



David Ford, Site Acquisition
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February 8, 2016

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

**RE: Notice of Exempt Modification // Site Number: CT1011
2 Mountain Street, Hartford, CT 06107 (Name: Hartford South)
N 41.7265750 // W -72.7081661**

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (AT&T) currently maintains nine (9) antennas at the 103-foot level of the existing 109-foot monopole tower at 2 Mountain Street, Hartford, CT. The tower is owned by American Tower Corporation (ATC). The property is owned by Hartford Bureau of Public Works ó Metropolitan District. AT&T now intends to replace three (3) of its existing antennas with (3) new LTE (700/1900 band) antennas for its LTE upgrade. These antennas would be installed at the 103-foot level of the tower. AT&T also intends to install three (3) remote radio units, (1) surge arrester, (2) DC power lines and (1) fiber line.

The current proposal involves an antenna swap only (three for three); no antennas will be added.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 Luke Bronin, Mayor of the City of Hartford, as well as the tower owner, American Tower Corporation and the ground owner, Hartford Bureau of Public Works ó Metropolitan District.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Attached to accommodate this filing are construction drawings dated December 08, 2015 by ComEx Consultants, a structural analysis dated January 15, 2016 by CLSGroup and an Emissions Analysis Report dated January 09, 2016 by EBI Consulting.

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis by CLSGroup, dated January 15, 2016.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



David Ford, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 821-6509
dford@centerlincommunications.com

Attachments

cc: Luke Bronin, Mayor, City of Hartford - as elected official
American Tower Corporation - as tower owner
Bureau of Public Works ó Metropolitan District - as property owner

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

AT&T Existing Facility

Site ID: CT1011

Hartford South 2
2 Mountain Street
Hartford, CT 06107

January 9, 2016

EBI Project Number: 6616000140

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	26.62%

January 9, 2016

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

Emissions Analysis for Site: **CT1011 – Hartford South 2**

EBI Consulting was directed to analyze the proposed AT&T facility located at **2 Mountain Street, Hartford, 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 **2 Mountain Street, Hartford, 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 (PCS Band – 1900 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 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 6) 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.

- 7) 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.
- 8) 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.
- 9) 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.
- 10) The antennas used in this modeling are the **Powerwave 7770.00, CCI OPA-65R-LCUU-H8, CCI OPA-65R-LCUU-H8, Commscope SBNH-1D6565C and the KMW AM-X-CD-16-65-00T-RET** 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.
- 11) The antenna mounting height centerline of the proposed antennas is **103 feet** above ground level (AGL).
- 12) 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):	103 feet	Height (AGL):	103 feet	Height (AGL):	103 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	3,453.54.56	ERP (W):	3,453.54.56	ERP (W):	3,453.54.56
Antenna A1 MPE%	1.56	Antenna B1 MPE%	1.56	Antenna C1 MPE%	1.56
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-LCUU-H8	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	14.95 / 13.35 dBd	Gain:	15.45 / 12.45 dBd	Gain:	15.45 / 12.45 dBd
Height (AGL):	103 feet	Height (AGL):	103 feet	Height (AGL):	103 feet
Frequency Bands	2300 MHz (WCS) / 850 MHz	Frequency Bands	2300 MHz (WCS) / 850 MHz	Frequency Bands	2300 MHz (WCS) / 850 MHz
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):	5,048.93	ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	2.31	Antenna B2 MPE%	2.32	Antenna C2 MPE%	2.32
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope SBNH-1D6565C	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.5 / 15.05 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	103 feet	Height (AGL):	103 feet	Height (AGL):	103 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):	6,556.25	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A3 MPE%	3.69	Antenna B3 MPE%	3.66	Antenna C3 MPE%	3.66

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	7.56 %
Clearwire	0.17 %
MetroPCS	2.97 %
SNET Paging	0.46 %
Town of W. Hartford	0.98 %
T-Mobile	1.56 %
Verizon Wireless	12.92 %
Site Total MPE %:	26.62%

AT&T Sector 1 Total:	7.56 %
AT&T Sector 2 Total:	7.54 %
AT&T Sector 3 Total:	7.54 %
Site Total:	26.62 %

AT&T _ Highest Sector Values (Sector A)	# 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	103	3.16	850	567	0.56 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	103	5.02	1900	1000	0.50 %
AT&T 1900 MHz (PCS) GSM	2	656.33	103	5.02	1900	1000	0.50 %
AT&T 2300 MHz (WCS) LTE	2	1875.65	103	14.33	2300	1000	1.43 %
AT&T 850 MHz GSM	2	648.82	103	4.96	850	567	0.87 %
AT&T 700 MHz LTE	2	1358.79	103	10.38	700	467	2.22 %
AT&T 1900 MHz (PCS) LTE	2	1919.34	103	14.67	1900	1000	1.47 %
						Total:	7.56 %

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:	7.56 %
Sector 2:	7.54 %
Sector 3 :	7.54 %
AT&T Maximum Total (per sector):	7.56 %
Site Total:	26.62%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **26.62%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

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 SQUIDS: (1) NEW DC-6 SQUID, FOR A TOTAL OF (1).
- AT&T TRUNKS: (2) NEW DC TRUNKS, FOR A TOTAL OF (2). (1) NEW FIBER TRUNK, FOR A TOTAL OF (1).

SITE ADDRESS: 2 MOUNTAIN ST
HARTFORD, CT 06107

LATITUDE: 41.7265750 41°-43'-35.67"N
LONGITUDE: -72.7081661 72°-42'-29.397"W

USID: 59334

TOWER OWNER: AMERICAN TOWER
SITE NAME: HARTFORD SOUTH
SITE#: 302481

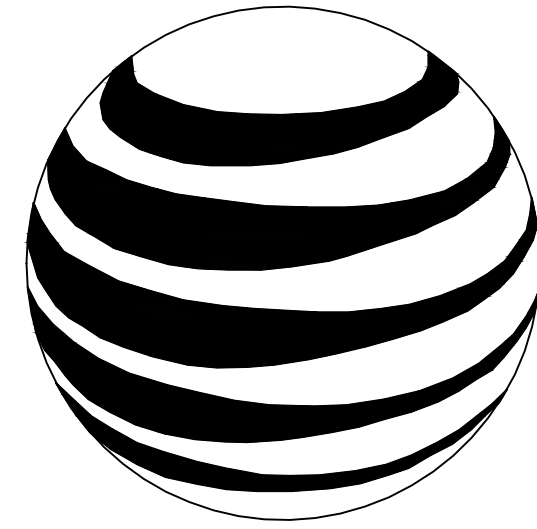
TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 109'-0"±

RAD CENTER: 103'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



at&t
MOBILITY

FA CODE: 10034968
SITE NUMBER: CT1011
SITE NAME: HARTFORD SOUTH

PROJECT TEAM

CLIENT REPRESENTATIVE

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

SITE ACQUISITION:

COMPANY: VERTICAL DEVELOPMENT, LLC
ADDRESS: 20 COMMERCIAL STREET
BRANFORD, CT 06405
CONTACT: DAVID BASS
PHONE: 203-826-5857
EMAIL: dbass@verticaldevelopmentllc.com

ZONING:

COMPANY: VERTICAL DEVELOPMENT, LLC
ADDRESS: 20 COMMERCIAL STREET
BRANFORD, CT 06405
CONTACT: DAVID BASS
PHONE: 203-826-5857
EMAIL: dbass@verticaldevelopmentllc.com

ENGINEERING:

COMPANY: COM-EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
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

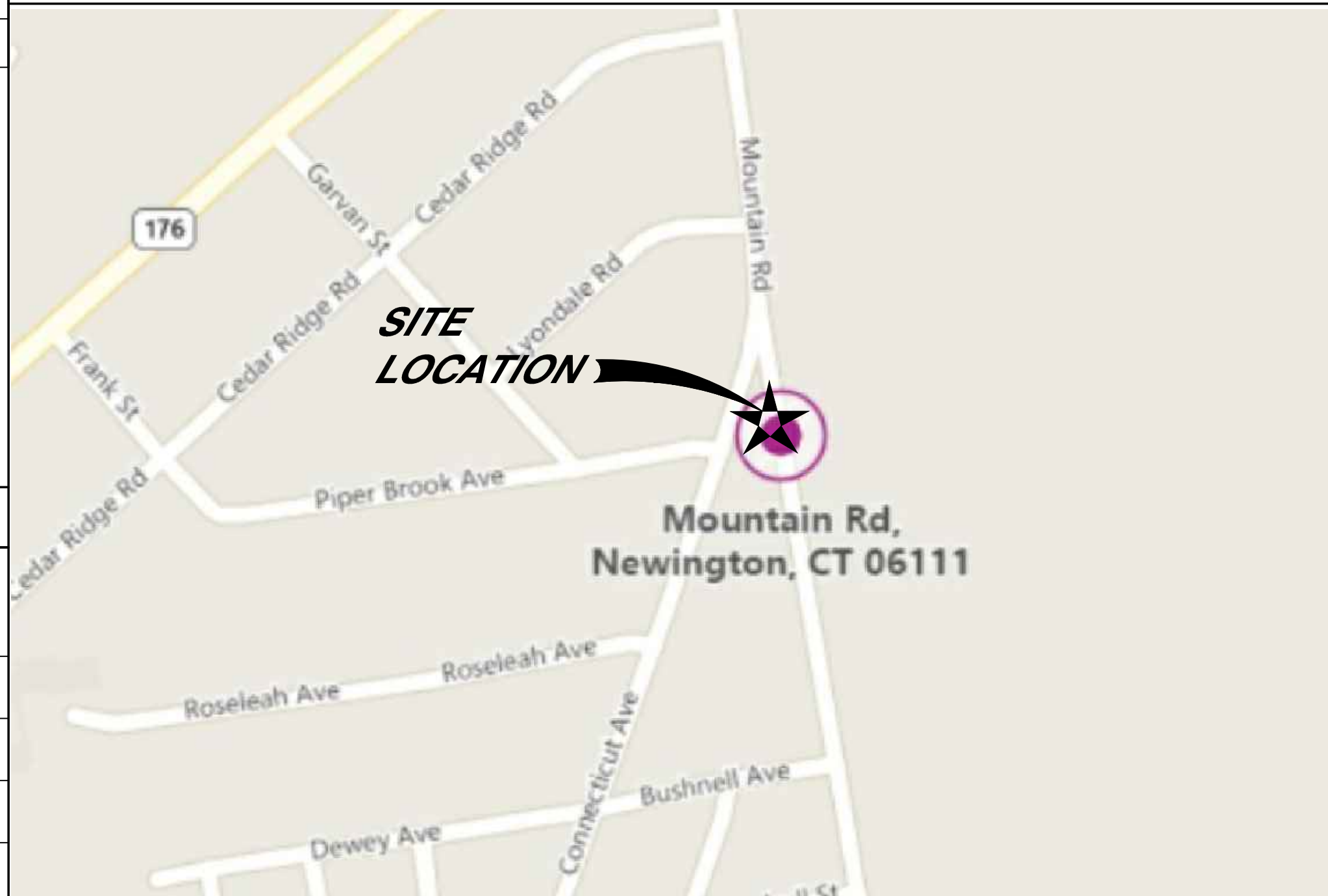
DRAWING INDEX

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VICINITY MAP

START OUT GOING NE ON ENTERPRISE DR TOWARD CAPITOL BLVD, 0.4MI. TURN LEFT ONTO CAPITOL BLVD, 0.3MI. TURN LEFT ONTO WEST ST, 0.2MI. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD, 6.6MI. TAKE THE BRAINARD RD EXIT, EXIT 27, TOWARD BRAINARD AIRPORT/AIRPORT RD, 0.5MI. TURN LEFT ONTO BRAINARD RD, 0.2MI. TURN LEFT ONTO AIRPORT RD, 0.6MI. AIRPORT RD BECOMES BROWN ST, 0.9MI. BROWN ST. BECOMES LINNMOORE ST, 0.7MI. TURN LEFT ONTO HARVARD ST, 0.4MI. TURN LEFT ONTO MOUNTAIN ST, 0.2MI. 11 MOUNTAIN RD IS ON THE LEFT.



GENERAL NOTES

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

APPROVALS

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

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



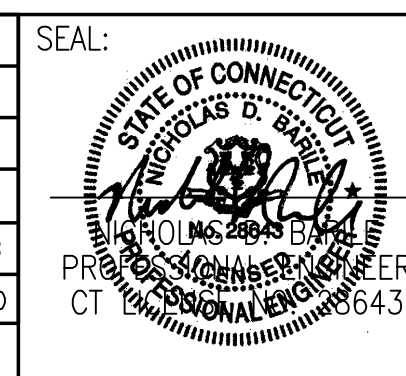
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



SITE NUMBER: CT1011
SITE NAME: HARTFORD SOUTH
2 MOUNTAIN ST
HARTFORD, CT 06107
HARTFORD COUNTY



0	12/8/15	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		



AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER 15048-EMP	DRAWING NUMBER T-1	REV 0

GROUNDING NOTES:

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

GENERAL NOTES:

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

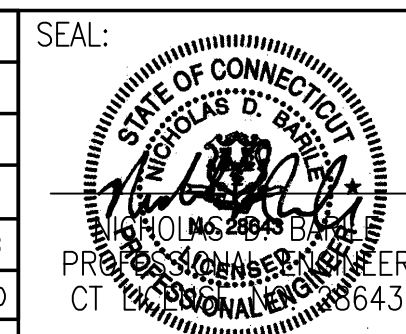
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL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



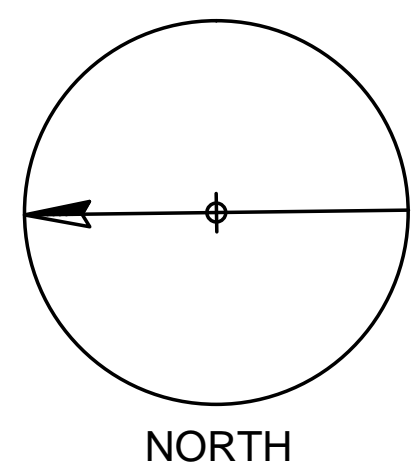
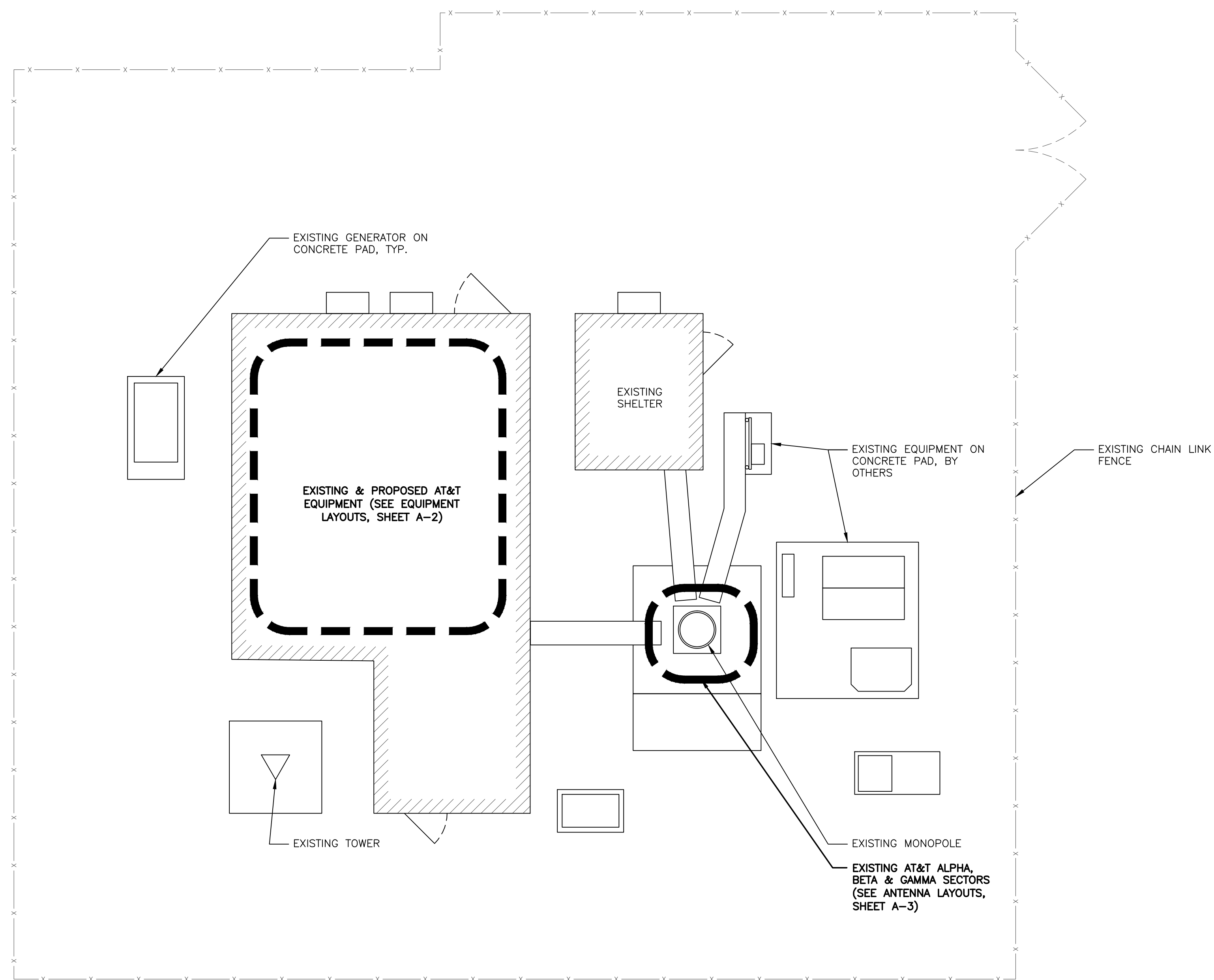
SITE NUMBER: CT1011
SITE NAME: HARTFORD SOUTH
 2 MOUNTAIN ST
 HARTFORD, CT 06107
 HARTFORD COUNTY



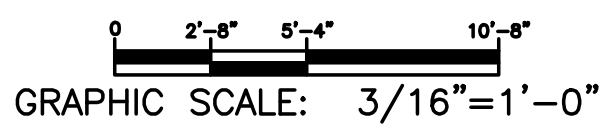
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		



AT&T		
DRAWING TITLE: GROUNDING & GENERAL NOTES		
JOB NUMBER 15048-EMP	DRAWING NUMBER GN-1	REV 0



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.

