85	-0.18	0.074
45.00	-20.32	-4.19	0.00	-223.08	0.00	223.08	3,540.23	1,770.11	6,702.83	3,310.28	0.89	-0.18	0.073
50.00	-19.21	-4.05	0.00	-202.11	0.00	202.11	3,501.07	1,750.54	6,483.06	3,201.74	1.09	-0.20	0.069
55.00	-18.11	-3.89	0.00	-181.88	0.00	181.88	3,460.22	1,730.11	6,263.48	3,093.30	1.32	-0.22	0.064
60.00	-17.03	-3.74	0.00	-162.41	0.00	162.41	3,417.68	1,708.84	6,044.31	2,985.06	1.56	-0.24	0.059
65.00	-15.97	-3.59	0.00	-143.71	0.00	143.71	3,373.45	1,686.72	5,825.75	2,877.12	1.83	-0.26	0.055
70.00	-14.93	-3.43	0.00	-125.76	0.00	125.76	3,327.52	1,663.76	5,608.02	2,769.59	2.11	-0.28	0.050
75.00	-13.92	-3.34	0.00	-108.59	0.00	108.59	3,279.90	1,639.95	5,391.32	2,662.57	2.41	-0.29	0.045
76.08	-13.70	-3.26	0.00	-104.97	0.00	104.97	3,269.36	1,634.68	5,344.53	2,639.46	2.48	-0.30	0.044
80.00	-12.39	-3.17	0.00	-92.19	0.00	92.19	3,230.58	1,615.29	5,175.88	2,556.17	2.73	-0.31	0.040
82.00	-11.72	-3.09	0.00	-85.86	0.00	85.86	2,493.67	1,246.84	4,031.45	1,990.98	2.86	-0.31	0.048
85.00	-11.21	-2.97	0.00	-76.59	0.00	76.59	2,475.07	1,237.54	3,939.60	1,945.62	3.06	-0.32	0.044
90.00	-10.37	-2.81	0.00	-61.76	0.00	61.76	2,442.71	1,221.36	3,786.49	1,870.00	3.40	-0.34	0.037
95.00	-9.55	-2.66	0.00	-47.70	0.00	47.70	2,408.66	1,204.33	3,633.51	1,794.45	3.76	-0.35	0.031
100.00	-8.75	-2.51	0.00	-34.40	0.00	34.40	2,372.92	1,186.46	3,480.88	1,719.08	4.13	-0.36	0.024
105.00	-7.96	-2.40	0.00	-21.85	0.00	21.85	2,335.48	1,167.74	3,328.81	1,643.98	4.51	-0.36	0.017
107.00	-4.80	-1.42	0.00	-17.04	0.00	17.04	2,320.03	1,160.02	3,268.19	1,614.04	4.66	-0.36	0.013
110.00	-4.37	-1.30	0.00	-12.78	0.00	12.78	2,296.35	1,148.18	3,177.52	1,569.26	4.89	-0.37	0.010
115.00	-3.67	-1.19	0.00	-6.27	0.00	6.27	2,255.53	1,127.76	3,027.21	1,495.02	5.27	-0.37	0.006
118.00	-2.90	-0.91	0.00	-2.66	0.00	2.66	2,230.22	1,115.11	2,937.58	1,450.76	5.51	-0.37	0.003
120.00	0.00	-0.90	0.00	-0.84	0.00	0.84	2,213.01	1,106.51	2,878.09	1,421.38	5.66	-0.37	0.001

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.05
Upper Limit C_s	0.05
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	1.33
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.42
Total Unfactored Dead Load:	33.80 k
Seismic Base Shear (E):	2.18 k

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

Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
30	119.00	238	207	0.016	34	294
29	116.50	411	347	0.026	57	510
28	112.50	699	562	0.042	92	867
27	108.50	428	327	0.025	54	530
26	106.00	310	229	0.017	38	385
25	102.50	788	555	0.042	91	976
24	97.50	805	528	0.040	87	998
23	92.50	822	501	0.038	82	1,019
22	87.50	839	473	0.036	77	1,040
21	83.50	512	270	0.020	44	634
20	81.00	662	334	0.025	55	821
19	78.04	1,315	630	0.047	103	1,629
18	75.54	217	99	0.007	16	269
17	72.50	1,016	438	0.033	72	1,259
16	67.50	1,037	404	0.030	66	1,285
15	62.50	1,057	370	0.028	61	1,310
14	57.50	1,078	335	0.025	55	1,335
13	52.50	1,098	300	0.023	49	1,361
12	47.50	1,119	265	0.020	43	1,386
11	44.50	226	49	0.004	8	280
10	42.00	1,790	356	0.027	58	2,218
9	38.63	1,247	221	0.017	36	1,545
8	36.13	590	95	0.007	16	731

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1/29/2016 10:13:55 AM

Customer: AT&T Mobility

7	32.50	1,328	184	0.014	30	1,645
6	27.50	1,352	148	0.011	24	1,675
5	22.50	1,376	113	0.009	19	1,705
4	17.50	1,400	81	0.006	13	1,735
3	12.50	1,424	51	0.004	8	1,764
2	7.50	1,448	25	0.002	4	1,794
1	2.50	1,285	5	0.000	1	1,593
Powerwave LGP21401	120.00	85	75	0.006	12	105
Ericsson RRUS-32	120.00	231	203	0.015	33	286
KMW AM-X-CD-17-65-00	120.00	92	81	0.006	13	115
Powerwave 7770.00	120.00	105	92	0.007	15	130
CCI HPA-65R-BUU-H6	120.00	153	135	0.010	22	190
Flat Platform w/ Han	120.00	2,000	1,762	0.132	289	2,479
Raycap DC6-48-60-18-	118.00	64	55	0.004	9	79
Ericsson RRUS 11 (Ba	118.00	300	258	0.019	42	372
Ericsson KRY 112 144	107.00	33	25	0.002	4	41
Ericsson RRUS 11 B12	107.00	152	114	0.009	19	188
Ericsson AIR 21, 1.3	107.00	275	206	0.015	34	340
Ericsson AIR 21, 1.3	107.00	244	183	0.014	30	303
Andrew LNX-6515DS-VT	107.00	154	115	0.009	19	191
Flat Platform w/ Han	107.00	2,000	1,498	0.113	245	2,479
		33,803	13,304	1.000	2,181	41,891