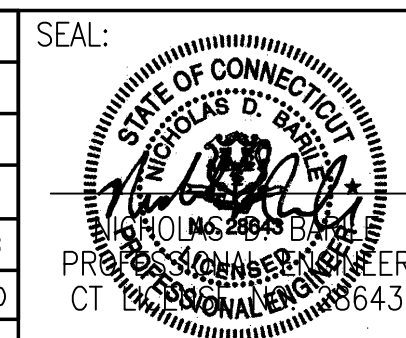
COM-EX
Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

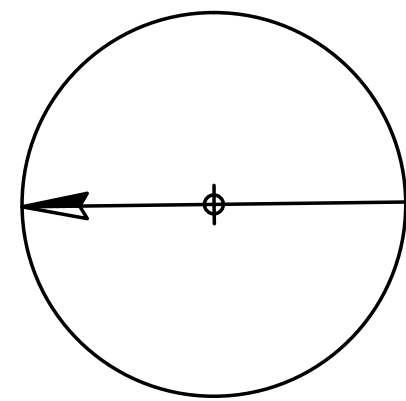
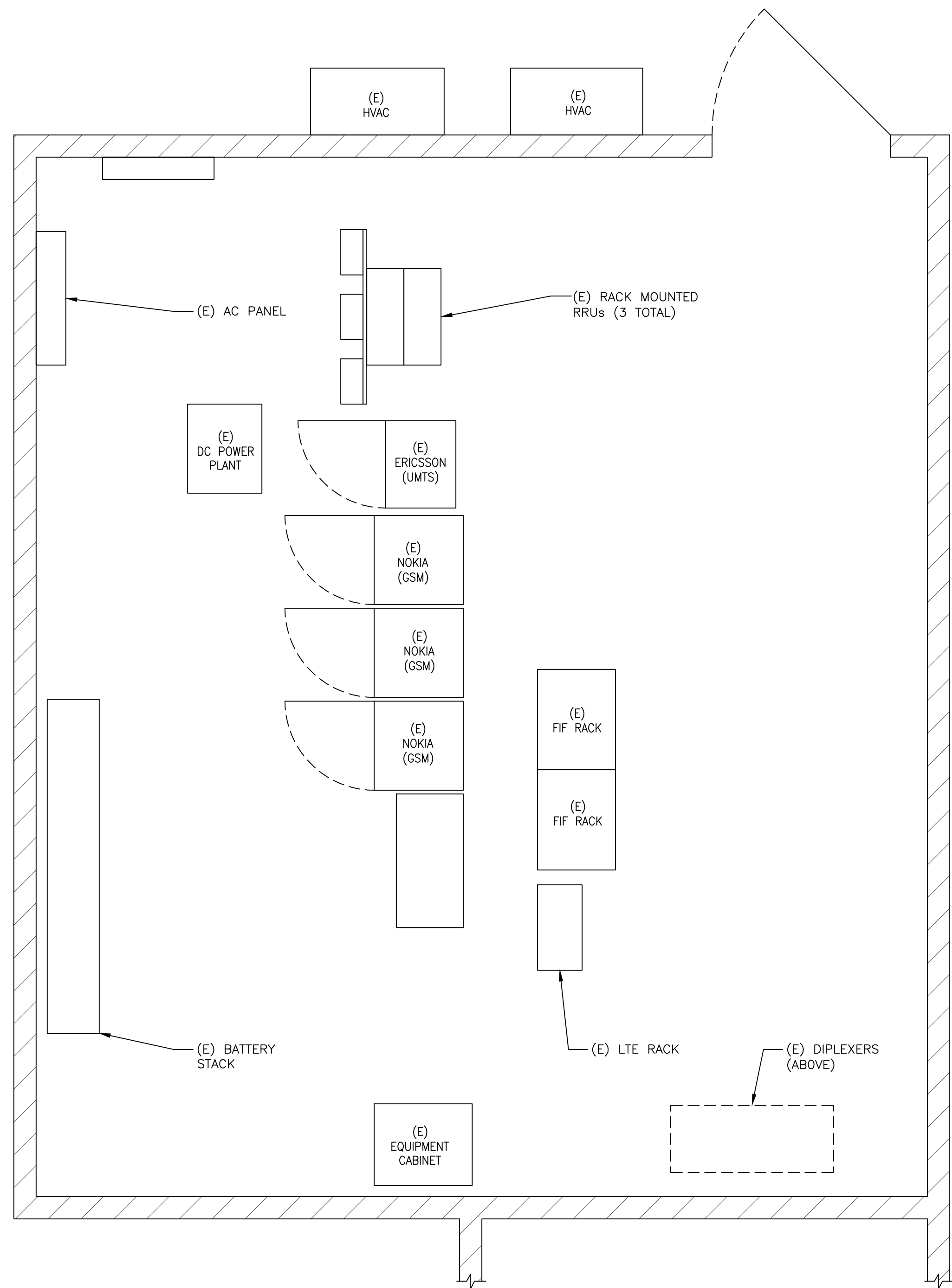
SITE NUMBER: CT1011
SITE NAME: HARTFORD SOUTH
2 MOUNTAIN ST
HARTFORD, CT 06107
HARTFORD COUNTY

at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

0	12/8/15	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

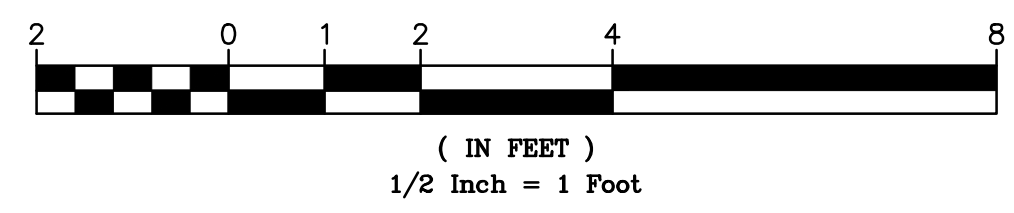


AT&T		
DRAWING TITLE: COMPOUND LAYOUT		
JOB NUMBER 15048-EMP	DRAWING NUMBER A-1	REV 0



NORTH

EXISTING EQUIPMENT LAYOUT
SCALE: 1" = 2'-0"



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

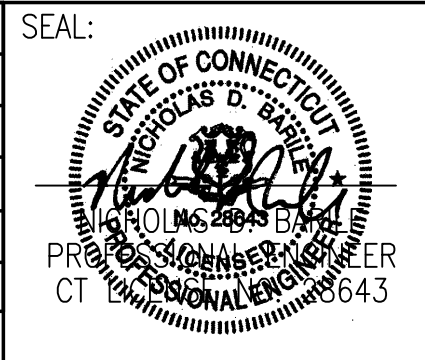
COM-EX
Consultants
115 ROUTE 46
SUITE E39
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PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

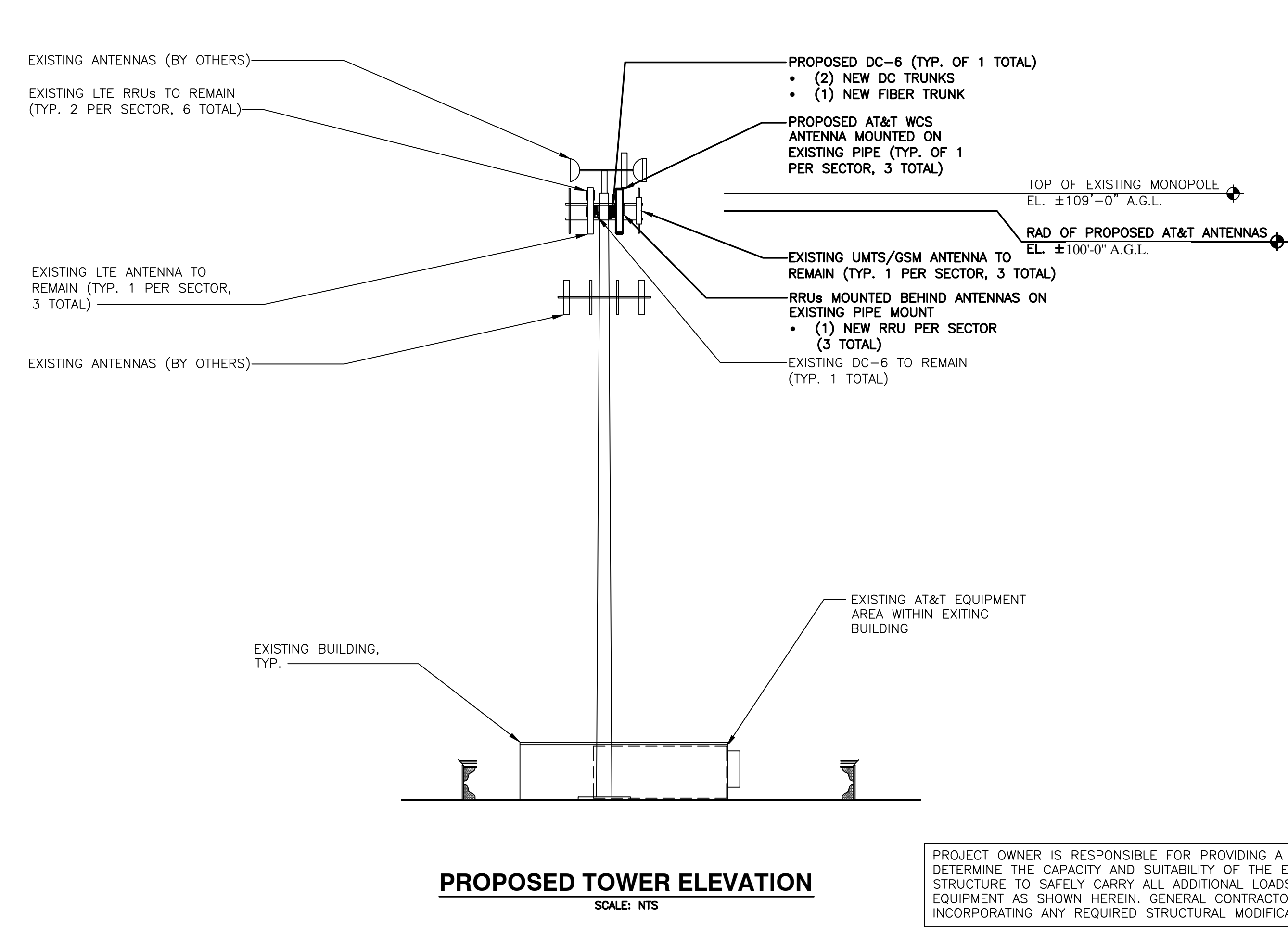
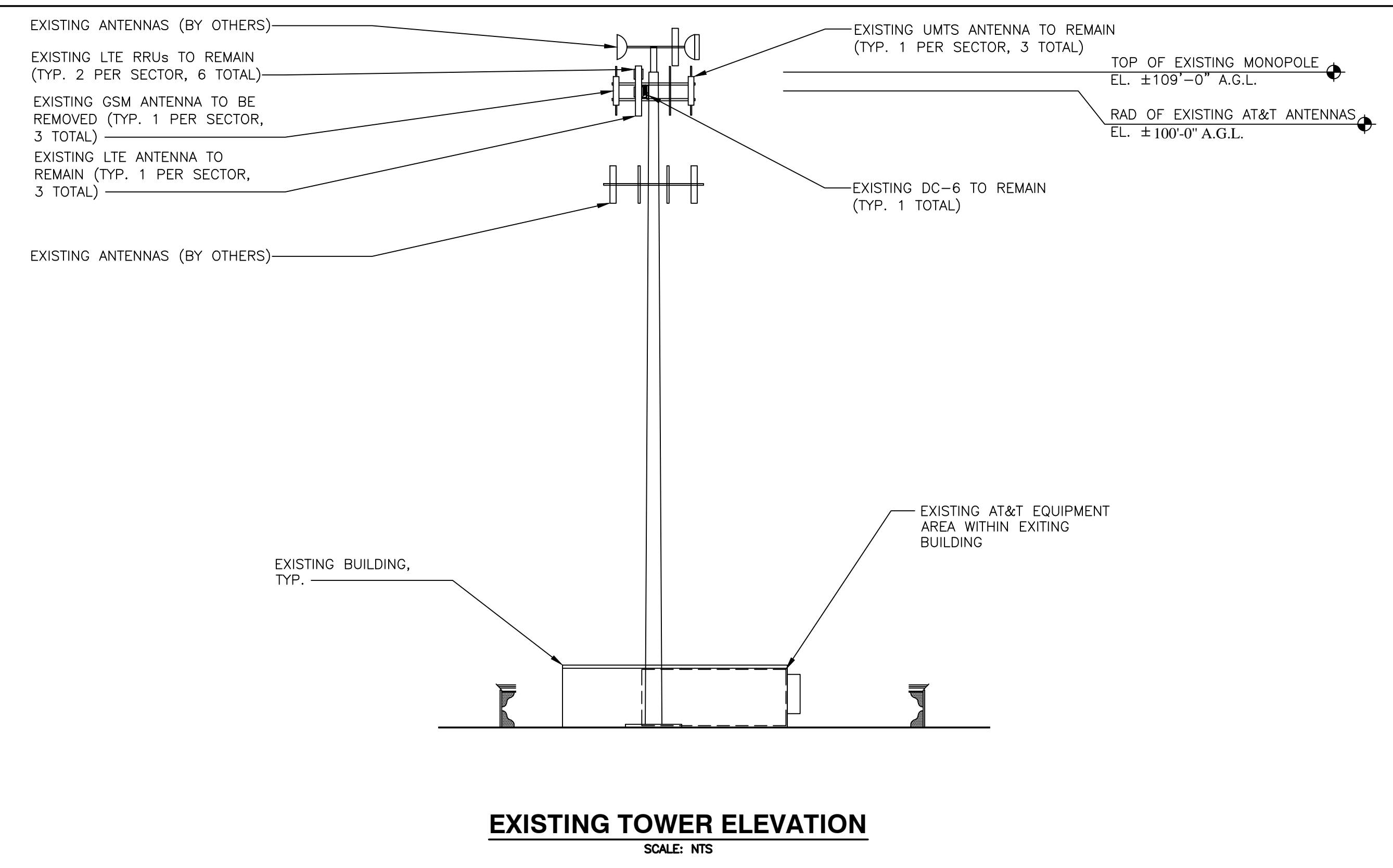
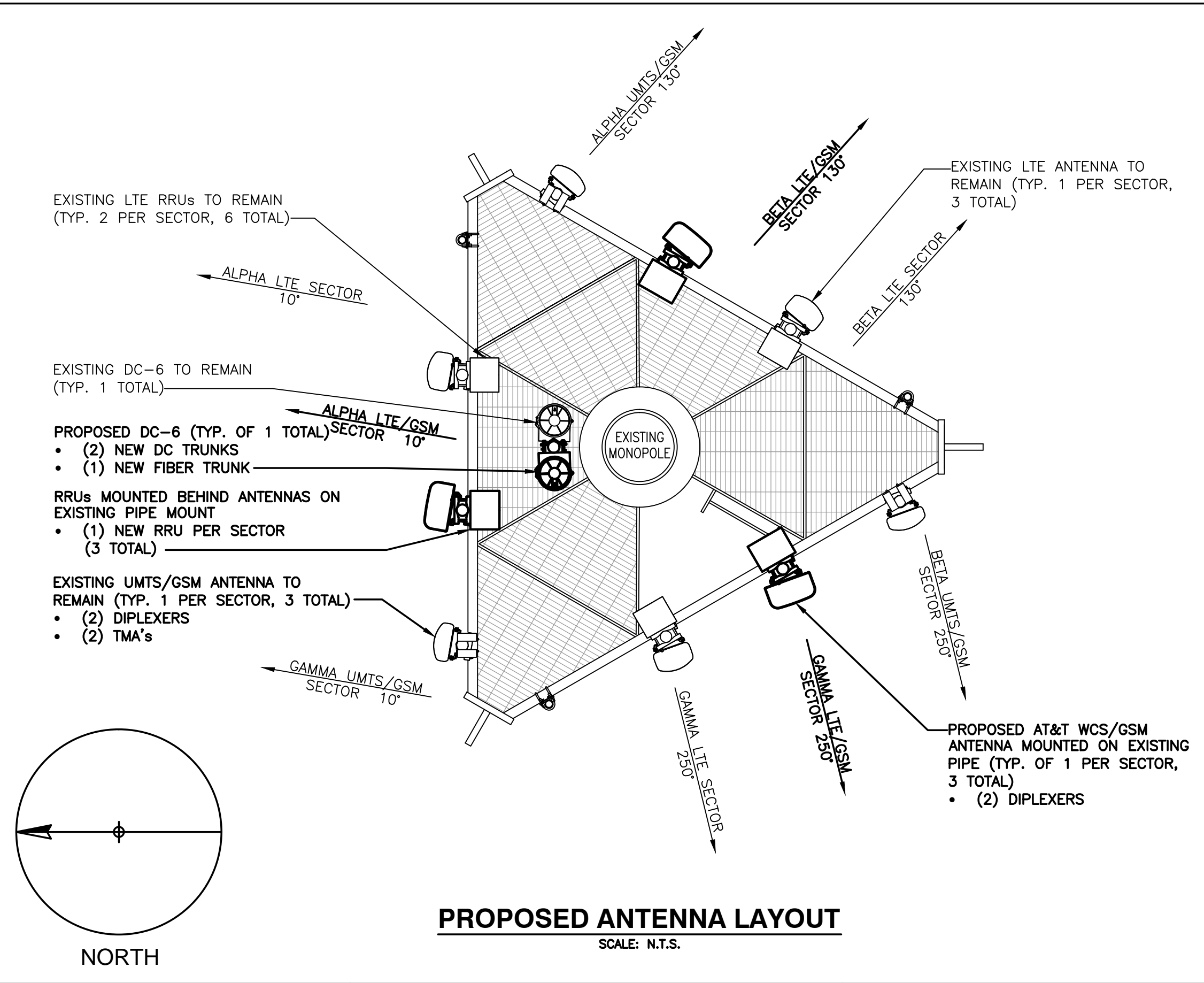
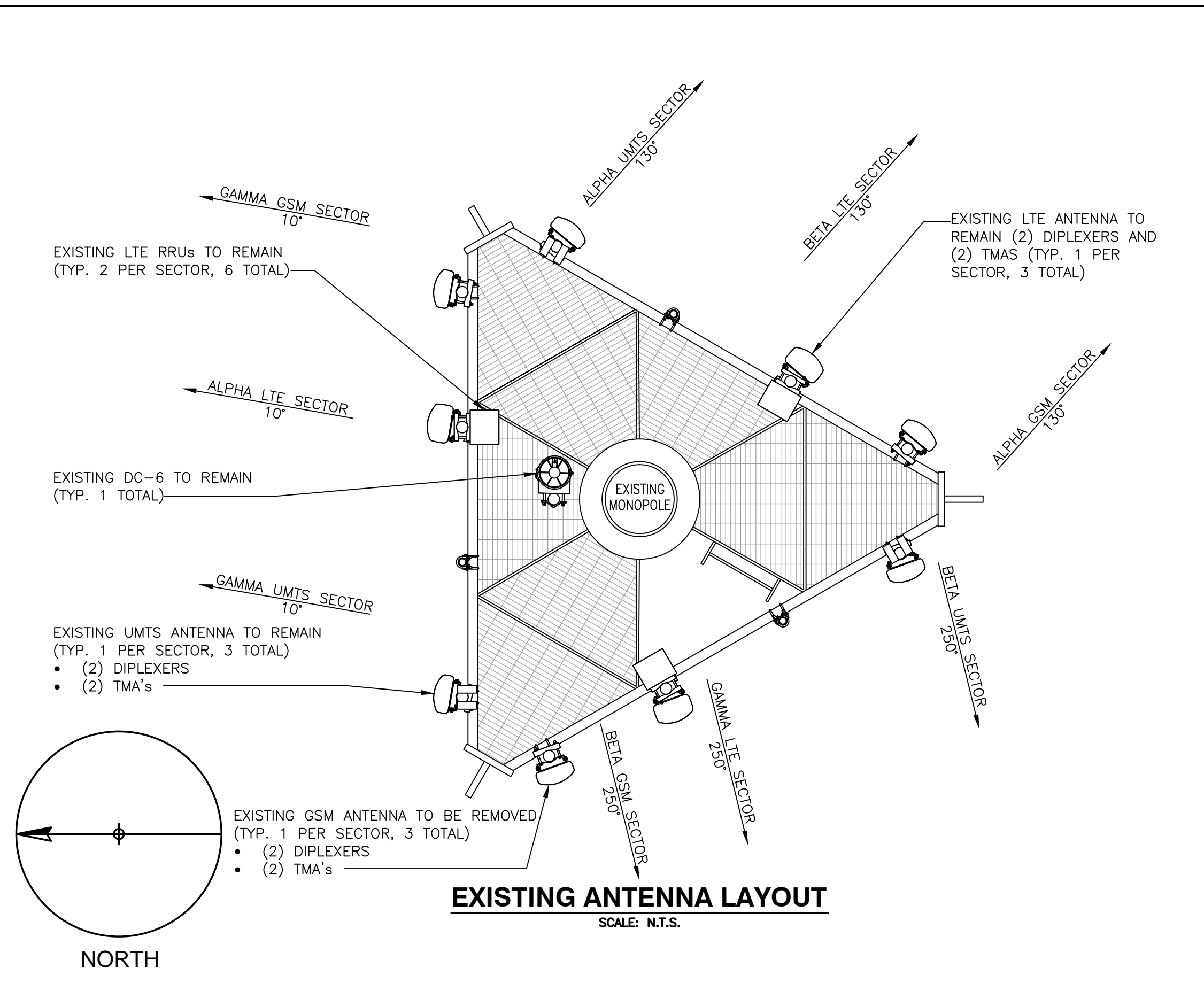
SITE NUMBER: CT1011
SITE NAME: HARTFORD SOUTH
2 MOUNTAIN ST
HARTFORD, CT 06107
HARTFORD COUNTY

at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

0	12/8/15	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		



AT&T		
DRAWING TITLE: EQUIPMENT LAYOUTS		
JOB NUMBER 15048-EMP	DRAWING NUMBER A-2	REV 0



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.

COM-EX
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16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT1011
SITE NAME: HARTFORD SOUTH

2 MOUNTAIN ST
HARTFORD, CT 06107
HARTFORD COUNTY

at&t
MOBILITY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

0	12/8/15	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

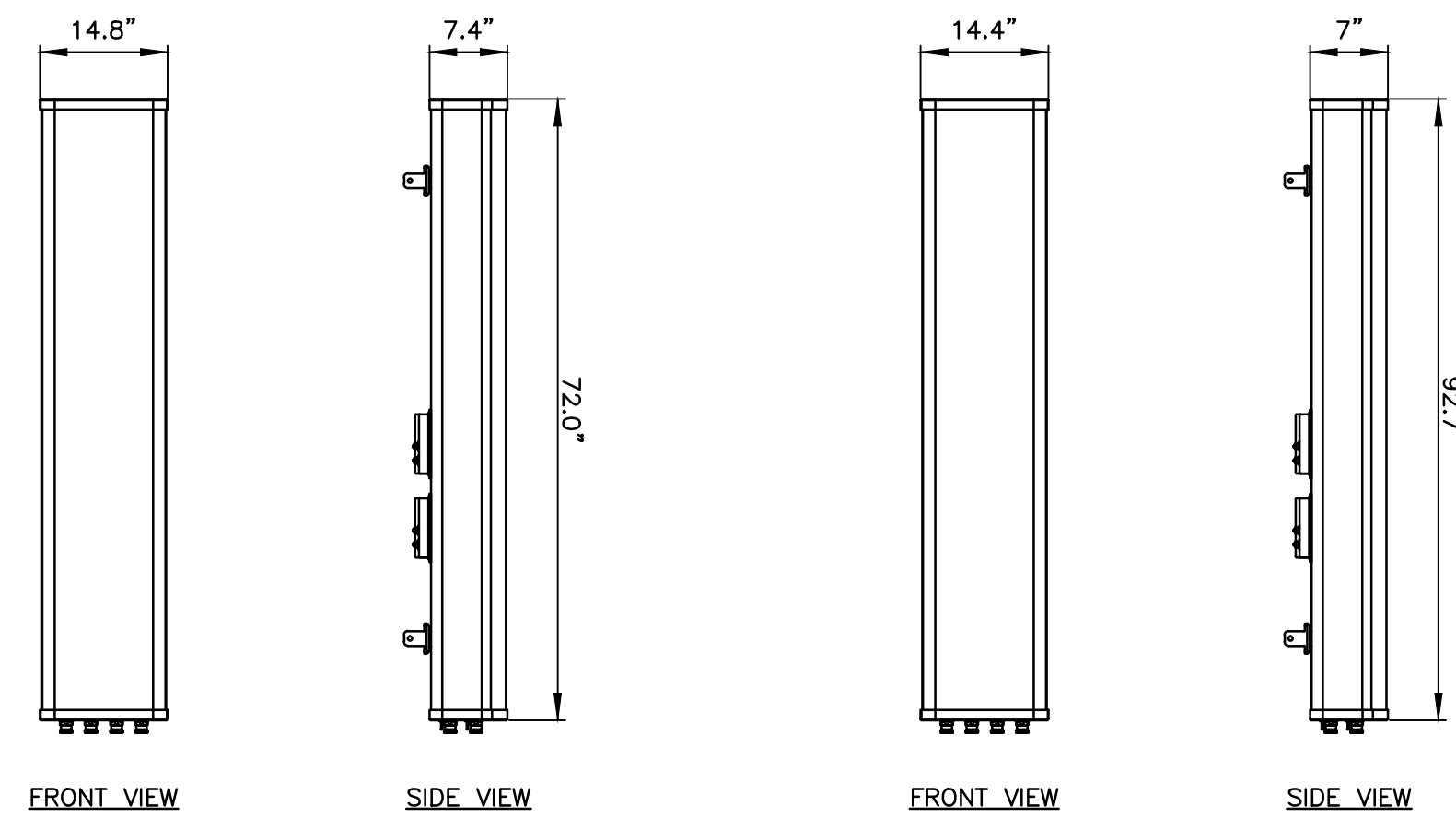
SEAL:

NICHOLAS D. BARONE
PROFESSIONAL ENGINEER
CT LICENSE NO. 17624

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

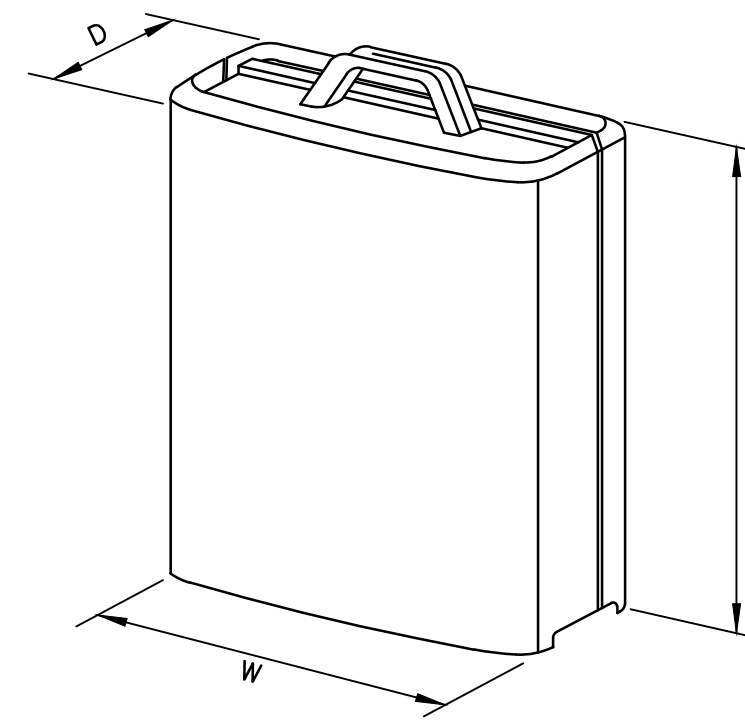
JOB NUMBER	DRAWING NUMBER	REV
15048-EMP	A-3	0



FRONT VIEW SIDE VIEW FRONT VIEW SIDE VIEW

MANUFACTURER	CCI	MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H6	MODEL	OPA-65R-LCUU-H8
WEIGHT	73.0 LBS	WEIGHT	88.0 LBS

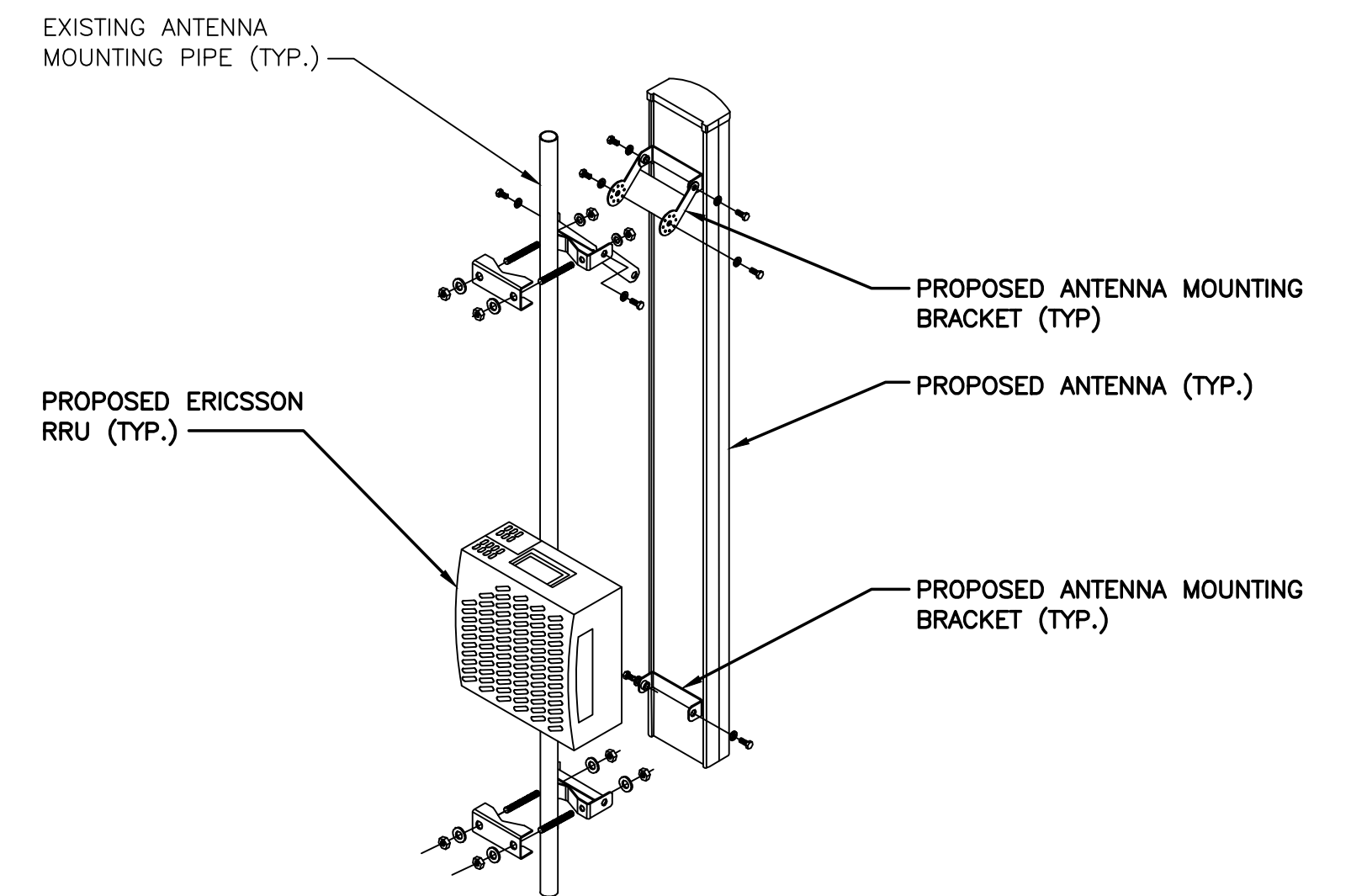
LTE ANTENNA DETAIL
SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-32	29.9" x 13.3" x 9.5"	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	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	-	-	-
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	-	-	-
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	POWERWAVE	7770	55"x11"x5"

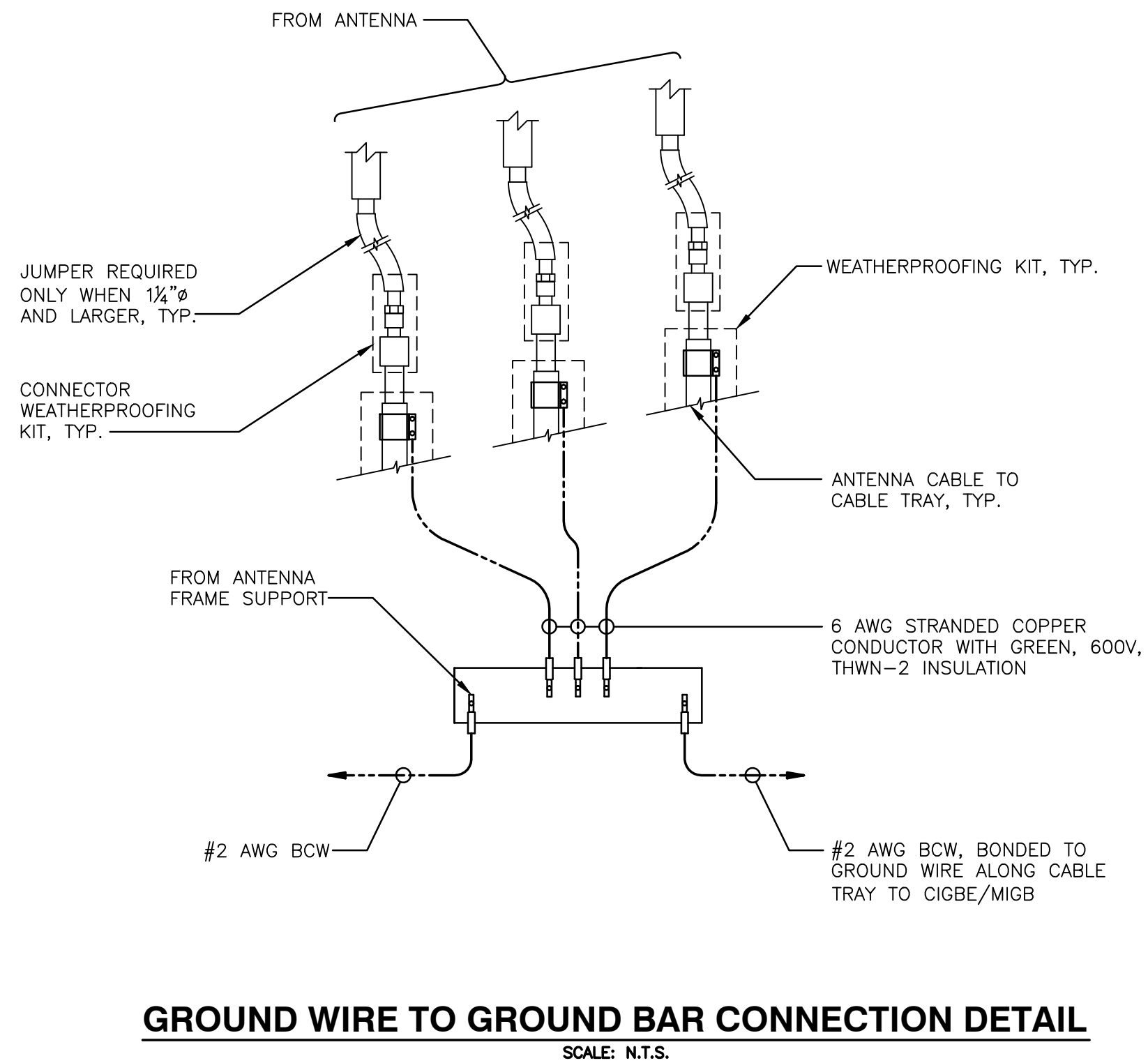
FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	CCI	OPA-65R-LCUU-H8	92.7"x14.4"x7"
	A3	ANDREW	SBNH-1D6565C	96.4"x11.9"x7.1"
	A4	-	-	-
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	CCI	OPA-65R-LCUU-H6	72"x14.8"x7.4"
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	-	-	-
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	CCI	OPA-65R-LCUU-H6	72"x14.8"x7.4"
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	-	-	-

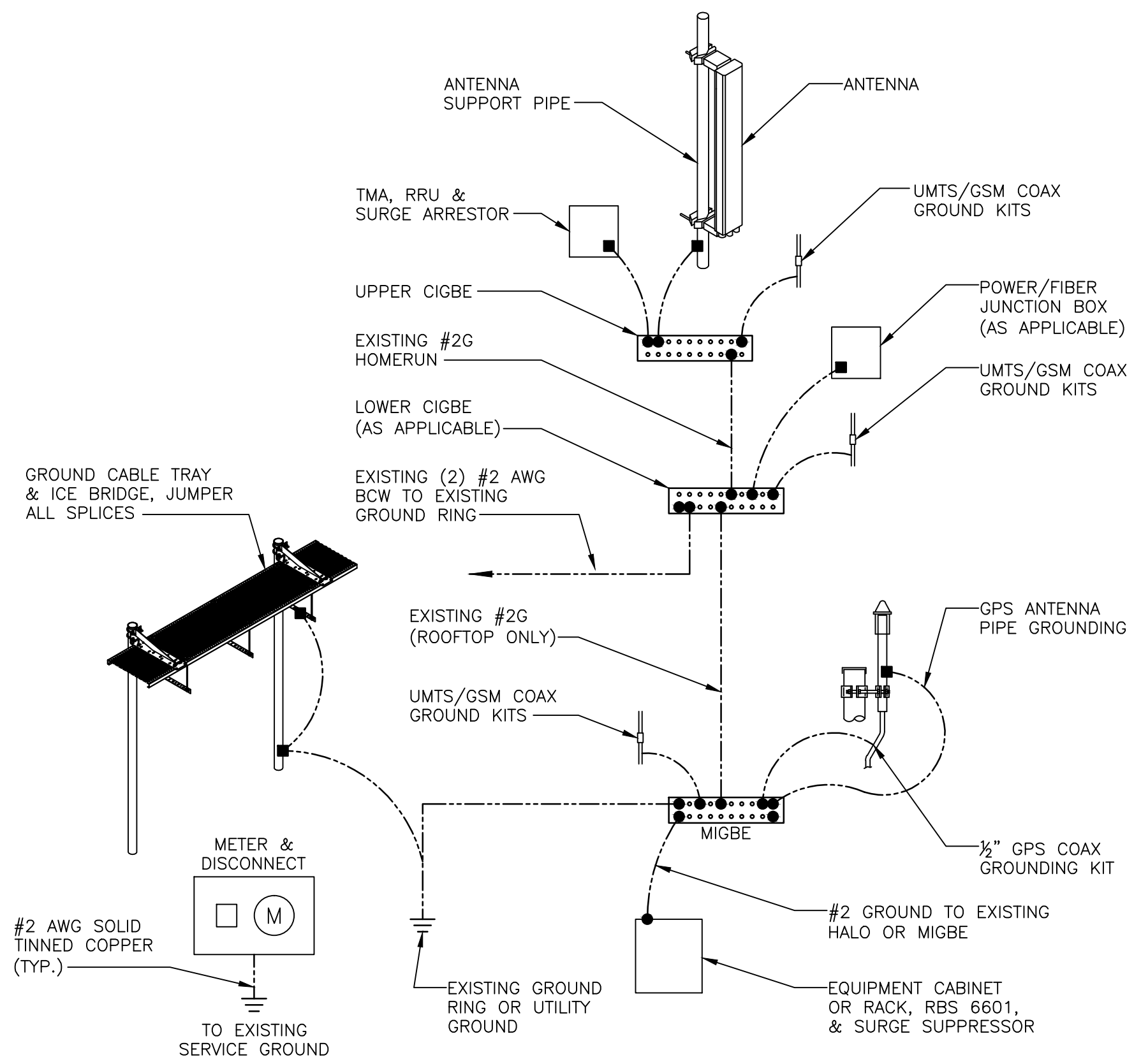
PROPOSED RRU SCHEDULE

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"		