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
30	119.00	238	207	0.016	34	204
29	116.50	411	347	0.026	57	354
28	112.50	699	562	0.042	92	602
27	108.50	428	327	0.025	54	368
26	106.00	310	229	0.017	38	267
25	102.50	788	555	0.042	91	678
24	97.50	805	528	0.040	87	693
23	92.50	822	501	0.038	82	708
22	87.50	839	473	0.036	77	722
21	83.50	512	270	0.020	44	441
20	81.00	662	334	0.025	55	570
19	78.04	1,315	630	0.047	103	1,132
18	75.54	217	99	0.007	16	187
17	72.50	1,016	438	0.033	72	875
16	67.50	1,037	404	0.030	66	892
15	62.50	1,057	370	0.028	61	910
14	57.50	1,078	335	0.025	55	928
13	52.50	1,098	300	0.023	49	945
12	47.50	1,119	265	0.020	43	963
11	44.50	226	49	0.004	8	195
10	42.00	1,790	356	0.027	58	1,540
9	38.63	1,247	221	0.017	36	1,073
8	36.13	590	95	0.007	16	508
7	32.50	1,328	184	0.014	30	1,143
6	27.50	1,352	148	0.011	24	1,164
5	22.50	1,376	113	0.009	19	1,184
4	17.50	1,400	81	0.006	13	1,205
3	12.50	1,424	51	0.004	8	1,226
2	7.50	1,448	25	0.002	4	1,246
1	2.50	1,285	5	0.000	1	1,106
Powerwave LGP21401	120.00	85	75	0.006	12	73
Ericsson RRUS-32	120.00	231	203	0.015	33	199
KMW AM-X-CD-17-65-00	120.00	92	81	0.006	13	80

Site Number: 370629

Code: ANSI/TIA-222-G

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Engineering Number: 64759321

1/29/2016 10:13:55 AM

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Powerwave 7770.00	120.00	105	92	0.007	15	90
CCI HPA-65R-BUU-H6	120.00	153	135	0.010	22	132
Flat Platform w/ Han	120.00	2,000	1,762	0.132	289	1,721
Raycap DC6-48-60-18-	118.00	64	55	0.004	9	55
Ericsson RRUS 11 (Ba	118.00	300	258	0.019	42	258
Ericsson KRY 112 144	107.00	33	25	0.002	4	28
Ericsson RRUS 11 B12	107.00	152	114	0.009	19	131
Ericsson AIR 21, 1.3	107.00	275	206	0.015	34	236
Ericsson AIR 21, 1.3	107.00	244	183	0.014	30	210
Andrew LNX-6515DS-VT	107.00	154	115	0.009	19	132
Flat Platform w/ Han	107.00	2,000	1,498	0.113	245	1,721
		33,803	13,304	1.000	2,181	29,096

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

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

Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.30	-2.18	0.00	-199.08	0.00	199.08	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.046
5.00	-38.50	-2.19	0.00	-188.16	0.00	188.16	4,806.09	2,403.05	10,523.9	5,197.39	0.01	-0.01	0.044
10.00	-36.74	-2.18	0.00	-177.24	0.00	177.24	4,759.62	2,379.81	10,224.2	5,049.35	0.02	-0.02	0.043
15.00	-35.00	-2.17	0.00	-166.32	0.00	166.32	4,711.45	2,355.72	9,924.75	4,901.46	0.05	-0.03	0.041
20.00	-33.30	-2.16	0.00	-155.45	0.00	155.45	4,661.59	2,330.79	9,625.81	4,753.82	0.08	-0.04	0.040
25.00	-31.62	-2.14	0.00	-144.65	0.00	144.65	4,610.03	2,305.02	9,327.59	4,606.54	0.13	-0.05	0.038
30.00	-29.98	-2.11	0.00	-133.95	0.00	133.95	4,556.79	2,278.39	9,030.30	4,459.73	0.18	-0.06	0.037
35.00	-29.25	-2.10	0.00	-123.38	0.00	123.38	4,501.84	2,250.92	8,734.16	4,313.47	0.25	-0.07	0.035
37.25	-27.70	-2.06	0.00	-118.66	0.00	118.66	4,476.57	2,238.28	8,601.32	4,247.87	0.28	-0.07	0.034
40.00	-25.48	-2.01	0.00	-112.98	0.00	112.98	4,445.21	2,222.61	8,439.37	4,167.89	0.32	-0.08	0.033
44.00	-25.20	-2.00	0.00	-104.96	0.00	104.96	3,547.86	1,773.93	6,746.79	3,331.99	0.39	-0.08	0.039
45.00	-23.82	-1.96	0.00	-102.96	0.00	102.96	3,540.23	1,770.11	6,702.83	3,310.28	0.41	-0.08	0.038
50.00	-22.45	-1.91	0.00	-93.18	0.00	93.18	3,501.07	1,750.54	6,483.06	3,201.74	0.50	-0.09	0.036
55.00	-21.12	-1.85	0.00	-83.63	0.00	83.63	3,460.22	1,730.11	6,263.48	3,093.30	0.60	-0.10	0.033
60.00	-19.81	-1.79	0.00	-74.36	0.00	74.36	3,417.68	1,708.84	6,044.31	2,985.06	0.71	-0.11	0.031
65.00	-18.52	-1.73	0.00	-65.39	0.00	65.39	3,373.45	1,686.72	5,825.75	2,877.12	0.84	-0.12	0.028
70.00	-17.26	-1.66	0.00	-56.75	0.00	56.75	3,327.52	1,663.76	5,608.02	2,769.59	0.97	-0.13	0.026
75.00	-17.00	-1.64	0.00	-48.47	0.00	48.47	3,279.90	1,639.95	5,391.32	2,662.57	1.10	-0.13	0.023
76.08	-15.37	-1.53	0.00	-46.69	0.00	46.69	3,269.36	1,634.68	5,344.53	2,639.46	1.13	-0.14	0.022
80.00	-14.55	-1.48	0.00	-40.68	0.00	40.68	3,230.58	1,615.29	5,175.88	2,556.17	1.25	-0.14	0.020
82.00	-13.91	-1.43	0.00	-37.72	0.00	37.72	2,493.67	1,246.84	4,031.45	1,990.98	1.31	-0.14	0.025
85.00	-12.87	-1.35	0.00	-33.42	0.00	33.42	2,475.07	1,237.54	3,939.60	1,945.62	1.40	-0.15	0.022
90.00	-11.85	-1.27	0.00	-26.65	0.00	26.65	2,442.71	1,221.36	3,786.49	1,870.00	1.55	-0.15	0.019
95.00	-10.85	-1.18	0.00	-20.30	0.00	20.30	2,408.66	1,204.33	3,633.51	1,794.45	1.72	-0.16	0.016
100.00	-9.88	-1.09	0.00	-14.39	0.00	14.39	2,372.92	1,186.46	3,480.88	1,719.08	1.88	-0.16	0.013
105.00	-9.49	-1.05	0.00	-8.94	0.00	8.94	2,335.48	1,167.74	3,328.81	1,643.98	2.06	-0.16	0.010
107.00	-5.42	-0.63	0.00	-6.84	0.00	6.84	2,320.03	1,160.02	3,268.19	1,614.04	2.12	-0.17	0.007
110.00	-4.56	-0.54	0.00	-4.94	0.00	4.94	2,296.35	1,148.18	3,177.52	1,569.26	2.23	-0.17	0.005
115.00	-4.05	-0.48	0.00	-2.23	0.00	2.23	2,255.53	1,127.76	3,027.21	1,495.02	2.40	-0.17	0.003
118.00	-3.30	-0.39	0.00	-0.79	0.00	0.79	2,230.22	1,115.11	2,937.58	1,450.76	2.51	-0.17	0.002
120.00	0.00	-0.38	0.00	0.00	0.00	0.00	2,213.01	1,106.51	2,878.09	1,421.38	2.58	-0.17	0.000