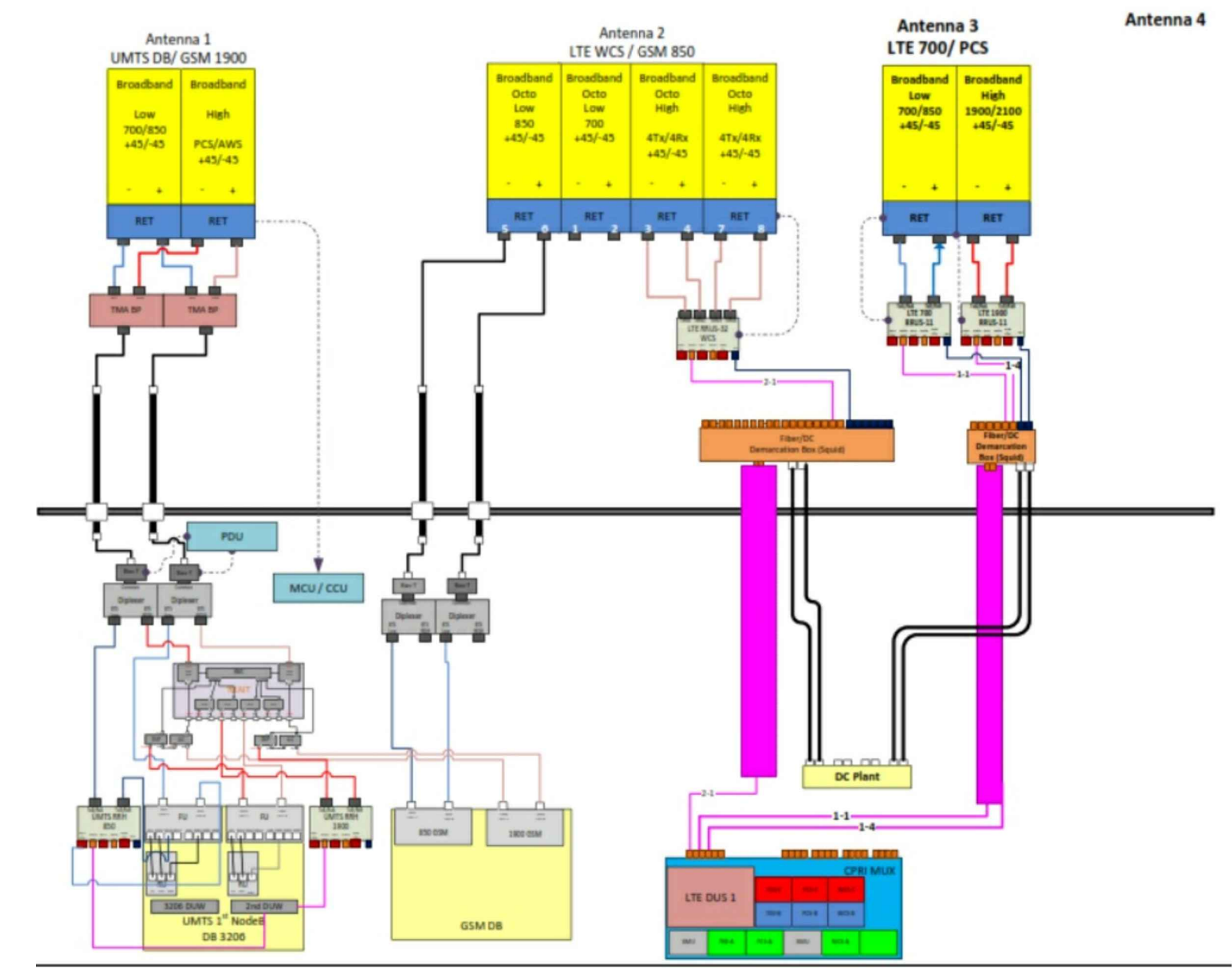
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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



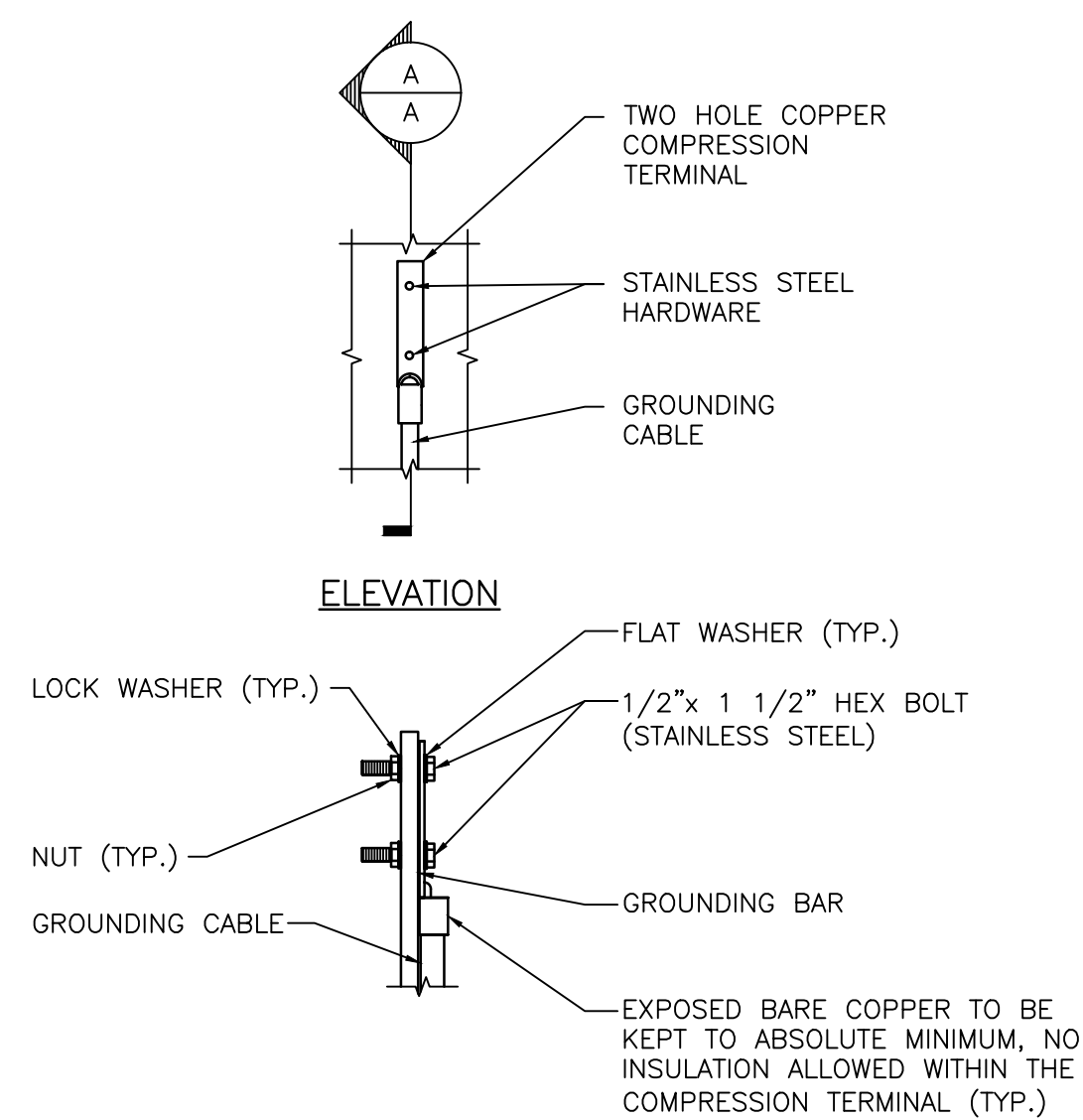
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



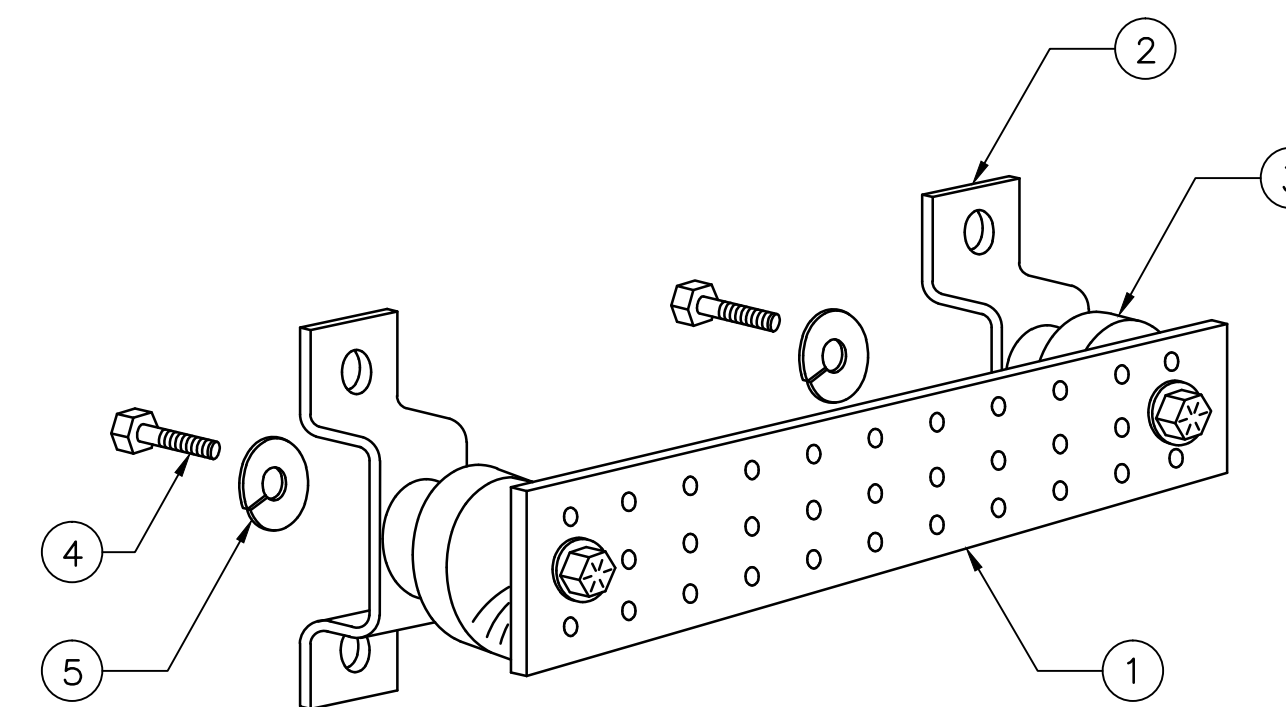
GROUNDING RISER DIAGRAM
SCALE: N.T.S.



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



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



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

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

GROUND BAR DETAIL
SCALE: N.T.S.



AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by



Structural Analysis Report

Structure : 110 ft Monopole
ATC Site Name : Hrfr - South, CT
ATC Site Number : 302481
Engineering Number : 64749021
Proposed Carrier : AT&T Mobility
Carrier Site Name : Hartford South
Carrier Site Number : CT1011/FA#10034968
Site Location : Mountain Road
Hartford, CT 06106-4121
41.726569,-72.708169
County : Hartford
Date : January 15, 2016
Max Usage : 100%
Result : Pass

Reviewed by:
William Garrett, PE
Chief Engineer



Prepared By:
Zachary A. Medoff

Jan 15 2016 3:11 PM

COA: PEC.0001553



Table of Contents

Introduction	1
Supporting Documents	1
Analysis	1
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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 110 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Mapped by Smith Cullum Site #CT-0017(A), dated June 6, 2001
Foundation Drawing	Girard & Co Engineering Job #39902, dated April 29, 1988
Geotechnical Report	TEP Project #071162.01, dated July 23, 2007
Modifications	ATC Project #42719232, dated January 12, 2009 ATC Project #43595333, dated July 1, 2009 ATC Project #43930034, dated September 15, 2009 ATC Project #44662232, dated March 30, 2010

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:	95 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1" 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:	4
Crest Height:	36 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					
110.0	110.0	3	DragonWave Horizon Compact	Side Arms	(6) 5/16" Coax (3) 1/2" Coax (1) 2" Conduit	Clearwire
		1	DragonWave A-ANT-23G-1-C			
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		2	DragonWave A-ANT-11G-2.5-C			
100.0	100.0	3	Powerwave 7770.00	Platform w/ Handrails	(12) 1 5/8" Coax (2) 0.78" 8 AWG 6 (1) 3" Conduit	AT&T Mobility
		2	KMW AM-X-CD-16-65-00T-RET			
		1	Andrew SBNH-1D6565C			
		6	Kathrein 860-10025			
		3	Powerwave TT19-08BP111-001			
		6	Powerwave LGP21401			
89.5	91.0	3	Kathrein Smart Bias Tee	Low Profile Platform	(18) 1 5/8" Coax	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	Ericsson KRY 112 489/1			
		3	RFS APX16DWV-16DWV-S-E-ACU			
		3	Commscope LNX-6515DS-VTM			
80.0	80.0	3	Alcatel-Lucent RRH2X60-AWS	Low Profile Platform	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH2x60 700			
		6	Antel BXA-171063-12CF-EDIN-5			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Antel BXA-70063-6CF-EDIN-2			
77.0	77.0	1	Scala 840 10212	Stand Offs	(1) 7/8" Coax	West Hartford
		1	TX RX Systems 421-86A-10-18-12-N			
60.0	60.0	1	Scala 840 10212	Stand Off	(1) 1/4" Coax (1) 7/8" Coax	West Hartford
		1	Radio Waves SP2-4.7 w/ Radome			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	100.0	3	Powerwave 7770.00	-	(1) 0.39" Cable	AT&T Mobility
		6	Ericsson RRUS 11 (Band 12)			
		1	Raycap DC6-48-60-18-8F.			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
100.0	100.0	2	Raycap DC6-48-60-18-8F	Platform w/ Handrails	(2) 0.39" Fiber Trunk (2) 0.78" 8 AWG 6	AT&T Mobility
		2	CCI OPA-65R-LCUU-H6			
		1	CCI OPA-65R-LCUU-H8			
		6	Ericsson RRUS-11			
		3	Ericsson RRUS-32			

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	36%	Pass
Shaft	100%	Pass
Base Plate	67%	Pass
Flanges	22%	Pass
Reinforcement	97%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1,681.4	81%
Axial (Kips)	79.6	17%
Shear (Kips)	24.1	76%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
110.0	DragonWave A-ANT-23G-1-C	Clearwire	1.692	1.608
	DragonWave A-ANT-11G-2.5-C			
100.0	Raycap DC6-48-60-18-8F	AT&T Mobility	1.413	1.585
	Ericsson RRUS-11			
	Ericsson RRUS-32			
	CCI OPA-65R-LCUU-H6			
60.0	Radio Waves SP2-4.7 w/ Radome	West Hartford	0.538	0.957

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



Standard Conditions

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

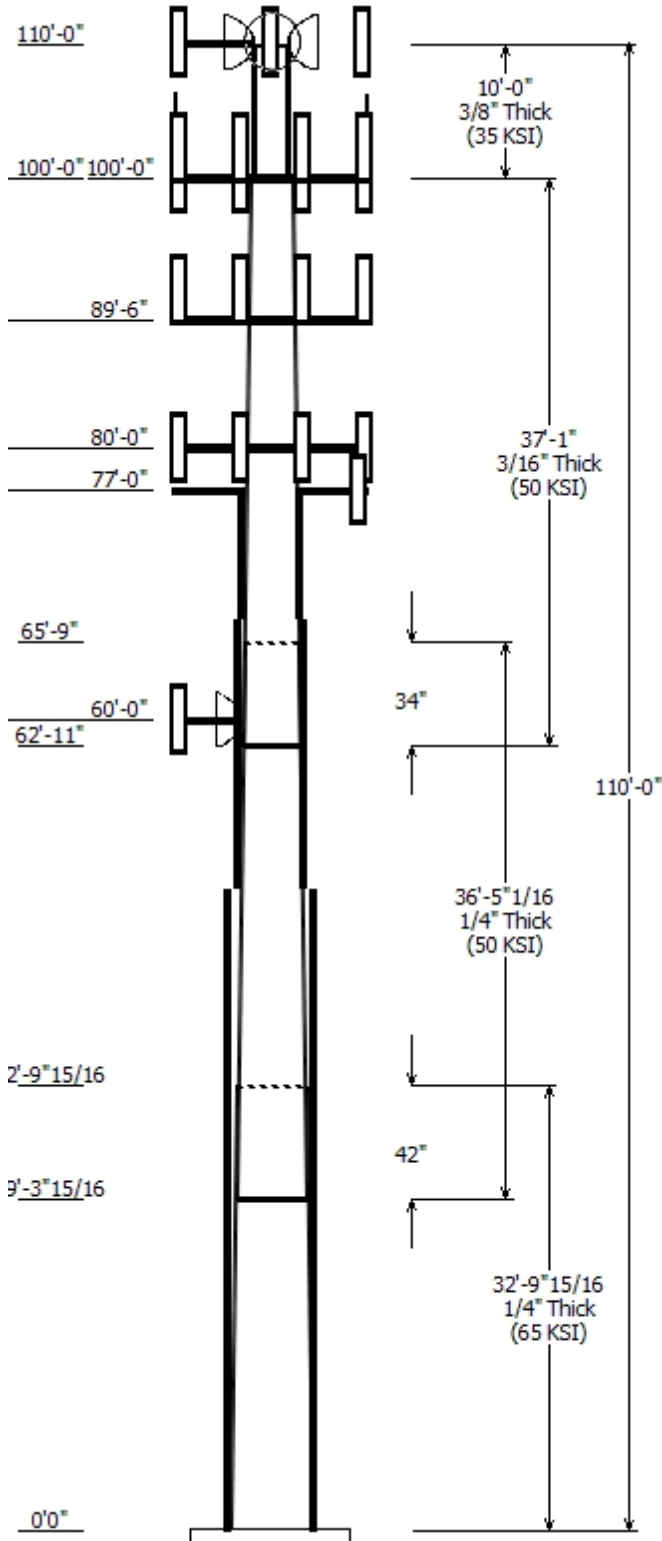
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements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