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-27.99	-2.18	0.00	-198.02	0.00	198.02	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.043
5.00	-26.74	-2.18	0.00	-187.11	0.00	187.11	4,806.09	2,403.05	10,523.9	5,197.39	0.01	-0.01	0.042
10.00	-25.52	-2.18	0.00	-176.20	0.00	176.20	4,759.62	2,379.81	10,224.2	5,049.35	0.02	-0.02	0.040
15.00	-24.31	-2.17	0.00	-165.31	0.00	165.31	4,711.45	2,355.72	9,924.75	4,901.46	0.05	-0.03	0.039
20.00	-23.13	-2.15	0.00	-154.47	0.00	154.47	4,661.59	2,330.79	9,625.81	4,753.82	0.08	-0.04	0.037
25.00	-21.96	-2.13	0.00	-143.71	0.00	143.71	4,610.03	2,305.02	9,327.59	4,606.54	0.13	-0.05	0.036
30.00	-20.82	-2.10	0.00	-133.05	0.00	133.05	4,556.79	2,278.39	9,030.30	4,459.73	0.18	-0.06	0.034
35.00	-20.31	-2.09	0.00	-122.54	0.00	122.54	4,501.84	2,250.92	8,734.16	4,313.47	0.25	-0.07	0.033
37.25	-19.24	-2.05	0.00	-117.84	0.00	117.84	4,476.57	2,238.28	8,601.32	4,247.87	0.28	-0.07	0.032
40.00	-17.70	-2.00	0.00	-112.19	0.00	112.19	4,445.21	2,222.61	8,439.37	4,167.89	0.32	-0.08	0.031
44.00	-17.50	-1.99	0.00	-104.21	0.00	104.21	3,547.86	1,773.93	6,746.79	3,331.99	0.39	-0.08	0.036
45.00	-16.54	-1.94	0.00	-102.22	0.00	102.22	3,540.23	1,770.11	6,702.83	3,310.28	0.40	-0.08	0.036
50.00	-15.60	-1.90	0.00	-92.50	0.00	92.50	3,501.07	1,750.54	6,483.06	3,201.74	0.50	-0.09	0.033
55.00	-14.67	-1.84	0.00	-83.01	0.00	83.01	3,460.22	1,730.11	6,263.48	3,093.30	0.60	-0.10	0.031
60.00	-13.76	-1.78	0.00	-73.80	0.00	73.80	3,417.68	1,708.84	6,044.31	2,985.06	0.71	-0.11	0.029
65.00	-12.86	-1.72	0.00	-64.89	0.00	64.89	3,373.45	1,686.72	5,825.75	2,877.12	0.83	-0.12	0.026
70.00	-11.99	-1.64	0.00	-56.31	0.00	56.31	3,327.52	1,663.76	5,608.02	2,769.59	0.96	-0.13	0.024
75.00	-11.80	-1.63	0.00	-48.09	0.00	48.09	3,279.90	1,639.95	5,391.32	2,662.57	1.10	-0.13	0.022
76.08	-10.67	-1.52	0.00	-46.33	0.00	46.33	3,269.36	1,634.68	5,344.53	2,639.46	1.13	-0.13	0.021
80.00	-10.10	-1.47	0.00	-40.36	0.00	40.36	3,230.58	1,615.29	5,175.88	2,556.17	1.24	-0.14	0.019
82.00	-9.66	-1.42	0.00	-37.43	0.00	37.43	2,493.67	1,246.84	4,031.45	1,990.98	1.30	-0.14	0.023
85.00	-8.94	-1.34	0.00	-33.16	0.00	33.16	2,475.07	1,237.54	3,939.60	1,945.62	1.39	-0.15	0.021
90.00	-8.23	-1.26	0.00	-26.44	0.00	26.44	2,442.71	1,221.36	3,786.49	1,870.00	1.54	-0.15	0.018
95.00	-7.54	-1.17	0.00	-20.14	0.00	20.14	2,408.66	1,204.33	3,633.51	1,794.45	1.71	-0.16	0.014
100.00	-6.86	-1.08	0.00	-14.27	0.00	14.27	2,372.92	1,186.46	3,480.88	1,719.08	1.87	-0.16	0.011
105.00	-6.59	-1.04	0.00	-8.87	0.00	8.87	2,335.48	1,167.74	3,328.81	1,643.98	2.04	-0.16	0.008
107.00	-3.77	-0.63	0.00	-6.79	0.00	6.79	2,320.03	1,160.02	3,268.19	1,614.04	2.11	-0.16	0.006
110.00	-3.16	-0.54	0.00	-4.90	0.00	4.90	2,296.35	1,148.18	3,177.52	1,569.26	2.21	-0.16	0.004
115.00	-2.81	-0.48	0.00	-2.22	0.00	2.22	2,255.53	1,127.76	3,027.21	1,495.02	2.39	-0.17	0.003
118.00	-2.29	-0.39	0.00	-0.78	0.00	0.78	2,230.22	1,115.11	2,937.58	1,450.76	2.49	-0.17	0.002
120.00	0.00	-0.38	0.00	0.00	0.00	0.00	2,213.01	1,106.51	2,878.09	1,421.38	2.56	-0.17	0.000

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.33
Redundancy Factor (ρ):	1.30

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

Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
30	119.00	238	1.859	1.819	1.081	0.370	76	294
29	116.50	411	1.781	1.455	0.946	0.322	115	510
28	112.50	699	1.661	0.980	0.756	0.252	153	867
27	108.50	428	1.545	0.618	0.598	0.192	71	530
26	106.00	310	1.475	0.441	0.513	0.158	43	385
25	102.50	788	1.379	0.245	0.410	0.117	80	976
24	97.50	805	1.248	0.054	0.292	0.070	49	998
23	92.50	822	1.123	-0.056	0.201	0.035	25	1,019
22	87.50	839	1.005	-0.109	0.134	0.013	10	1,040
21	83.50	512	0.915	-0.121	0.093	0.004	2	634
20	81.00	662	0.861	-0.120	0.073	0.002	1	821
19	78.04	1,315	0.799	-0.112	0.054	0.001	2	1,629
18	75.54	217	0.749	-0.101	0.040	0.003	1	269
17	72.50	1,016	0.690	-0.084	0.028	0.007	6	1,259
16	67.50	1,037	0.598	-0.052	0.014	0.017	15	1,285
15	62.50	1,057	0.513	-0.021	0.008	0.027	24	1,310
14	57.50	1,078	0.434	0.007	0.006	0.035	33	1,335
13	52.50	1,098	0.362	0.030	0.008	0.041	39	1,361
12	47.50	1,119	0.296	0.046	0.013	0.044	43	1,386
11	44.50	226	0.260	0.054	0.016	0.045	9	280
10	42.00	1,790	0.232	0.058	0.019	0.045	69	2,218
9	38.63	1,247	0.196	0.063	0.024	0.044	47	1,545
8	36.13	590	0.171	0.066	0.027	0.043	22	731
7	32.50	1,328	0.139	0.069	0.032	0.042	48	1,645
6	27.50	1,352	0.099	0.071	0.037	0.039	46	1,675
5	22.50	1,376	0.066	0.072	0.041	0.037	44	1,705
4	17.50	1,400	0.040	0.070	0.042	0.035	42	1,735
3	12.50	1,424	0.021	0.064	0.038	0.031	38	1,764
2	7.50	1,448	0.007	0.050	0.029	0.024	30	1,794
1	2.50	1,285	0.001	0.022	0.012	0.011	12	1,593
Powerwave LGP21401	120.00	85	1.890	1.980	1.140	0.390	29	105
Ericsson RRUS-32	120.00	231	1.890	1.980	1.140	0.390	78	286
KMW AM-X-CD-17-65-00	120.00	92	1.890	1.980	1.140	0.390	31	115
Powerwave 7770.00	120.00	105	1.890	1.980	1.140	0.390	35	130

Site Number: 370629

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Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

CCI HPA-65R-BUU-H6	120.00	153	1.890	1.980	1.140	0.390	52	190
Flat Platform w/ Han	120.00	2,000	1.890	1.980	1.140	0.390	676	2,479
Raycap DC6-48-60-18-	118.00	64	1.828	1.667	1.025	0.350	19	79
Ericsson RRUS 11 (Ba	118.00	300	1.828	1.667	1.025	0.350	91	372
Ericsson KRY 112 144	107.00	33	1.503	0.508	0.546	0.171	5	41
Ericsson RRUS 11 B12	107.00	152	1.503	0.508	0.546	0.171	23	188
Ericsson AIR 21, 1.3	107.00	275	1.503	0.508	0.546	0.171	41	340
Ericsson AIR 21, 1.3	107.00	244	1.503	0.508	0.546	0.171	36	303
Andrew LNX-6515DS-VT	107.00	154	1.503	0.508	0.546	0.171	23	191
Flat Platform w/ Han	107.00	2,000	1.503	0.508	0.546	0.171	296	2,479
		33,803	44.535	23.839	17.752	6.172	2,630	41,891

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)
30	119.00	238	1.859	1.819	1.081	0.370	76	204
29	116.50	411	1.781	1.455	0.946	0.322	115	354
28	112.50	699	1.661	0.980	0.756	0.252	153	602
27	108.50	428	1.545	0.618	0.598	0.192	71	368
26	106.00	310	1.475	0.441	0.513	0.158	43	267
25	102.50	788	1.379	0.245	0.410	0.117	80	678
24	97.50	805	1.248	0.054	0.292	0.070	49	693
23	92.50	822	1.123	-0.056	0.201	0.035	25	708
22	87.50	839	1.005	-0.109	0.134	0.013	10	722
21	83.50	512	0.915	-0.121	0.093	0.004	2	441
20	81.00	662	0.861	-0.120	0.073	0.002	1	570
19	78.04	1,315	0.799	-0.112	0.054	0.001	2	1,132
18	75.54	217	0.749	-0.101	0.040	0.003	1	187
17	72.50	1,016	0.690	-0.084	0.028	0.007	6	875
16	67.50	1,037	0.598	-0.052	0.014	0.017	15	892
15	62.50	1,057	0.513	-0.021	0.008	0.027	24	910
14	57.50	1,078	0.434	0.007	0.006	0.035	33	928
13	52.50	1,098	0.362	0.030	0.008	0.041	39	945
12	47.50	1,119	0.296	0.046	0.013	0.044	43	963
11	44.50	226	0.260	0.054	0.016	0.045	9	195
10	42.00	1,790	0.232	0.058	0.019	0.045	69	1,540
9	38.63	1,247	0.196	0.063	0.024	0.044	47	1,073
8	36.13	590	0.171	0.066	0.027	0.043	22	508
7	32.50	1,328	0.139	0.069	0.032	0.042	48	1,143
6	27.50	1,352	0.099	0.071	0.037	0.039	46	1,164
5	22.50	1,376	0.066	0.072	0.041	0.037	44	1,184
4	17.50	1,400	0.040	0.070	0.042	0.035	42	1,205
3	12.50	1,424	0.021	0.064	0.038	0.031	38	1,226
2	7.50	1,448	0.007	0.050	0.029	0.024	30	1,246
1	2.50	1,285	0.001	0.022	0.012	0.011	12	1,106
Powerwave LGP21401	120.00	85	1.890	1.980	1.140	0.390	29	73
Ericsson RRUS-32	120.00	231	1.890	1.980	1.140	0.390	78	199
KMW AM-X-CD-17-65-00	120.00	92	1.890	1.980	1.140	0.390	31	80
Powerwave 7770.00	120.00	105	1.890	1.980	1.140	0.390	35	90
CCI HPA-65R-BUU-H6	120.00	153	1.890	1.980	1.140	0.390	52	132
Flat Platform w/ Han	120.00	2,000	1.890	1.980	1.140	0.390	676	1,721
Raycap DC6-48-60-18-	118.00	64	1.828	1.667	1.025	0.350	19	55
Ericsson RRUS 11 (Ba	118.00	300	1.828	1.667	1.025	0.350	91	258
Ericsson KRY 112 144	107.00	33	1.503	0.508	0.546	0.171	5	28
Ericsson RRUS 11 B12	107.00	152	1.503	0.508	0.546	0.171	23	131
Ericsson AIR 21, 1.3	107.00	275	1.503	0.508	0.546	0.171	41	236
Ericsson AIR 21, 1.3	107.00	244	1.503	0.508	0.546	0.171	36	210
Andrew LNX-6515DS-VT	107.00	154	1.503	0.508	0.546	0.171	23	132

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

Flat Platform w/ Han	107.00	2,000	1.503	0.508	0.546	0.171	296	1,721
		33,803	44.535	23.839	17.752	6.172	2,630	29,096