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

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

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

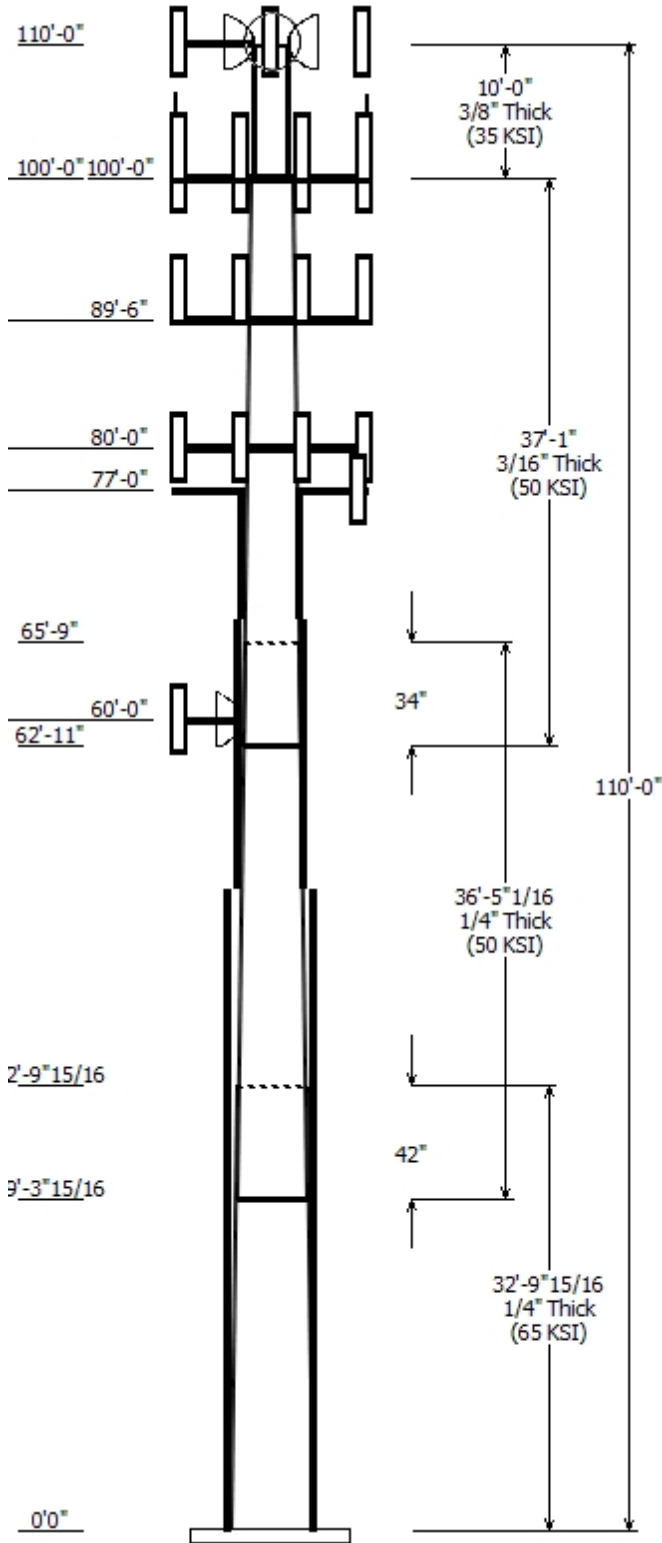
Job Information	
Pole : 302481	Code: ANSI/TIA-222-G
Description : 110 ft ITT Meyer Monopole	
Client : AT&T Mobility	Struct Class : II
Location : Hrfr - South, CT	
Shape : 12 Sides	Exposure : B
Height : 110.00 (ft)	Topo : 4
Base Elev (ft): 0.00	
Taper: 0.16375(in/ft)	



Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)	
		Top	Bottom	Type				
1	32.830	24.62	30.00	0.250	0.000	0.163800	65	
2	36.420	19.73	25.69	0.250 Slip Joint	42.000	0.163800	50	
3	37.083	14.50	20.57	0.188 Slip Joint	34.000	0.163800	50	
4	10.000	12.75	12.75	0.375 Butt Joint	0.000	0.000000	35	

Discrete Appurtenance				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	
110.000	110.000	1	Side Arms	
110.000	110.000	1	DragonWave A-ANT-23G-1-C	
110.000	110.000	3	Argus LLPX310R	
110.000	110.000	3	NextNet BTS-2500	
110.000	110.000	2	DragonWave A-ANT-11G-2.5-C	
110.000	110.000	3	DragonWave Horizon Compact	
100.000	102.000	6	Ericsson RRUS-11	
100.000	104.000	1	CCI OPA-65R-LCUU-H8	
100.000	104.000	2	CCI OPA-65R-LCUU-H6	
100.000	102.000	3	Ericsson RRUS-32	
100.000	105.000	2	Raycap DC6-48-60-18-8F	
100.000	104.000	3	Powerwave 7770.00	
100.000	104.000	1	Andrew SBNH-1D6565C	
100.000	104.000	2	KMW AM-X-CD-16-65-00T-RET	
100.000	102.000	6	Kathrein 860-10025	
100.000	100.000	1	Flat Platform w/ Handrails	
100.000	100.000	3	Powerwave TT19-08BP111-001	
100.000	100.000	6	Powerwave LGP21401	
89.500	91.000	3	Commscope LNX-6515DS-VTM	
89.500	91.000	3	Ericsson KRY 112 489/1	
89.500	91.000	3	Ericsson KRY 112 144/1	
89.500	91.000	3	Kathrein Smart Bias Tee	
89.500	91.000	3	RFS APX16DWV-16DWV-S-E-	
89.500	89.500	1	Flat Low Profile Platform	
80.000	80.000	1	Round Low Profile Platform	
80.000	80.000	3	Alcatel-Lucent RRH2x60 700	
80.000	80.000	3	Alcatel-Lucent RRH2X60-AWS	
80.000	80.000	2	RFS DB-T1-6Z-8AB-0Z	
80.000	80.000	6	Antel BXA-70063-6CF-EDIN-2	
80.000	80.000	6	Antel BXA-171063-12CF-EDIN-5	
77.000	77.000	2	Stand Offs	
77.000	77.000	1	TX RX Systems 421-86A-10-18-	
77.000	77.000	1	Scala 840 10212	
60.000	60.000	1	Stand Off	
60.000	60.000	1	Scala 840 10212	
60.000	60.000	1	Radio Waves SP2-4.7 w/	

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	60.000	1/4" Coax	Yes
0.000	60.000	7/8" Coax	Yes

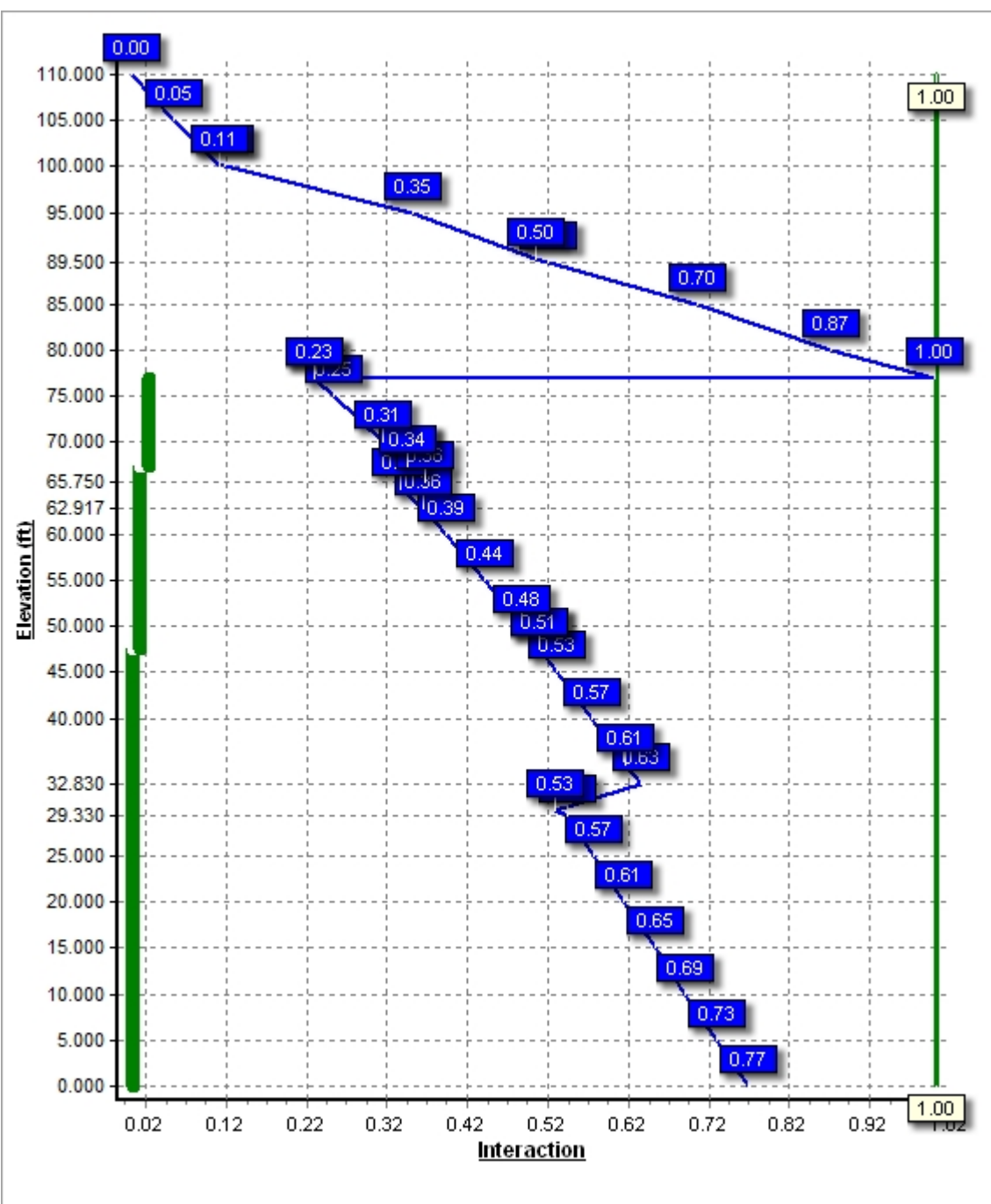


0.000	77.000	7/8" Coax	Yes
0.000	80.000	1 5/8" Coax	Yes
0.000	80.000	1 5/8" Hybriflex	Yes
0.000	81.000	#20 DYWIDAG	Yes
0.000	89.500	1 5/8" Coax	Yes
0.000	100.0	0.39" Fiber Trunk	No
0.000	100.0	0.78" 8 AWG 6	No
0.000	100.0	0.78" 8 AWG 6	No
0.000	100.0	1 5/8" Coax	No
0.000	100.0	1 5/8" Coax	Yes
0.000	100.0	3" Conduit	No
0.000	110.0	1/2" Coax	Yes
0.000	110.0	2" Conduit	Yes
0.000	110.0	5/16" Coax	No

Load Cases	
1.2D + 1.6W	95 mph with No Ice
0.9D + 1.6W	95 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	1632.27	23.47	29.70
0.9D + 1.6W	1603.99	23.38	22.25
1.2D + 1.0Di + 1.0Wi	476.96	6.33	76.34
(1.2 + 0.2Sds) * DL + E ELFM	91.62	1.04	29.50
(1.2 + 0.2Sds) * DL + E EMAM	113.67	1.29	29.50
(0.9 - 0.2Sds) * DL + E ELFM	90.11	1.03	20.51
(0.9 - 0.2Sds) * DL + E EMAM	111.67	1.29	20.51
1.0D + 1.0W	402.30	5.85	24.81

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	60.00	6.273	0.929
1.0D + 1.0W	110.00	19.320	1.503
1.0D + 1.0W	110.00	19.320	1.503



Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:18 AM

Customer: AT&T Mobility

Analysis Parameters

Location:	Hartford County, CT	Height (ft):	110
Code:	ANSI/TIA-222-G	Base Diameter (in):	30.00
Shape:	12 Sides. Sect 4: Round	Top Diameter (in):	12.75
Pole Type:	Custom	Taper (in/ft) :	0.164
Pole Manufacturer:	ITT Meyer		

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	95 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	4	Operational Wind Speed:	60 mph
Crest Height:	36.4 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.13		
T _L (sec):	6	p:	1.3
S _s :	0.181	S ₁ :	0.064
F _a :	1.600	F _v :	2.400
S _{ds} :	0.193	S _{d1} :	0.102
		C _s :	0.032
		C _s Max:	0.032
		C _s Min:	0.030

Load Cases

1.2D + 1.6W	95 mph with No Ice
0.9D + 1.6W	95 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in 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	32.830	0.2500	65		0.00	2,434	30.00	0.00	23.95	2705.5	29.47	120.00	24.62	32.83	19.62	1487.9	23.71	98.50	0.163751
2-12	36.420	0.2500	50	Slip	42.00	2,241	25.69	29.33	20.49	1693.2	24.86	102.79	19.73	65.75	15.68	759.9	18.47	78.93	0.163751
3-12	37.083	0.1875	50	Slip	34.00	1,322	20.57	62.92	12.31	652.8	26.72	109.72	14.50	100.00	8.64	225.9	18.04	77.33	0.163751
4-R	10.000	0.3750	35	Butt	0.00	496	12.75	100.00	14.58	279.3	0.00	34.00	12.75	110.00	14.58	279.3	0.00	34.00	0.000000
Shaft Weight						6,493													

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		
110.00	Argus LLPX310R	3	28.60	4.290	0.63	178.50	5.481	0.63	0.000	0.000
110.00	DragonWave A-ANT-11G-2.5-	2	47.60	8.670	0.90	213.26	10.914	0.90	0.000	0.000
110.00	DragonWave A-ANT-23G-1-C	1	15.00	1.610	0.90	60.90	2.594	0.90	0.000	0.000
110.00	DragonWave Horizon	3	10.60	0.430	0.50	54.59	0.772	0.50	0.000	0.000
110.00	NextNet BTS-2500	3	35.00	1.820	0.64	115.53	2.551	0.64	0.000	0.000
110.00	Side Arms	1	560.00	8.500	1.00	1,168.26	17.733	1.00	0.000	0.000
100.00	Andrew SBNH-1D6565C	1	60.80	11.450	0.70	418.19	13.597	0.70	0.000	4.000
100.00	CCI OPA-65R-LCUU-H6	2	73.00	9.660	0.66	386.34	11.449	0.66	0.000	4.000
100.00	CCI OPA-65R-LCUU-H8	1	88.00	12.750	0.67	469.44	14.867	0.67	0.000	4.000
100.00	Ericsson RRUS-11	6	50.00	2.570	0.50	162.11	3.424	0.50	0.000	2.000
100.00	Ericsson RRUS-32	3	77.00	3.310	0.50	202.47	4.964	0.50	0.000	2.000
100.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,833.54	69.457	1.00	0.000	0.000
100.00	Kathrein 860-10025	6	1.10	0.140	0.50	15.26	0.398	0.50	0.000	2.000
100.00	KMW AM-X-CD-16-65-00T-	2	48.50	8.020	0.67	305.89	9.719	0.67	0.000	4.000
100.00	Powerwave 7770.00	3	35.00	5.510	0.65	220.58	6.897	0.65	0.000	4.000
100.00	Powerwave LGP21401	6	14.10	1.100	0.50	62.42	1.718	0.50	0.000	0.000
100.00	Powerwave TT19-08BP111-	3	16.00	0.640	0.50	56.20	1.018	0.50	0.000	0.000
100.00	Raycap DC6-48-60-18-8F	2	32.80	1.280	1.00	160.37	2.146	1.00	0.000	5.000
89.50	Commscope LNX-6515DS-	3	50.30	11.440	0.70	404.69	13.582	0.70	0.000	1.500
89.50	Ericsson KRY 112 144/1	3	11.00	0.410	0.50	35.30	0.734	0.50	0.000	1.500
89.50	Ericsson KRY 112 489/1	3	15.40	0.650	0.50	51.19	1.027	0.50	0.000	1.500
89.50	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,330.16	50.563	1.00	0.000	0.000
89.50	Kathrein Smart Bias Tee	3	3.31	0.090	0.50	14.25	0.312	0.50	0.000	1.500
89.50	RFS APX16DWV-16DWV-S-E-	3	39.60	6.080	0.60	216.46	7.483	0.60	0.000	1.500
80.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.50	167.11	2.966	0.50	0.000	0.000
80.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.50	138.50	2.654	0.50	0.000	0.000
80.00	Antel BXA-171063-12CF-EDIN-	6	12.80	4.800	0.72	178.78	6.394	0.72	0.000	0.000
80.00	Antel BXA-70063-6CF-EDIN-2	6	17.00	7.570	0.66	251.70	9.210	0.66	0.000	0.000
80.00	RFS DB-T1-6Z-8AB-0Z	2	44.00	4.800	0.50	235.83	5.932	0.50	0.000	0.000
80.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,325.80	46.171	1.00	0.000	0.000
77.00	Scala 840 10212	1	6.70	2.170	1.00	93.16	3.042	1.00	0.000	0.000
77.00	Stand Offs	2	75.00	2.500	1.00	121.55	3.741	1.00	0.000	0.000
77.00	TX RX Systems 421-86A-10-	1	15.00	2.220	1.00	86.10	3.018	1.00	0.000	0.000
60.00	Radio Waves SP2-4.7 w/	1	26.00	2.710	1.00	154.90	3.188	1.00	0.000	0.000
60.00	Scala 840 10212	1	6.70	2.170	1.00	92.43	3.036	1.00	0.000	0.000
60.00	Stand Off	1	75.00	2.500	1.00	121.27	4.152	1.00	0.000	0.000
Totals		93	8332.53			23,588.40			Number of Loadings : 36	

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	110.00	3	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

0.00	110.00	1	2" Conduit	2.38	3.65	N	2.38	Y	Clearwire
0.00	110.00	6	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
0.00	100.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
0.00	100.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	100.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	100.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	100.00	6	1 5/8" Coax	1.98	0.82	N	3.96	Y	AT&T Mobility
0.00	100.00	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	89.50	18	1 5/8" Coax	1.98	0.82	N	1.98	Y	T-Mobile (4*1.09 - 2.38)
0.00	81.00	4	#20 DYWIDAG	8.00	0.00	N	0.00	Y	--
0.00	80.00	12	1 5/8" Coax	1.98	0.82	N	0.00	Y	Verizon
0.00	80.00	2	1 5/8" Hybriflex	1.98	1.30	N	0.00	Y	Verizon
0.00	77.00	1	7/8" Coax	1.09	0.33	N	0.00	Y	West Hartford
0.00	60.00	1	1/4" Coax	0.34	0.06	N	0.00	Y	West Hartford
0.00	60.00	1	7/8" Coax	1.09	0.33	N	0.00	Y	West Hartford

Additional Steel

— Intermediate Connections —											
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Description	Spacing (in)	Len (in)	Connectors	Continuation?	
0.00	47.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	39.0	3.31	5/8" A36 U-Bolt	Yes	
47.50	67.50	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes	
67.50	77.04	4	SOL #20 All Thread	80	2.31	6" Angle Bracket	30.0	3.31	5/8" A36 U-Bolt	Yes	