Site Number: 370629

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

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

Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-40.30	-2.62	0.00	-257.20	0.00	257.20	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.056
5.00	-38.50	-2.60	0.00	-244.09	0.00	244.09	4,806.09	2,403.05	10,523.9	5,197.39	0.01	-0.01	0.055
10.00	-36.74	-2.57	0.00	-231.09	0.00	231.09	4,759.62	2,379.81	10,224.2	5,049.35	0.03	-0.03	0.053
15.00	-35.00	-2.53	0.00	-218.25	0.00	218.25	4,711.45	2,355.72	9,924.75	4,901.46	0.06	-0.04	0.052
20.00	-33.30	-2.49	0.00	-205.59	0.00	205.59	4,661.59	2,330.79	9,625.81	4,753.82	0.11	-0.05	0.050
25.00	-31.62	-2.45	0.00	-193.11	0.00	193.11	4,610.03	2,305.02	9,327.59	4,606.54	0.17	-0.06	0.049
30.00	-29.98	-2.41	0.00	-180.85	0.00	180.85	4,556.79	2,278.39	9,030.30	4,459.73	0.24	-0.08	0.047
35.00	-29.24	-2.39	0.00	-168.79	0.00	168.79	4,501.84	2,250.92	8,734.16	4,313.47	0.32	-0.09	0.046
37.25	-27.70	-2.35	0.00	-163.41	0.00	163.41	4,476.57	2,238.28	8,601.32	4,247.87	0.37	-0.09	0.045
40.00	-25.48	-2.28	0.00	-156.96	0.00	156.96	4,445.21	2,222.61	8,439.37	4,167.89	0.42	-0.10	0.043
44.00	-25.20	-2.27	0.00	-147.85	0.00	147.85	3,547.86	1,773.93	6,746.79	3,331.99	0.51	-0.11	0.051
45.00	-23.81	-2.23	0.00	-145.58	0.00	145.58	3,540.23	1,770.11	6,702.83	3,310.28	0.53	-0.11	0.051
50.00	-22.45	-2.19	0.00	-134.45	0.00	134.45	3,501.07	1,750.54	6,483.06	3,201.74	0.66	-0.13	0.048
55.00	-21.12	-2.16	0.00	-123.49	0.00	123.49	3,460.22	1,730.11	6,263.48	3,093.30	0.80	-0.14	0.046
60.00	-19.81	-2.14	0.00	-112.69	0.00	112.69	3,417.68	1,708.84	6,044.31	2,985.06	0.95	-0.15	0.044
65.00	-18.52	-2.12	0.00	-102.01	0.00	102.01	3,373.45	1,686.72	5,825.75	2,877.12	1.12	-0.16	0.041
70.00	-17.26	-2.12	0.00	-91.40	0.00	91.40	3,327.52	1,663.76	5,608.02	2,769.59	1.30	-0.18	0.038
75.00	-16.99	-2.12	0.00	-80.82	0.00	80.82	3,279.90	1,639.95	5,391.32	2,662.57	1.49	-0.19	0.036
76.08	-15.36	-2.11	0.00	-78.53	0.00	78.53	3,269.36	1,634.68	5,344.53	2,639.46	1.53	-0.19	0.034
80.00	-14.54	-2.11	0.00	-70.27	0.00	70.27	3,230.58	1,615.29	5,175.88	2,556.17	1.69	-0.20	0.032
82.00	-13.91	-2.11	0.00	-66.05	0.00	66.05	2,493.67	1,246.84	4,031.45	1,990.98	1.78	-0.20	0.039
85.00	-12.87	-2.09	0.00	-59.73	0.00	59.73	2,475.07	1,237.54	3,939.60	1,945.62	1.91	-0.21	0.036
90.00	-11.85	-2.07	0.00	-49.26	0.00	49.26	2,442.71	1,221.36	3,786.49	1,870.00	2.13	-0.22	0.031
95.00	-10.85	-2.02	0.00	-38.93	0.00	38.93	2,408.66	1,204.33	3,633.51	1,794.45	2.37	-0.23	0.026
100.00	-9.87	-1.93	0.00	-28.84	0.00	28.84	2,372.92	1,186.46	3,480.88	1,719.08	2.61	-0.24	0.021
105.00	-9.49	-1.89	0.00	-19.17	0.00	19.17	2,335.48	1,167.74	3,328.81	1,643.98	2.87	-0.24	0.016
107.00	-5.42	-1.38	0.00	-15.39	0.00	15.39	2,320.03	1,160.02	3,268.19	1,614.04	2.97	-0.25	0.012
110.00	-4.55	-1.22	0.00	-11.26	0.00	11.26	2,296.35	1,148.18	3,177.52	1,569.26	3.12	-0.25	0.009
115.00	-4.04	-1.11	0.00	-5.15	0.00	5.15	2,255.53	1,127.76	3,027.21	1,495.02	3.38	-0.25	0.005
118.00	-3.30	-0.92	0.00	-1.83	0.00	1.83	2,230.22	1,115.11	2,937.58	1,450.76	3.54	-0.25	0.003
120.00	0.00	-0.90	0.00	0.00	0.00	0.00	2,213.01	1,106.51	2,878.09	1,421.38	3.65	-0.25	0.000

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

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

Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-27.99	-2.62	0.00	-255.73	0.00	255.73	4,850.87	2,425.44	10,823.8	5,345.47	0.00	0.00	0.054
5.00	-26.74	-2.60	0.00	-242.63	0.00	242.63	4,806.09	2,403.05	10,523.9	5,197.39	0.01	-0.01	0.052
10.00	-25.52	-2.56	0.00	-229.66	0.00	229.66	4,759.62	2,379.81	10,224.2	5,049.35	0.03	-0.02	0.051
15.00	-24.31	-2.52	0.00	-216.85	0.00	216.85	4,711.45	2,355.72	9,924.75	4,901.46	0.06	-0.04	0.049
20.00	-23.13	-2.48	0.00	-204.23	0.00	204.23	4,661.59	2,330.79	9,625.81	4,753.82	0.11	-0.05	0.048
25.00	-21.96	-2.44	0.00	-191.80	0.00	191.80	4,610.03	2,305.02	9,327.59	4,606.54	0.16	-0.06	0.046
30.00	-20.82	-2.40	0.00	-179.59	0.00	179.59	4,556.79	2,278.39	9,030.30	4,459.73	0.24	-0.07	0.045
35.00	-20.31	-2.38	0.00	-167.61	0.00	167.61	4,501.84	2,250.92	8,734.16	4,313.47	0.32	-0.09	0.043
37.25	-19.24	-2.33	0.00	-162.26	0.00	162.26	4,476.57	2,238.28	8,601.32	4,247.87	0.36	-0.09	0.042
40.00	-17.70	-2.26	0.00	-155.85	0.00	155.85	4,445.21	2,222.61	8,439.37	4,167.89	0.42	-0.10	0.041
44.00	-17.50	-2.25	0.00	-146.80	0.00	146.80	3,547.86	1,773.93	6,746.79	3,331.99	0.51	-0.11	0.049
45.00	-16.54	-2.21	0.00	-144.54	0.00	144.54	3,540.23	1,770.11	6,702.83	3,310.28	0.53	-0.11	0.048
50.00	-15.59	-2.17	0.00	-133.48	0.00	133.48	3,501.07	1,750.54	6,483.06	3,201.74	0.65	-0.13	0.046
55.00	-14.67	-2.14	0.00	-122.61	0.00	122.61	3,460.22	1,730.11	6,263.48	3,093.30	0.79	-0.14	0.044
60.00	-13.76	-2.12	0.00	-111.89	0.00	111.89	3,417.68	1,708.84	6,044.31	2,985.06	0.94	-0.15	0.042
65.00	-12.86	-2.10	0.00	-101.29	0.00	101.29	3,373.45	1,686.72	5,825.75	2,877.12	1.11	-0.16	0.039
70.00	-11.99	-2.10	0.00	-90.77	0.00	90.77	3,327.52	1,663.76	5,608.02	2,769.59	1.29	-0.18	0.036
75.00	-11.80	-2.10	0.00	-80.28	0.00	80.28	3,279.90	1,639.95	5,391.32	2,662.57	1.48	-0.19	0.034
76.08	-10.67	-2.09	0.00	-78.01	0.00	78.01	3,269.36	1,634.68	5,344.53	2,639.46	1.52	-0.19	0.033
80.00	-10.10	-2.09	0.00	-69.80	0.00	69.80	3,230.58	1,615.29	5,175.88	2,556.17	1.68	-0.20	0.030
82.00	-9.66	-2.09	0.00	-65.62	0.00	65.62	2,493.67	1,246.84	4,031.45	1,990.98	1.76	-0.20	0.037
85.00	-8.93	-2.08	0.00	-59.35	0.00	59.35	2,475.07	1,237.54	3,939.60	1,945.62	1.89	-0.21	0.034
90.00	-8.23	-2.05	0.00	-48.95	0.00	48.95	2,442.71	1,221.36	3,786.49	1,870.00	2.12	-0.22	0.030
95.00	-7.53	-2.00	0.00	-38.69	0.00	38.69	2,408.66	1,204.33	3,633.51	1,794.45	2.35	-0.23	0.025
100.00	-6.86	-1.92	0.00	-28.68	0.00	28.68	2,372.92	1,186.46	3,480.88	1,719.08	2.60	-0.24	0.020
105.00	-6.59	-1.88	0.00	-19.07	0.00	19.07	2,335.48	1,167.74	3,328.81	1,643.98	2.85	-0.24	0.014
107.00	-3.76	-1.37	0.00	-15.32	0.00	15.32	2,320.03	1,160.02	3,268.19	1,614.04	2.95	-0.24	0.011
110.00	-3.16	-1.22	0.00	-11.20	0.00	11.20	2,296.35	1,148.18	3,177.52	1,569.26	3.10	-0.25	0.009
115.00	-2.81	-1.10	0.00	-5.12	0.00	5.12	2,255.53	1,127.76	3,027.21	1,495.02	3.36	-0.25	0.005
118.00	-2.29	-0.91	0.00	-1.82	0.00	1.82	2,230.22	1,115.11	2,937.58	1,450.76	3.52	-0.25	0.002
120.00	0.00	-0.90	0.00	0.00	0.00	0.00	2,213.01	1,106.51	2,878.09	1,421.38	3.62	-0.25	0.000

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	29.42	0.00	40.53	0.00	0.00	2393.80	0.00	0.46
0.9D + 1.6W	29.41	0.00	30.39	0.00	0.00	2383.17	0.00	0.45
1.2D + 1.0Di + 1.0Wi	4.93	0.00	57.59	0.00	0.00	408.72	0.00	0.09
(1.2 + 0.2Sds) * DL + E ELFM	2.18	0.00	40.30	0.00	0.00	199.08	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.62	0.00	40.30	0.00	0.00	257.20	0.00	0.06
(0.9 - 0.2Sds) * DL + E ELFM	2.18	0.00	27.99	0.00	0.00	198.02	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.62	0.00	27.99	0.00	0.00	255.73	0.00	0.05
1.0D + 1.0W	5.47	0.00	33.80	0.00	0.00	443.84	0.00	0.09

Site Number: 370629

Code: ANSI/TIA-222-G

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Site Name: Northhaven I, CT

Engineering Number: 64759321

1/29/2016 10:13:55 AM

Customer: AT&T Mobility

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
4,149.00	39.20	37.10	2,393.80	57.59	29.42	42.74

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
60.0	2.750	68.920	Polygon	12	0.00	41.181	1054.77	4204.33	0.25

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression			Tension		
									Force (kip)	Allow (kip)	Ratio	Force (kip)	Allow (kip)	Ratio
62.92	20	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	94.19	260.00	0.37	88.43	260.00	0.35

Site Number: **370629**
 Site Name: **Northhaven I**
 Job Number: **64759321**
 Engineer: **CRF**
 Date: **1/29/2016**