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

Segment Properties (Max Len : 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in ³)	Z (in ³)	Weight (lb)	Additional Reinforcing		
												Area (in ²)	Ix (in ⁴)	Weight (lb)
0.00		0.2500	30.000	23.949	2,705.5	29.47	120.00	72.6	174.2	0.0	0.0	19.64	3,462	0.0
5.00		0.2500	29.181	23.290	2,488.2	28.60	116.72	73.5	164.7	0.0	401.9	19.64	3,308	334.0
10.00		0.2500	28.362	22.631	2,282.9	27.72	113.45	74.5	155.5	0.0	390.6	19.64	3,157	334.0
15.00		0.2500	27.544	21.971	2,089.2	26.84	110.17	75.4	146.5	0.0	379.4	19.64	3,010	334.0
20.00		0.2500	26.725	21.312	1,906.7	25.96	106.90	76.4	137.8	0.0	368.2	19.64	2,866	334.0
25.00		0.2500	25.906	20.653	1,735.2	25.09	103.62	77.4	129.4	0.0	357.0	19.64	2,726	334.0
29.33	Bot - Section 2	0.2500	25.197	20.083	1,595.3	24.33	100.79	78.2	122.3	0.0	300.1	19.64	2,607	289.2
30.00		0.2500	25.087	19.994	1,574.4	24.21	100.35	78.3	121.2	0.0	92.3	19.64	2,672	44.8
32.83	Top - Section 1	0.2500	25.124	20.024	1,581.3	24.25	100.50	62.7	121.6	0.0	385.4	19.64	2,595	189.0
35.00		0.2500	24.769	19.738	1,514.5	23.87	99.07	63.0	118.1	0.0	146.8	19.64	2,537	145.0
40.00		0.2500	23.950	19.078	1,367.8	22.99	95.80	63.0	110.3	0.0	330.2	19.64	2,405	334.0
45.00		0.2500	23.131	18.419	1,230.9	22.11	92.52	63.0	102.8	0.0	319.0	19.64	2,277	334.0
47.50	Reinf. Top Reinf	0.2500	22.722	18.090	1,166.0	21.67	90.89	63.0	99.1	0.0	155.3	19.64	2,214	167.0
50.00		0.2500	22.312	17.760	1,103.4	21.23	89.25	63.0	95.5	0.0	152.5	19.64	2,152	167.0
55.00		0.2500	21.494	17.101	985.1	20.36	85.97	63.0	88.5	0.0	296.6	19.64	2,031	334.0
60.00		0.2500	20.675	16.442	875.5	19.48	82.70	63.0	81.8	0.0	285.4	19.64	1,913	334.0
62.92	Bot - Section 3	0.2500	20.197	16.058	815.5	18.97	80.79	63.0	78.0	0.0	161.3	19.64	1,846	194.8
65.00		0.2500	19.856	15.783	774.4	18.60	79.42	63.0	75.3	0.0	199.4	19.64	1,850	139.2
65.75	Top - Section 2	0.1875	20.108	12.027	609.2	26.06	107.24	61.4	58.5	0.0	70.9	19.64	1,833	50.1
67.50	Reinf. Top Reinf	0.1875	19.822	11.854	583.3	25.65	105.72	61.7	56.8	0.0	71.1	19.64	1,794	116.9
70.00		0.1875	19.412	11.607	547.6	25.06	103.53	62.1	54.5	0.0	99.8	19.64	1,738	167.0
75.00		0.1875	18.594	11.113	480.5	23.89	99.17	63.0	49.9	0.0	193.3	19.64	1,629	334.0
77.00		0.1875	18.266	10.915	455.3	23.42	97.42	63.0	48.2	0.0	75.0	19.64	1,587	133.6
77.04	Reinf. Top	0.1875	18.259	10.911	454.8	23.41	97.38	63.0	48.1	0.0	1.5	19.64	1,586	2.8
80.00		0.1875	17.775	10.618	419.2	22.72	94.80	63.0	45.6	0.0	108.4			
85.00		0.1875	16.956	10.124	363.4	21.55	90.43	63.0	41.4	0.0	176.5			
89.50		0.1875	16.219	9.679	317.5	20.50	86.50	63.0	37.8	0.0	151.6			
90.00		0.1875	16.137	9.630	312.7	20.38	86.07	63.0	37.4	0.0	16.4			
95.00		0.1875	15.319	9.135	267.0	19.21	81.70	63.0	33.7	0.0	159.6			
100.0	Top - Section 3	0.1875	14.500	8.641	225.9	18.04	77.33	63.0	30.1	0.0	151.2			
100.0	Bot - Section 4	0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4				
105.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
110.0		0.3750	12.750	14.579	279.3	0.00	34.00	35.0	43.8	57.4	248.0			
											6,492.7	5,146.3		

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:18 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

95 mph with No Ice

23 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		520.0	0.0					0.0	0.0	520.0	0.0	0.0	0.0
5.00		958.5	482.2					251.5	714.1	1,210.0	1,196.3	0.0	0.0
10.00		815.0	468.8					224.8	714.1	1,039.8	1,182.9	0.0	0.0
15.00		704.9	455.3					204.0	714.1	908.9	1,169.4	0.0	0.0
20.00		619.2	441.9					187.8	714.1	807.0	1,156.0	0.0	0.0
25.00		518.1	428.4					175.1	714.1	693.2	1,142.5	0.0	0.0
29.33	Bot - Section 2	261.4	360.1					143.0	618.4	404.4	978.5	0.0	0.0
30.00		175.4	110.8					21.4	95.7	196.7	206.5	0.0	0.0
32.83	Top - Section 1	247.0	462.4					89.5	404.2	336.5	866.6	0.0	0.0
35.00		341.3	176.2					68.1	309.9	409.5	486.1	0.0	0.0
40.00		461.0	396.2					155.5	714.1	616.5	1,110.3	0.0	0.0
45.00		334.6	382.8					153.9	714.1	488.6	1,096.9	0.0	0.0
47.50	Reinf. Top Reinf	216.3	186.3					76.6	357.0	292.8	543.4	0.0	0.0
50.00		314.9	183.0					76.4	357.0	391.3	540.0	0.0	0.0
55.00		407.9	355.9					152.5	714.1	560.4	1,070.0	0.0	0.0
60.00	Appertunance(s)	313.4	342.4	270.8	0.0	0.0	129.2	152.5	714.1	736.7	1,185.8	0.0	0.0
62.92	Bot - Section 3	194.3	193.5					89.1	415.2	283.4	608.7	0.0	0.0
65.00		109.8	239.3					63.8	296.6	173.6	535.8	0.0	0.0
65.75	Top - Section 2	95.5	85.1					23.0	106.7	118.5	191.9	0.0	0.0
67.50	Reinf. Top Reinf	160.5	85.3					53.7	249.1	214.3	334.5	0.0	0.0
70.00		276.5	119.8					76.9	355.9	353.4	475.6	0.0	0.0
75.00		253.9	231.9					154.5	711.8	408.4	943.7	0.0	0.0
77.00	Appertunance(s)	72.7	89.9	351.0	0.0	0.0	206.0	62.1	284.7	485.8	580.7	0.0	0.0
77.04	Reinf. Top	104.8	1.9					1.3	5.9	106.1	7.8	0.0	0.0
80.00	Appertunance(s)	272.9	130.0	2,664.5	0.0	0.0	2,482.7	92.2	182.8	3,029.6	2,795.5	0.0	0.0
85.00		316.5	211.7					156.9	234.3	473.4	446.1	0.0	0.0
89.50	Appertunance(s)	163.0	181.9	2,121.2	0.0	1,686.5	2,230.6	142.4	210.9	2,426.5	2,623.4	0.0	0.0
90.00		172.4	19.7					12.1	14.6	184.5	34.3	0.0	0.0
95.00		306.0	191.6					121.8	145.8	427.8	337.4	0.0	0.0
100.00	Top - Section 3	228.4	181.5	3,734.7	0.0	7,135.8	3,879.1	123.0	145.8	4,086.0	4,206.4	0.0	0.0
105.00		158.2	297.7					0.0	26.4	158.2	324.1	0.0	0.0
110.00	Appertunance(s)	79.5	297.7	1,270.6	0.0	0.0	1,071.4	0.0	26.4	1,350.1	1,395.4	0.0	0.0
Totals:										23,891.6	29,772.3	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:21 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.6W

95 mph with No Ice

23 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	-29.70	-23.47	0.00	-1,632.27	0.00	1,632.27	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.766
5.00	-28.36	-22.43	0.00	-1,514.93	0.00	1,514.93	1,541.15	770.57	1,839.28	908.35	0.20	-0.36	0.727
10.00	-27.06	-21.55	0.00	-1,402.77	0.00	1,402.77	1,517.03	758.51	1,758.81	868.61	0.77	-0.72	0.688
15.00	-25.78	-20.78	0.00	-1,295.02	0.00	1,295.02	1,491.77	745.88	1,678.72	829.05	1.72	-1.07	0.650
20.00	-24.52	-20.10	0.00	-1,191.12	0.00	1,191.12	1,465.38	732.69	1,599.10	789.74	3.03	-1.42	0.612
25.00	-23.29	-19.50	0.00	-1,090.64	0.00	1,090.64	1,437.85	718.92	1,520.08	750.71	4.70	-1.76	0.574
29.33	-22.27	-19.13	0.00	-1,006.21	0.00	1,006.21	1,413.09	706.55	1,452.23	717.20	6.43	-2.05	0.541
30.00	-22.03	-18.97	0.00	-993.40	0.00	993.40	1,409.19	704.59	1,441.78	712.04	6.72	-2.10	0.526
32.83	-21.13	-18.66	0.00	-939.72	0.00	939.72	1,130.07	565.03	1,157.93	571.86	8.02	-2.28	0.633
35.00	-20.59	-18.31	0.00	-899.24	0.00	899.24	1,119.12	559.56	1,130.16	558.15	9.09	-2.42	0.613
40.00	-19.41	-17.74	0.00	-807.70	0.00	807.70	1,081.75	540.87	1,055.58	521.31	11.79	-2.72	0.572
45.00	-18.28	-17.27	0.00	-718.99	0.00	718.99	1,044.38	522.19	983.54	485.73	14.79	-3.00	0.529
47.50	-17.71	-16.99	0.00	-675.83	0.00	675.83	1,025.69	512.85	948.47	468.41	16.40	-3.15	0.507
47.50	-17.71	-16.99	0.00	-675.83	0.00	675.83	1,025.69	512.85	948.47	468.41	16.40	-3.15	0.507
50.00	-17.14	-16.63	0.00	-633.36	0.00	633.36	1,007.01	503.50	914.04	451.41	18.08	-3.28	0.485
55.00	-16.03	-16.07	0.00	-550.22	0.00	550.22	969.64	484.82	847.09	418.35	21.66	-3.54	0.438
60.00	-14.85	-15.31	0.00	-469.85	0.00	469.85	932.27	466.13	782.69	386.54	25.50	-3.78	0.390
62.92	-14.23	-15.02	0.00	-425.20	0.00	425.20	910.47	455.23	746.30	368.57	27.86	-3.92	0.362
65.00	-13.69	-14.82	0.00	-393.91	0.00	393.91	894.90	447.45	720.83	355.99	29.59	-4.01	0.334
65.75	-13.49	-14.70	0.00	-382.80	0.00	382.80	664.38	332.19	545.54	269.42	30.22	-4.04	0.364
67.50	-13.15	-14.48	0.00	-357.07	0.00	357.07	658.03	329.02	532.49	262.97	31.71	-4.11	0.343
67.50	-13.15	-14.48	0.00	-357.07	0.00	357.07	658.03	329.02	532.49	262.97	31.71	-4.11	0.343
70.00	-12.67	-14.13	0.00	-320.87	0.00	320.87	648.81	324.40	513.97	253.83	33.89	-4.21	0.312
75.00	-11.73	-13.67	0.00	-250.23	0.00	250.23	629.79	314.89	477.45	235.80	38.40	-4.39	0.250
77.00	-11.18	-13.15	0.00	-222.89	0.00	222.89	618.88	309.44	460.75	227.55	40.25	-4.45	0.227
77.04	-11.17	-13.05	0.00	-222.34	0.00	222.34	618.65	309.32	460.40	227.37	40.29	-4.45	0.226
77.04	-11.17	-13.05	0.00	-222.34	0.00	222.34	618.65	309.32	460.40	227.37	40.29	-4.45	0.998
80.00	-8.57	-9.86	0.00	-183.72	0.00	183.72	602.06	301.03	435.93	215.29	43.08	-4.54	0.869
85.00	-8.09	-9.42	0.00	-134.42	0.00	134.42	574.04	287.02	396.08	195.61	48.12	-5.08	0.702
89.50	-5.67	-6.78	0.00	-90.35	0.00	90.35	548.81	274.41	361.85	178.70	53.11	-5.48	0.517
90.00	-5.64	-6.61	0.00	-86.96	0.00	86.96	546.01	273.00	358.14	176.87	53.68	-5.52	0.503
95.00	-5.31	-6.18	0.00	-53.89	0.00	53.89	517.98	258.99	322.11	159.08	59.63	-5.84	0.350
100.00	-1.55	-1.68	0.00	-15.86	0.00	15.86	489.95	244.98	288.00	142.23	65.86	-6.04	0.115
100.00	-1.55	-1.68	0.00	-15.86	0.00	15.86	459.24	229.62	229.69	150.79	65.86	-6.04	0.109
105.00	-1.24	-1.49	0.00	-7.46	0.00	7.46	459.24	229.62	229.69	150.79	72.22	-6.12	0.052
110.00	0.00	-1.35	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	78.62	-6.13	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:21 AM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

95 mph with No Ice (Reduced DL)

23 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		520.0	0.0					0.0	0.0	520.0	0.0	0.0	0.0
5.00		958.5	361.7					251.5	535.6	1,210.0	897.2	0.0	0.0
10.00		815.0	351.6					224.8	535.6	1,039.8	887.2	0.0	0.0
15.00		704.9	341.5					204.0	535.6	908.9	877.1	0.0	0.0
20.00		619.2	331.4					187.8	535.6	807.0	867.0	0.0	0.0
25.00		518.1	321.3					175.1	535.6	693.2	856.9	0.0	0.0
29.33	Bot - Section 2	261.4	270.1					143.0	463.8	404.4	733.9	0.0	0.0
30.00		175.4	83.1					21.4	71.8	196.7	154.8	0.0	0.0
32.83	Top - Section 1	247.0	346.8					89.5	303.1	336.5	649.9	0.0	0.0
35.00		341.3	132.1					68.1	232.5	409.5	364.6	0.0	0.0
40.00		461.0	297.2					155.5	535.6	616.5	832.8	0.0	0.0
45.00		334.6	287.1					153.9	535.6	488.6	822.7	0.0	0.0
47.50	Reinf. Top Reinf	216.3	139.8					76.6	267.8	292.8	407.5	0.0	0.0
50.00		314.9	137.2					76.4	267.8	391.3	405.0	0.0	0.0
55.00		407.9	266.9					152.5	535.6	560.4	802.5	0.0	0.0
60.00	Appertunance(s)	313.4	256.8	270.8	0.0	0.0	96.9	152.5	535.6	736.7	889.3	0.0	0.0
62.92	Bot - Section 3	194.3	145.1					89.1	311.4	283.4	456.5	0.0	0.0
65.00		109.8	179.5					63.8	222.4	173.6	401.9	0.0	0.0
65.75	Top - Section 2	95.5	63.8					23.0	80.1	118.5	143.9	0.0	0.0
67.50	Reinf. Top Reinf	160.5	64.0					53.7	186.8	214.3	250.8	0.0	0.0
70.00		276.5	89.8					76.9	266.9	353.4	356.7	0.0	0.0
75.00		253.9	173.9					154.5	533.8	408.4	707.8	0.0	0.0
77.00	Appertunance(s)	72.7	67.5	351.0	0.0	0.0	154.5	62.1	213.5	485.8	435.5	0.0	0.0
77.04	Reinf. Top	104.8	1.4					1.3	4.4	106.1	5.8	0.0	0.0
80.00	Appertunance(s)	272.9	97.5	2,664.5	0.0	0.0	1,862.0	92.2	137.1	3,029.6	2,096.7	0.0	0.0
85.00		316.5	158.8					156.9	175.8	473.4	334.6	0.0	0.0
89.50	Appertunance(s)	163.0	136.5	2,121.2	0.0	1,686.5	1,672.9	142.4	158.2	2,426.5	1,967.6	0.0	0.0
90.00		172.4	14.8					12.1	10.9	184.5	25.7	0.0	0.0
95.00		306.0	143.7					121.8	109.3	427.8	253.0	0.0	0.0
100.00	Top - Section 3	212.1	136.1	3,734.7	0.0	7,135.8	2,909.3	123.0	109.3	4,069.7	3,154.8	0.0	0.0
105.00		125.5	223.2					0.0	19.8	125.5	243.0	0.0	0.0
110.00	Appertunance(s)	63.1	223.2	1,270.6	0.0	0.0	803.5	0.0	19.8	1,333.7	1,046.6	0.0	0.0
Totals:										23,826.4	22,329.2	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:23 AM

Customer: AT&T Mobility

Load Case: 0.9D + 1.6W

95 mph with No Ice (Reduced DL)