Base Plate and Bolt Analysis

Moment: **2393.8 k-ft**
 Shear/Leg: **29.4 k**
 Compression/Leg: **57.6 k**

TIA-222 Code Revision (F/G): **G**
 Anchor Bolt Arrangement: **Round**
 Monopole Shaft Diameter (Across Flats): **54.5 in**
 Lower Monopole Thickness: **0.438 in**
 # of Sides of Pole: **12**
 Monopole Shaft Yield Strength: **65 ksi**
 Baseplate Diameter / Length: **68.92**
 Base Plate Thickness: **2.75 in**
 Base Plate Yield Strength: **60 ksi**
 Baseplate Detail Type: **D**
 Include Plate Thickness Beyond Bolt Circle: **Y**
 Stress Increase: **1.00**
 Fillet Weld Size: **0.375 in**
 Weld Type (CJP or F/F): **CJP**
 Weld Strength: **70 ksi**

Anchor Bolts

Anchor Bolt Yield Strength: **75 ksi**
 Anchor Bolt Ultimate Strength: **100 ksi**
 Anchor Bolt Diameter: **2.25 in**
 Anchor Bolt Circle: **62.92 in**
 # of Anchor Bolts: **20**
 Minimum Anchor Bolt Separation: **6.00 in**
 Additional Anchor Bolts Installed: **N**

Failure Mode:	Effective Width (in)	Baseplate Flexural Capacity				Baseplate Shear Capacity			
		Moment (k-in)	S/Z (in ³)	Capacity (k-in)	Usage	Shear (k)	Area (in ²)	Capacity (k)	Usage
AA	36.94	875.2	69.8	3771.7	0.23	273.5	101.6	3291.6	0.08
AB	40.94	1028.1	77.4	4180.1	0.25	273.5	112.6	3648.0	0.07
BA	33.35	612.3	63.0	3404.5	0.18	273.5	91.7	2971.2	0.09
BB	40.22	1053.2	76.0	4106.2	0.26	273.5	110.6	3583.6	0.08

Anchor Bolt Capacity

Area of Bolt: **3.25 in²**
 Inertia of Bolt: **0.84 in⁴**
 Total Bolt Inertia: **32160.1 in⁴**
 Maximum Bolt Tension: **88.4 k**
 Maximum Bolt Compression: **94.1 k**
 Bolt Shear: **1.5 k**
 Tensile Bolt Capacity: **259.8 k**
 Compressive Bolt Capacity: **259.8 k**
 Shear Bolt Capacity: **140.3 k**
 Interaction Equation: **0.38 Result: OK**

Base Weld Capacity

Force / Weld: **9.8 k/in**
 Weld Capacity: **32.2 k/in**
 Interaction Equation: **0.30 Result: OK**

SES Base Plate Design Moment: **396.3 k-in**
 Design Stress: **24.5 ksi**
 SES Base Plate Allowable Stress / Moment Capacity: **874.0 ksi / k-in**
 Usage: **0.45**

Moment Factor: **2.66**
 Length Factor: **4.70**

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

AT&T Existing Facility

Site ID: CT2209

North Haven Railroad Tracks
127 Washington Avenue
North Haven, CT 06473

February 24, 2016

EBI Project Number: 6216000896

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	8.97 %

February 24, 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: **CT2209 – North Haven Railroad Tracks**

EBI Consulting was directed to analyze the proposed AT&T facility located at **127 Washington Avenue, North Haven, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general 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 **127 Washington Avenue, North Haven, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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 (WCS Band – 2300 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 (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, KMW AM-X-CD-16-65-00T-RET and the Powerwave 7770.00** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **123 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	123 feet	Height (AGL):	123 feet	Height (AGL):	123 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%	0.73	Antenna B1 MPE%	0.73	Antenna C1 MPE%	0.73
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-BUU-H6	Make / Model:	CCI OPA-65R-BUU-H6	Make / Model:	CCI OPA-65R-BUU-H6
Gain:	12.65 / 15.25 dBd	Gain:	12.65 / 15.25 dBd	Gain:	12.65 / 15.25 dBd
Height (AGL):	123 feet	Height (AGL):	123 feet	Height (AGL):	123 feet
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	5,124.05	ERP (W):	5,124.05	ERP (W):	5,124.05
Antenna A2 MPE%	1.57	Antenna B2 MPE%	1.57	Antenna C2 MPE%	1.57
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	123 feet	Height (AGL):	123 feet	Height (AGL):	123 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):	6,614.85	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A3 MPE%	2.52	Antenna B3 MPE%	2.52	Antenna C3 MPE%	2.52

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	4.81 %
XM Satellite Radio	0.21 %
T-Mobile	3.95 %
Site Total MPE %:	8.97 %

AT&T Sector 1 Total:	4.81 %
AT&T Sector 2 Total:	4.81 %
AT&T Sector 3 Total:	4.81 %
Site Total:	8.97 %

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	123	2.18	850	567	0.38 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	123	3.45	1900	1000	0.34 %
AT&T 850 MHz GSM	2	552.23	123	2.90	850	567	0.51 %
AT&T 2300 MHz (WCS) LTE	2	2009.79	123	10.56	2300	1000	1.06 %
AT&T 700 MHz LTE	2	1297.63	123	6.82	700	467	1.46 %
AT&T 1900 MHz (PCS) LTE	2	2009.79	123	10.56	1900	1000	1.06 %
						Total:	4.81 %

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:	4.81%
Sector 2:	4.81%
Sector 3 :	4.81%
AT&T Maximum Total (per sector):	4.81%
Site Total:	8.97 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **8.97%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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