23 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	-22.25	-23.38	0.00	-1,603.99	0.00	1,603.99	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.751
5.00	-21.22	-22.30	0.00	-1,487.10	0.00	1,487.10	1,541.15	770.57	1,839.28	908.35	0.19	-0.36	0.711
10.00	-20.22	-21.37	0.00	-1,375.63	0.00	1,375.63	1,517.03	758.51	1,758.81	868.61	0.76	-0.71	0.672
15.00	-19.23	-20.56	0.00	-1,268.77	0.00	1,268.77	1,491.77	745.88	1,678.72	829.05	1.68	-1.05	0.635
20.00	-18.27	-19.85	0.00	-1,165.95	0.00	1,165.95	1,465.38	732.69	1,599.10	789.74	2.97	-1.39	0.597
25.00	-17.33	-19.22	0.00	-1,066.73	0.00	1,066.73	1,437.85	718.92	1,520.08	750.71	4.61	-1.73	0.560
29.33	-16.55	-18.84	0.00	-983.49	0.00	983.49	1,413.09	706.55	1,452.23	717.20	6.31	-2.01	0.527
30.00	-16.37	-18.67	0.00	-970.87	0.00	970.87	1,409.19	704.59	1,441.78	712.04	6.59	-2.05	0.512
32.83	-15.68	-18.35	0.00	-918.03	0.00	918.03	1,130.07	565.03	1,157.93	571.86	7.87	-2.23	0.616
35.00	-15.26	-17.99	0.00	-878.20	0.00	878.20	1,119.12	559.56	1,130.16	558.15	8.91	-2.37	0.596
40.00	-14.37	-17.41	0.00	-788.26	0.00	788.26	1,081.75	540.87	1,055.58	521.31	11.55	-2.66	0.556
45.00	-13.51	-16.93	0.00	-701.22	0.00	701.22	1,044.38	522.19	983.54	485.73	14.49	-2.94	0.514
47.50	-13.08	-16.65	0.00	-658.90	0.00	658.90	1,025.69	512.85	948.47	468.41	16.07	-3.08	0.492
47.50	-13.08	-16.65	0.00	-658.90	0.00	658.90	1,025.69	512.85	948.47	468.41	16.07	-3.08	0.492
50.00	-12.64	-16.28	0.00	-617.28	0.00	617.28	1,007.01	503.50	914.04	451.41	17.72	-3.21	0.470
55.00	-11.81	-15.72	0.00	-535.91	0.00	535.91	969.64	484.82	847.09	418.35	21.22	-3.47	0.425
60.00	-10.92	-14.96	0.00	-457.31	0.00	457.31	932.27	466.13	782.69	386.54	24.98	-3.70	0.378
62.92	-10.46	-14.67	0.00	-413.66	0.00	413.66	910.47	455.23	746.30	368.57	27.28	-3.83	0.350
65.00	-10.05	-14.48	0.00	-383.10	0.00	383.10	894.90	447.45	720.83	355.99	28.97	-3.92	0.323
65.75	-9.90	-14.36	0.00	-372.24	0.00	372.24	864.38	332.19	545.54	269.42	29.59	-3.95	0.352
67.50	-9.65	-14.14	0.00	-347.11	0.00	347.11	658.03	329.02	532.49	262.97	31.05	-4.02	0.331
67.50	-9.65	-14.14	0.00	-347.11	0.00	347.11	658.03	329.02	532.49	262.97	31.05	-4.02	0.331
70.00	-9.28	-13.79	0.00	-311.74	0.00	311.74	648.81	324.40	513.97	253.83	33.18	-4.12	0.301
75.00	-8.58	-13.35	0.00	-242.80	0.00	242.80	629.79	314.89	477.45	235.80	37.58	-4.29	0.241
77.00	-8.18	-12.83	0.00	-216.11	0.00	216.11	618.88	309.44	460.75	227.55	39.39	-4.35	0.218
77.04	-8.17	-12.73	0.00	-215.57	0.00	215.57	618.65	309.32	460.40	227.37	39.43	-4.35	0.218
77.04	-8.17	-12.73	0.00	-215.57	0.00	215.57	618.65	309.32	460.40	227.37	39.43	-4.35	0.963
80.00	-6.26	-9.59	0.00	-177.90	0.00	177.90	602.06	301.03	435.93	215.29	42.15	-4.43	0.838
85.00	-5.89	-9.13	0.00	-129.96	0.00	129.96	574.04	287.02	396.08	195.61	47.08	-4.96	0.676
89.50	-4.13	-6.56	0.00	-87.17	0.00	87.17	548.81	274.41	361.85	178.70	51.94	-5.34	0.496
90.00	-4.10	-6.38	0.00	-83.89	0.00	83.89	546.01	273.00	358.14	176.87	52.50	-5.38	0.482
95.00	-3.86	-5.95	0.00	-51.98	0.00	51.98	517.98	258.99	322.11	159.08	58.30	-5.69	0.335
100.00	-1.13	-1.58	0.00	-15.10	0.00	15.10	489.95	244.98	288.00	142.23	64.37	-5.89	0.109
100.00	-1.13	-1.58	0.00	-15.10	0.00	15.10	459.24	229.62	229.69	150.79	64.37	-5.89	0.103
105.00	-0.90	-1.44	0.00	-7.18	0.00	7.18	459.24	229.62	229.69	150.79	70.56	-5.96	0.050
110.00	0.00	-1.33	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	76.80	-5.97	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:23 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	23 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		102.6	0.0					0.0	0.0	102.6	0.0	0.0	0.0	
5.00		190.0	914.1					124.1	2,110.6	314.1	3,024.6	0.0	0.0	
10.00		162.9	917.2					111.7	2,204.5	274.6	3,121.8	0.0	0.0	
15.00		141.5	895.4					99.2	2,217.3	240.7	3,112.6	0.0	0.0	
20.00		124.7	868.1					88.9	2,211.2	213.7	3,079.3	0.0	0.0	
25.00		104.7	839.6					80.8	2,200.0	185.5	3,039.6	0.0	0.0	
29.33	Bot - Section 2	52.9	704.7					64.8	1,895.9	117.7	2,600.7	0.0	0.0	
30.00		35.5	164.7					9.7	292.7	45.2	457.4	0.0	0.0	
32.83	Top - Section 1	50.1	685.7					40.4	1,234.3	90.5	1,920.0	0.0	0.0	
35.00		69.4	344.7					30.7	944.6	100.1	1,289.3	0.0	0.0	
40.00		94.1	771.4					70.0	2,171.0	164.0	2,942.4	0.0	0.0	
45.00		68.5	744.8					69.1	2,165.5	137.7	2,910.3	0.0	0.0	
47.50	Reinf. Top Reinf	44.5	364.1					34.4	1,081.4	78.8	1,445.4	0.0	0.0	
50.00		65.0	357.6					34.3	1,080.8	99.3	1,438.4	0.0	0.0	
55.00		84.6	693.2					68.4	2,160.5	153.0	2,853.7	0.0	0.0	
60.00	Appertunance(s)	65.3	668.1	65.9	0.0	0.0	363.6	68.4	2,160.5	199.6	3,192.2	0.0	0.0	
62.92	Bot - Section 3	40.6	379.6					40.0	1,217.3	80.6	1,596.9	0.0	0.0	
65.00		23.0	372.5					28.6	870.0	51.6	1,242.5	0.0	0.0	
65.75	Top - Section 2	20.1	132.8					10.3	313.2	30.4	446.0	0.0	0.0	
67.50	Reinf. Top Reinf	33.8	195.3					24.1	731.2	57.9	926.5	0.0	0.0	
70.00		58.5	274.0					34.5	1,045.1	93.0	1,319.1	0.0	0.0	
75.00		53.9	529.3					69.4	2,092.5	123.4	2,621.8	0.0	0.0	
77.00	Appertunance(s)	15.5	207.2	87.6	0.0	0.0	606.7	27.9	838.0	131.1	1,652.0	0.0	0.0	
77.04	Reinf. Top	22.5	4.3					0.6	17.1	23.1	21.4	0.0	0.0	
80.00	Appertunance(s)	58.8	299.6	708.3	0.0	0.0	6,511.0	41.5	978.8	808.6	7,789.4	0.0	0.0	
85.00		68.7	487.3					70.7	928.4	139.4	1,415.6	0.0	0.0	
89.50	Appertunance(s)	35.6	421.2	573.6	0.0	358.9	4,667.6	64.3	762.8	673.5	5,851.6	0.0	0.0	
90.00		38.0	46.2					5.1	39.0	43.1	85.3	0.0	0.0	
95.00		68.0	445.3					50.9	391.0	118.8	836.3	0.0	0.0	
100.00	Top - Section 3	62.7	424.3	932.2	0.0	1,548.3	9,415.7	51.5	392.1	1,046.4	10,232.1	0.0	0.0	
105.00		58.9	504.2					0.0	128.8	58.9	633.0	0.0	0.0	
110.00	Appertunance(s)	29.6	505.1	333.7	0.0	0.0	2,611.2	0.0	129.4	363.2	3,245.7	0.0	0.0	
							Totals:				6,360.10	76,342.7	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:25 AM

Customer: AT&T Mobility

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

23 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	-76.34	-6.33	0.00	-476.96	0.00	476.96	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.248
5.00	-73.30	-6.15	0.00	-445.31	0.00	445.31	1,541.15	770.57	1,839.28	908.35	0.06	-0.11	0.236
10.00	-70.17	-5.99	0.00	-414.57	0.00	414.57	1,517.03	758.51	1,758.81	868.61	0.23	-0.21	0.225
15.00	-67.05	-5.86	0.00	-384.60	0.00	384.60	1,491.77	745.88	1,678.72	829.05	0.50	-0.32	0.214
20.00	-63.96	-5.74	0.00	-355.30	0.00	355.30	1,465.38	732.69	1,599.10	789.74	0.89	-0.42	0.202
25.00	-60.91	-5.63	0.00	-326.60	0.00	326.60	1,437.85	718.92	1,520.08	750.71	1.39	-0.52	0.191
29.33	-58.31	-5.54	0.00	-302.22	0.00	302.22	1,413.09	706.55	1,452.23	717.20	1.90	-0.61	0.181
30.00	-57.85	-5.52	0.00	-298.51	0.00	298.51	1,409.19	704.59	1,441.78	712.04	1.99	-0.62	0.176
32.83	-55.92	-5.46	0.00	-282.88	0.00	282.88	1,130.07	565.03	1,157.93	571.86	2.37	-0.68	0.212
35.00	-54.63	-5.41	0.00	-271.04	0.00	271.04	1,119.12	559.56	1,130.16	558.15	2.69	-0.72	0.206
40.00	-51.68	-5.28	0.00	-244.01	0.00	244.01	1,081.75	540.87	1,055.58	521.31	3.49	-0.81	0.193
45.00	-48.77	-5.16	0.00	-217.60	0.00	217.60	1,044.38	522.19	983.54	485.73	4.38	-0.90	0.180
47.50	-47.32	-5.09	0.00	-204.71	0.00	204.71	1,025.69	512.85	948.47	468.41	4.87	-0.94	0.173
47.50	-47.32	-5.09	0.00	-204.71	0.00	204.71	1,025.69	512.85	948.47	468.41	4.87	-0.94	0.173
50.00	-45.88	-5.01	0.00	-191.99	0.00	191.99	1,007.01	503.50	914.04	451.41	5.37	-0.98	0.166
55.00	-43.02	-4.87	0.00	-166.92	0.00	166.92	969.64	484.82	847.09	418.35	6.44	-1.06	0.151
60.00	-39.83	-4.65	0.00	-142.59	0.00	142.59	932.27	466.13	782.69	386.54	7.59	-1.13	0.135
62.92	-38.23	-4.56	0.00	-129.04	0.00	129.04	910.47	455.23	746.30	368.57	8.29	-1.17	0.126
65.00	-36.99	-4.49	0.00	-119.55	0.00	119.55	894.90	447.45	720.83	355.99	8.81	-1.20	0.118
65.75	-36.54	-4.46	0.00	-116.18	0.00	116.18	664.38	332.19	545.54	269.42	9.00	-1.21	0.129
67.50	-35.62	-4.40	0.00	-108.38	0.00	108.38	658.03	329.02	532.49	262.97	9.45	-1.23	0.122
67.50	-35.62	-4.40	0.00	-108.38	0.00	108.38	658.03	329.02	532.49	262.97	9.45	-1.23	0.122
70.00	-34.30	-4.30	0.00	-97.38	0.00	97.38	648.81	324.40	513.97	253.83	10.10	-1.26	0.112
75.00	-31.67	-4.14	0.00	-75.86	0.00	75.86	629.79	314.89	477.45	235.80	11.45	-1.32	0.092
77.00	-30.03	-3.98	0.00	-67.58	0.00	67.58	618.88	309.44	460.75	227.55	12.01	-1.34	0.084
77.04	-30.00	-3.96	0.00	-67.42	0.00	67.42	618.65	309.32	460.40	227.37	12.02	-1.34	0.084
77.04	-30.00	-3.96	0.00	-67.42	0.00	67.42	618.65	309.32	460.40	227.37	12.02	-1.34	0.345
80.00	-22.23	-3.01	0.00	-55.70	0.00	55.70	602.06	301.03	435.93	215.29	12.86	-1.36	0.296
85.00	-20.81	-2.88	0.00	-40.67	0.00	40.67	574.04	287.02	396.08	195.61	14.37	-1.52	0.244
89.50	-14.98	-2.06	0.00	-27.35	0.00	27.35	548.81	274.41	361.85	178.70	15.87	-1.64	0.180
90.00	-14.89	-2.03	0.00	-26.31	0.00	26.31	546.01	273.00	358.14	176.87	16.04	-1.66	0.176
95.00	-14.06	-1.91	0.00	-16.15	0.00	16.15	517.98	258.99	322.11	159.08	17.84	-1.75	0.129
100.00	-3.86	-0.55	0.00	-5.06	0.00	5.06	489.95	244.98	288.00	142.23	19.71	-1.81	0.043
100.00	-3.86	-0.55	0.00	-5.06	0.00	5.06	459.24	229.62	229.69	150.79	19.71	-1.81	0.042
105.00	-3.23	-0.47	0.00	-2.34	0.00	2.34	459.24	229.62	229.69	150.79	21.62	-1.84	0.023
110.00	0.00	-0.36	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	23.55	-1.84	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:25 AM

Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 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		129.6	0.0					0.0	0.0	129.6	0.0	0.0	0.0	
5.00		239.0	401.9					70.4	595.1	309.4	996.9	0.0	0.0	
10.00		203.2	390.6					61.1	595.1	264.3	985.7	0.0	0.0	
15.00		175.7	379.4					54.0	595.1	229.7	974.5	0.0	0.0	
20.00		154.4	368.2					48.5	595.1	202.9	963.3	0.0	0.0	
25.00		129.2	357.0					44.3	595.1	173.4	952.1	0.0	0.0	
29.33	Bot - Section 2	65.2	300.1					35.6	515.3	100.8	815.4	0.0	0.0	
30.00		43.7	92.3					5.3	79.8	49.0	172.1	0.0	0.0	
32.83	Top - Section 1	61.6	385.4					22.3	336.8	83.9	722.2	0.0	0.0	
35.00		85.1	146.8					17.0	258.3	102.1	405.1	0.0	0.0	
40.00		114.9	330.2					38.8	595.1	153.7	925.3	0.0	0.0	
45.00		83.4	319.0					38.4	595.1	121.8	914.1	0.0	0.0	
47.50	Reinf. Top Reinf	53.9	155.3					19.1	297.5	73.0	452.8	0.0	0.0	
50.00		78.5	152.5					19.0	297.5	97.5	450.0	0.0	0.0	
55.00		101.7	296.6					38.0	595.1	139.7	891.6	0.0	0.0	
60.00	Appertunance(s)	78.1	285.4	67.5	0.0	0.0	107.7	38.0	595.1	183.7	988.1	0.0	0.0	
62.92	Bot - Section 3	48.4	161.3					22.2	346.0	70.7	507.3	0.0	0.0	
65.00		27.4	199.4					15.9	247.2	43.3	446.5	0.0	0.0	
65.75	Top - Section 2	23.8	70.9					5.7	89.0	29.6	159.9	0.0	0.0	
67.50	Reinf. Top Reinf	40.0	71.1					13.4	207.6	53.4	278.7	0.0	0.0	
70.00		68.9	99.8					19.2	296.6	88.1	396.4	0.0	0.0	
75.00		63.3	193.3					38.5	593.1	101.8	786.4	0.0	0.0	
77.00	Appertunance(s)	18.1	75.0	87.5	0.0	0.0	171.7	15.5	237.3	121.1	483.9	0.0	0.0	
77.04	Reinf. Top	26.1	1.5					0.3	4.9	26.5	6.5	0.0	0.0	
80.00	Appertunance(s)	68.0	108.4	664.3	0.0	0.0	2,068.9	23.0	152.3	755.3	2,329.6	0.0	0.0	
85.00		78.9	176.5					39.1	195.3	118.0	371.7	0.0	0.0	
89.50	Appertunance(s)	40.6	151.6	528.8	0.0	420.5	1,858.8	35.5	175.8	605.0	2,186.2	0.0	0.0	
90.00		43.0	16.4					3.0	12.1	46.0	28.6	0.0	0.0	
95.00		76.3	159.6					30.4	121.5	106.7	281.1	0.0	0.0	
100.00	Top - Section 3	52.9	151.2	931.1	0.0	1,779.0	3,232.6	30.7	121.5	1,014.6	3,505.3	0.0	0.0	
105.00		31.3	248.0					0.0	22.0	31.3	270.0	0.0	0.0	
110.00	Appertunance(s)	15.7	248.0	316.8	0.0	0.0	892.8	0.0	22.0	332.5	1,162.8	0.0	0.0	
Totals:											5,958.23	24,810.2	0.00	0.00

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:28 AM

Customer: AT&T Mobility

Load Case: 1.0D + 1.0W

Serviceability 60 mph

22 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	-24.81	-5.85	0.00	-402.30	0.00	402.30	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.195
5.00	-23.80	-5.57	0.00	-373.06	0.00	373.06	1,541.15	770.57	1,839.28	908.35	0.05	-0.09	0.185
10.00	-22.81	-5.34	0.00	-345.19	0.00	345.19	1,517.03	758.51	1,758.81	868.61	0.19	-0.18	0.175
15.00	-21.83	-5.14	0.00	-318.48	0.00	318.48	1,491.77	745.88	1,678.72	829.05	0.42	-0.26	0.165
20.00	-20.86	-4.96	0.00	-292.77	0.00	292.77	1,465.38	732.69	1,599.10	789.74	0.75	-0.35	0.156
25.00	-19.90	-4.81	0.00	-267.94	0.00	267.94	1,437.85	718.92	1,520.08	750.71	1.16	-0.43	0.146
29.33	-19.08	-4.72	0.00	-247.11	0.00	247.11	1,413.09	706.55	1,452.23	717.20	1.58	-0.50	0.138
30.00	-18.91	-4.68	0.00	-243.95	0.00	243.95	1,409.19	704.59	1,441.78	712.04	1.66	-0.52	0.134
32.83	-18.18	-4.60	0.00	-230.72	0.00	230.72	1,130.07	565.03	1,157.93	571.86	1.97	-0.56	0.161
35.00	-17.77	-4.51	0.00	-220.74	0.00	220.74	1,119.12	559.56	1,130.16	558.15	2.24	-0.59	0.156
40.00	-16.85	-4.37	0.00	-198.19	0.00	198.19	1,081.75	540.87	1,055.58	521.31	2.90	-0.67	0.146
45.00	-15.93	-4.25	0.00	-176.36	0.00	176.36	1,044.38	522.19	983.54	485.73	3.64	-0.74	0.135
47.50	-15.47	-4.18	0.00	-165.74	0.00	165.74	1,025.69	512.85	948.47	468.41	4.03	-0.77	0.129
47.50	-15.47	-4.18	0.00	-165.74	0.00	165.74	1,025.69	512.85	948.47	468.41	4.03	-0.77	0.129
50.00	-15.02	-4.09	0.00	-155.30	0.00	155.30	1,007.01	503.50	914.04	451.41	4.45	-0.81	0.124
55.00	-14.13	-3.95	0.00	-134.86	0.00	134.86	969.64	484.82	847.09	418.35	5.33	-0.87	0.112
60.00	-13.14	-3.76	0.00	-115.12	0.00	115.12	932.27	466.13	782.69	386.54	6.27	-0.93	0.100
62.92	-12.63	-3.69	0.00	-104.15	0.00	104.15	910.47	455.23	746.30	368.57	6.85	-0.96	0.093
65.00	-12.19	-3.64	0.00	-96.47	0.00	96.47	894.90	447.45	720.83	355.99	7.28	-0.98	0.086
65.75	-12.03	-3.61	0.00	-93.74	0.00	93.74	664.38	332.19	545.54	269.42	7.43	-0.99	0.094
67.50	-11.75	-3.56	0.00	-87.42	0.00	87.42	658.03	329.02	532.49	262.97	7.80	-1.01	0.088
67.50	-11.75	-3.56	0.00	-87.42	0.00	87.42	658.03	329.02	532.49	262.97	7.80	-1.01	0.088
70.00	-11.35	-3.47	0.00	-78.53	0.00	78.53	648.81	324.40	513.97	253.83	8.34	-1.03	0.081
75.00	-10.56	-3.36	0.00	-61.18	0.00	61.18	629.79	314.89	477.45	235.80	9.44	-1.08	0.065
77.00	-10.08	-3.23	0.00	-54.47	0.00	54.47	618.88	309.44	460.75	227.55	9.90	-1.09	0.059
77.04	-10.08	-3.20	0.00	-54.34	0.00	54.34	618.65	309.32	460.40	227.37	9.91	-1.09	0.059
77.04	-10.08	-3.20	0.00	-54.34	0.00	54.34	618.65	309.32	460.40	227.37	9.91	-1.09	0.255
80.00	-7.76	-2.41	0.00	-44.86	0.00	44.86	602.06	301.03	435.93	215.29	10.59	-1.11	0.221
85.00	-7.38	-2.30	0.00	-32.79	0.00	32.79	574.04	287.02	396.08	195.61	11.83	-1.25	0.181
89.50	-5.21	-1.65	0.00	-22.00	0.00	22.00	548.81	274.41	361.85	178.70	13.06	-1.34	0.133
90.00	-5.18	-1.61	0.00	-21.17	0.00	21.17	546.01	273.00	358.14	176.87	13.20	-1.35	0.129
95.00	-4.90	-1.50	0.00	-13.11	0.00	13.11	517.98	258.99	322.11	159.08	14.66	-1.43	0.092
100.00	-1.42	-0.40	0.00	-3.82	0.00	3.82	489.95	244.98	288.00	142.23	16.19	-1.48	0.030
100.00	-1.42	-0.40	0.00	-3.82	0.00	3.82	459.24	229.62	229.69	150.79	16.19	-1.48	0.028
105.00	-1.15	-0.36	0.00	-1.81	0.00	1.81	459.24	229.62	229.69	150.79	17.75	-1.50	0.015
110.00	0.00	-0.33	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	19.32	-1.50	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_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}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.03
Upper Limit C_s	0.03
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	2.13
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.82
Total Unfactored Dead Load:	24.81 k
Seismic Base Shear (E):	1.03 k

Load Case (1.2 + 0.2S_{ds}) * 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)
31	107.50	270	1,329	0.025	26	334
30	102.50	270	1,219	0.023	24	334
29	97.50	273	1,124	0.021	22	338
28	92.50	281	1,053	0.020	21	348
27	89.75	29	101	0.002	2	35
26	87.25	327	1,103	0.021	22	405
25	82.50	372	1,131	0.022	22	460
24	78.52	261	725	0.014	14	323
23	77.02	6	17	0.000	0	8
22	76.00	312	818	0.016	16	387
21	72.50	786	1,892	0.036	37	974
20	68.75	396	866	0.017	17	491
19	66.62	279	575	0.011	11	345
18	65.37	160	319	0.006	6	198
17	63.96	447	855	0.016	17	553
16	61.46	507	904	0.017	18	628
15	57.50	880	1,390	0.027	27	1,091
14	52.50	892	1,193	0.023	23	1,104
13	48.75	450	526	0.010	10	557
12	46.25	453	481	0.009	9	561
11	42.50	914	833	0.016	16	1,132
10	37.50	925	672	0.013	13	1,146
9	33.91	405	245	0.005	5	502

Site Number: 302481

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Engineering Number: 64749021

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Customer: AT&T Mobility

8	31.41	722	380	0.007	7	894
7	29.66	172	82	0.002	2	213
6	27.16	815	329	0.006	6	1,010
5	22.50	952	273	0.005	5	1,179
4	17.50	963	175	0.003	3	1,193
3	12.50	975	96	0.002	2	1,207
2	7.50	986	38	0.001	1	1,221
1	2.50	997	5	0.000	0	1,235
DragonWave Horizon C	110.00	32	163	0.003	3	39
DragonWave A-ANT-23G	110.00	15	77	0.001	2	19
NextNet BTS-2500	110.00	105	539	0.010	11	130
Argus LLPX310R	110.00	86	440	0.008	9	106
Side Arms	110.00	560	2,874	0.055	57	694
DragonWave A-ANT-11G	110.00	95	488	0.009	10	118
Kathrein 860-10025	100.00	7	28	0.001	1	8
Powerwave TT19-08BP1	100.00	48	207	0.004	4	59
Powerwave LGP21401	100.00	85	365	0.007	7	105
Raycap DC6-48-60-18-	100.00	66	283	0.005	6	81
Ericsson RRUS-11	100.00	300	1,295	0.025	25	372
Ericsson RRUS-32	100.00	231	997	0.019	20	286
Powerwave 7770.00	100.00	105	453	0.009	9	130
KMW AM-X-CD-16-65-00	100.00	97	419	0.008	8	120
CCI OPA-65R-LCUU-H6	100.00	146	630	0.012	12	181
Andrew SBNH-1D6565C	100.00	61	262	0.005	5	75
CCI OPA-65R-LCUU-H8	100.00	88	380	0.007	7	109
Flat Platform w/ Han	100.00	2,000	8,630	0.165	170	2,477
Kathrein Smart Bias	89.50	10	35	0.001	1	12
Ericsson KRY 112 144	89.50	33	116	0.002	2	41
Ericsson KRY 112 489	89.50	46	163	0.003	3	57
RFS APX16DWV-16DWV-S	89.50	119	419	0.008	8	147
Commscope LNX-6515DS	89.50	151	532	0.010	10	187
Flat Low Profile Pla	89.50	1,500	5,291	0.101	104	1,858
Alcatel-Lucent RRH2X	80.00	132	380	0.007	7	163
Alcatel-Lucent RRH2x	80.00	170	489	0.009	10	211
RFS DB-T1-6Z-8AB-OZ	80.00	88	253	0.005	5	109
Antel BXA-171063-12C	80.00	77	221	0.004	4	95
Antel BXA-70063-6CF-	80.00	102	293	0.006	6	126
Round Low Profile PI	80.00	1,500	4,315	0.082	85	1,858
Scala 840 10212	77.00	7	18	0.000	0	8
TX RX Systems 421-86	77.00	15	40	0.001	1	19
Stand Offs	77.00	150	403	0.008	8	186
Scala 840 10212	60.00	7	11	0.000	0	8
Stand Off	60.00	75	128	0.002	3	93
Radio Waves SP2-4.7	60.00	26	44	0.001	1	32
		24,810	52,429	1.000	1,031	30,730

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

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)
31	107.50	270	1,329	0.025	26	233
30	102.50	270	1,219	0.023	24	233
29	97.50	273	1,124	0.021	22	235
28	92.50	281	1,053	0.020	21	242
27	89.75	29	101	0.002	2	25
26	87.25	327	1,103	0.021	22	282
25	82.50	372	1,131	0.022	22	320
24	78.52	261	725	0.014	14	225
23	77.02	6	17	0.000	0	6
22	76.00	312	818	0.016	16	269

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

21	72.50	786	1,892	0.036	37	677
20	68.75	396	866	0.017	17	341
19	66.62	279	575	0.011	11	240
18	65.37	160	319	0.006	6	138
17	63.96	447	855	0.016	17	385
16	61.46	507	904	0.017	18	437
15	57.50	880	1,390	0.027	27	758
14	52.50	892	1,193	0.023	23	768
13	48.75	450	526	0.010	10	388
12	46.25	453	481	0.009	9	390
11	42.50	914	833	0.016	16	787
10	37.50	925	672	0.013	13	797
9	33.91	405	245	0.005	5	349
8	31.41	722	380	0.007	7	622
7	29.66	172	82	0.002	2	148
6	27.16	815	329	0.006	6	702
5	22.50	952	273	0.005	5	820
4	17.50	963	175	0.003	3	830
3	12.50	975	96	0.002	2	839
2	7.50	986	38	0.001	1	849
1	2.50	997	5	0.000	0	859
DragonWave Horizon C	110.00	32	163	0.003	3	27
DragonWave A-ANT-23G	110.00	15	77	0.001	2	13
NextNet BTS-2500	110.00	105	539	0.010	11	90
Argus LLPX310R	110.00	86	440	0.008	9	74
Side Arms	110.00	560	2,874	0.055	57	482
DragonWave A-ANT-11G	110.00	95	488	0.009	10	82
Kathrein 860-10025	100.00	7	28	0.001	1	6
Powerwave TT19-08BP1	100.00	48	207	0.004	4	41
Powerwave LGP21401	100.00	85	365	0.007	7	73
Raycap DC6-48-60-18-	100.00	66	283	0.005	6	57
Ericsson RRUS-11	100.00	300	1,295	0.025	25	258
Ericsson RRUS-32	100.00	231	997	0.019	20	199
Powerwave 7770.00	100.00	105	453	0.009	9	90
KMW AM-X-CD-16-65-00	100.00	97	419	0.008	8	84
CCI OPA-65R-LCUU-H6	100.00	146	630	0.012	12	126
Andrew SBNH-1D6565C	100.00	61	262	0.005	5	52
CCI OPA-65R-LCUU-H8	100.00	88	380	0.007	7	76
Flat Platform w/ Han	100.00	2,000	8,630	0.165	170	1,723
Kathrein Smart Bias	89.50	10	35	0.001	1	9
Ericsson KRY 112 144	89.50	33	116	0.002	2	28
Ericsson KRY 112 489	89.50	46	163	0.003	3	40
RFS APX16DWV-16DWV-S	89.50	119	419	0.008	8	102
Commscope LNX-6515DS	89.50	151	532	0.010	10	130
Flat Low Profile Pla	89.50	1,500	5,291	0.101	104	1,292
Alcatel-Lucent RRH2X	80.00	132	380	0.007	7	114
Alcatel-Lucent RRH2x	80.00	170	489	0.009	10	147
RFS DB-T1-6Z-8AB-0Z	80.00	88	253	0.005	5	76
Antel BXA-171063-12C	80.00	77	221	0.004	4	66
Antel BXA-70063-6CF-	80.00	102	293	0.006	6	88
Round Low Profile PI	80.00	1,500	4,315	0.082	85	1,292
Scala 840 10212	77.00	7	18	0.000	0	6
TX RX Systems 421-86	77.00	15	40	0.001	1	13
Stand Offs	77.00	150	403	0.008	8	129
Scala 840 10212	60.00	7	11	0.000	0	6
Stand Off	60.00	75	128	0.002	3	65
Radio Waves SP2-4.7	60.00	26	44	0.001	1	22
		24,810	52,429	1.000	1,031	21,371

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

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

Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-29.50	-1.04	0.00	-91.62	0.00	91.62	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.053
5.00	-28.27	-1.05	0.00	-86.44	0.00	86.44	1,541.15	770.57	1,839.28	908.35	0.01	-0.02	0.051
10.00	-27.07	-1.05	0.00	-81.21	0.00	81.21	1,517.03	758.51	1,758.81	868.61	0.04	-0.04	0.049
15.00	-25.87	-1.06	0.00	-75.95	0.00	75.95	1,491.77	745.88	1,678.72	829.05	0.10	-0.06	0.047
20.00	-24.69	-1.06	0.00	-70.66	0.00	70.66	1,465.38	732.69	1,599.10	789.74	0.17	-0.08	0.045
25.00	-23.68	-1.06	0.00	-65.37	0.00	65.37	1,437.85	718.92	1,520.08	750.71	0.27	-0.10	0.042
29.33	-23.47	-1.06	0.00	-60.79	0.00	60.79	1,413.09	706.55	1,452.23	717.20	0.37	-0.12	0.041
30.00	-22.58	-1.05	0.00	-60.08	0.00	60.08	1,409.19	704.59	1,441.78	712.04	0.39	-0.12	0.039
32.83	-22.07	-1.05	0.00	-57.09	0.00	57.09	1,130.07	565.03	1,157.93	571.86	0.46	-0.13	0.048
35.00	-20.93	-1.04	0.00	-54.81	0.00	54.81	1,119.12	559.56	1,130.16	558.15	0.53	-0.14	0.046
40.00	-19.79	-1.03	0.00	-49.61	0.00	49.61	1,081.75	540.87	1,055.58	521.31	0.69	-0.16	0.044
45.00	-19.23	-1.02	0.00	-44.47	0.00	44.47	1,044.38	522.19	983.54	485.73	0.86	-0.18	0.041
47.50	-18.68	-1.01	0.00	-41.91	0.00	41.91	1,025.69	512.85	948.47	468.41	0.96	-0.19	0.040
47.50	-18.68	-1.01	0.00	-41.91	0.00	41.91	1,025.69	512.85	948.47	468.41	0.96	-0.19	0.040
50.00	-17.57	-0.99	0.00	-39.38	0.00	39.38	1,007.01	503.50	914.04	451.41	1.06	-0.20	0.038
55.00	-16.48	-0.96	0.00	-34.44	0.00	34.44	969.64	484.82	847.09	418.35	1.27	-0.21	0.035
60.00	-15.72	-0.94	0.00	-29.63	0.00	29.63	932.27	466.13	782.69	386.54	1.50	-0.23	0.032
62.92	-15.17	-0.92	0.00	-26.89	0.00	26.89	910.47	455.23	746.30	368.57	1.64	-0.24	0.030
65.00	-14.97	-0.92	0.00	-24.97	0.00	24.97	894.90	447.45	720.83	355.99	1.75	-0.24	0.028
65.75	-14.62	-0.91	0.00	-24.28	0.00	24.28	664.38	332.19	545.54	269.42	1.79	-0.24	0.031
67.50	-14.13	-0.89	0.00	-22.69	0.00	22.69	658.03	329.02	532.49	262.97	1.88	-0.25	0.029
67.50	-14.13	-0.89	0.00	-22.69	0.00	22.69	658.03	329.02	532.49	262.97	1.88	-0.25	0.029
70.00	-13.16	-0.85	0.00	-20.47	0.00	20.47	648.81	324.40	513.97	253.83	2.01	-0.25	0.027
75.00	-12.77	-0.83	0.00	-16.23	0.00	16.23	629.79	314.89	477.45	235.80	2.28	-0.27	0.023
77.00	-12.55	-0.82	0.00	-14.57	0.00	14.57	618.88	309.44	460.75	227.55	2.39	-0.27	0.022
77.04	-12.23	-0.81	0.00	-14.53	0.00	14.53	618.65	309.32	460.40	227.37	2.39	-0.27	0.021
77.04	-12.23	-0.81	0.00	-14.53	0.00	14.53	618.65	309.32	460.40	227.37	2.39	-0.27	0.084
80.00	-9.20	-0.66	0.00	-12.15	0.00	12.15	602.06	301.03	435.93	215.29	2.56	-0.28	0.072
85.00	-8.80	-0.64	0.00	-8.86	0.00	8.86	574.04	287.02	396.08	195.61	2.87	-0.31	0.061
89.50	-6.46	-0.50	0.00	-5.99	0.00	5.99	548.81	274.41	361.85	178.70	3.18	-0.34	0.045
90.00	-6.11	-0.47	0.00	-5.74	0.00	5.74	546.01	273.00	358.14	176.87	3.21	-0.34	0.044
95.00	-5.78	-0.45	0.00	-3.37	0.00	3.37	517.98	258.99	322.11	159.08	3.58	-0.36	0.032
100.00	-1.44	-0.13	0.00	-1.11	0.00	1.11	489.95	244.98	288.00	142.23	3.96	-0.37	0.011
100.00	-1.44	-0.13	0.00	-1.11	0.00	1.11	459.24	229.62	229.69	150.79	3.96	-0.37	0.011
105.00	-1.11	-0.10	0.00	-0.49	0.00	0.49	459.24	229.62	229.69	150.79	4.36	-0.38	0.006
110.00	0.00	-0.09	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	4.75	-0.38	0.000

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-20.51	-1.03	0.00	-90.11	0.00	90.11	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.049
5.00	-19.66	-1.04	0.00	-84.94	0.00	84.94	1,541.15	770.57	1,839.28	908.35	0.01	-0.02	0.047
10.00	-18.82	-1.04	0.00	-79.74	0.00	79.74	1,517.03	758.51	1,758.81	868.61	0.04	-0.04	0.045
15.00	-17.99	-1.05	0.00	-74.52	0.00	74.52	1,491.77	745.88	1,678.72	829.05	0.10	-0.06	0.043
20.00	-17.17	-1.05	0.00	-69.28	0.00	69.28	1,465.38	732.69	1,599.10	789.74	0.17	-0.08	0.041
25.00	-16.47	-1.04	0.00	-64.05	0.00	64.05	1,437.85	718.92	1,520.08	750.71	0.27	-0.10	0.039
29.33	-16.32	-1.05	0.00	-59.53	0.00	59.53	1,413.09	706.55	1,452.23	717.20	0.36	-0.12	0.037
30.00	-15.70	-1.04	0.00	-58.83	0.00	58.83	1,409.19	704.59	1,441.78	712.04	0.38	-0.12	0.036
32.83	-15.35	-1.04	0.00	-55.89	0.00	55.89	1,130.07	565.03	1,157.93	571.86	0.46	-0.13	0.044
35.00	-14.55	-1.02	0.00	-53.64	0.00	53.64	1,119.12	559.56	1,130.16	558.15	0.52	-0.14	0.042
40.00	-13.77	-1.01	0.00	-48.53	0.00	48.53	1,081.75	540.87	1,055.58	521.31	0.67	-0.16	0.040
45.00	-13.37	-1.00	0.00	-43.48	0.00	43.48	1,044.38	522.19	983.54	485.73	0.85	-0.17	0.038
47.50	-12.99	-0.99	0.00	-40.98	0.00	40.98	1,025.69	512.85	948.47	468.41	0.94	-0.18	0.036
47.50	-12.99	-0.99	0.00	-40.98	0.00	40.98	1,025.69	512.85	948.47	468.41	0.94	-0.18	0.036
50.00	-12.22	-0.97	0.00	-38.50	0.00	38.50	1,007.01	503.50	914.04	451.41	1.04	-0.19	0.035
55.00	-11.46	-0.94	0.00	-33.66	0.00	33.66	969.64	484.82	847.09	418.35	1.25	-0.21	0.032
60.00	-10.93	-0.92	0.00	-28.95	0.00	28.95	932.27	466.13	782.69	386.54	1.47	-0.22	0.029
62.92	-10.55	-0.90	0.00	-26.26	0.00	26.26	910.47	455.23	746.30	368.57	1.61	-0.23	0.027
65.00	-10.41	-0.90	0.00	-24.38	0.00	24.38	894.90	447.45	720.83	355.99	1.71	-0.24	0.025
65.75	-10.17	-0.89	0.00	-23.71	0.00	23.71	664.38	332.19	545.54	269.42	1.75	-0.24	0.028
67.50	-9.83	-0.87	0.00	-22.16	0.00	22.16	658.03	329.02	532.49	262.97	1.84	-0.24	0.026
67.50	-9.83	-0.87	0.00	-22.16	0.00	22.16	658.03	329.02	532.49	262.97	1.84	-0.24	0.026
70.00	-9.15	-0.83	0.00	-19.99	0.00	19.99	648.81	324.40	513.97	253.83	1.97	-0.25	0.024
75.00	-8.88	-0.81	0.00	-15.84	0.00	15.84	629.79	314.89	477.45	235.80	2.24	-0.26	0.020
77.00	-8.73	-0.80	0.00	-14.21	0.00	14.21	618.88	309.44	460.75	227.55	2.34	-0.26	0.019
77.04	-8.50	-0.79	0.00	-14.18	0.00	14.18	618.65	309.32	460.40	227.37	2.35	-0.26	0.019
77.04	-8.50	-0.79	0.00	-14.18	0.00	14.18	618.65	309.32	460.40	227.37	2.35	-0.26	0.076
80.00	-6.40	-0.64	0.00	-11.85	0.00	11.85	602.06	301.03	435.93	215.29	2.51	-0.27	0.066
85.00	-6.12	-0.62	0.00	-8.64	0.00	8.64	574.04	287.02	396.08	195.61	2.81	-0.30	0.055
89.50	-4.49	-0.48	0.00	-5.84	0.00	5.84	548.81	274.41	361.85	178.70	3.11	-0.33	0.041
90.00	-4.25	-0.46	0.00	-5.60	0.00	5.60	546.01	273.00	358.14	176.87	3.15	-0.33	0.039
95.00	-4.02	-0.44	0.00	-3.29	0.00	3.29	517.98	258.99	322.11	159.08	3.51	-0.35	0.028
100.00	-1.00	-0.12	0.00	-1.09	0.00	1.09	489.95	244.98	288.00	142.23	3.88	-0.36	0.010
100.00	-1.00	-0.12	0.00	-1.09	0.00	1.09	459.24	229.62	229.69	150.79	3.88	-0.36	0.009
105.00	-0.77	-0.10	0.00	-0.48	0.00	0.48	459.24	229.62	229.69	150.79	4.27	-0.37	0.005
110.00	0.00	-0.09	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	4.66	-0.37	0.000

Site Number: 302481

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

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Customer: AT&T Mobility

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.13
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)
31	107.50	270	1.805	1.562	0.986	0.316	74	334
30	102.50	270	1.641	0.911	0.727	0.220	52	334
29	97.50	273	1.485	0.464	0.525	0.140	33	338
28	92.50	281	1.336	0.174	0.369	0.075	18	348
27	89.75	29	1.258	0.067	0.300	0.046	1	35
26	87.25	327	1.189	-0.005	0.247	0.024	7	405
25	82.50	372	1.063	-0.088	0.165	-0.009	-3	460
24	78.52	261	0.963	-0.117	0.114	-0.027	-6	323
23	77.02	6	0.927	-0.121	0.098	-0.031	0	8
22	76.00	312	0.902	-0.122	0.088	-0.033	-9	387
21	72.50	786	0.821	-0.115	0.060	-0.036	-24	974
20	68.75	396	0.738	-0.098	0.038	-0.032	-11	491
19	66.62	279	0.693	-0.085	0.029	-0.027	-7	345
18	65.37	160	0.668	-0.077	0.024	-0.023	-3	198
17	63.96	447	0.639	-0.067	0.020	-0.019	-7	553
16	61.46	507	0.590	-0.049	0.013	-0.009	-4	628
15	57.50	880	0.516	-0.022	0.008	0.007	5	1,091
14	52.50	892	0.431	0.008	0.006	0.026	20	1,104
13	48.75	450	0.371	0.027	0.008	0.036	14	557
12	46.25	453	0.334	0.037	0.010	0.042	16	561
11	42.50	914	0.282	0.049	0.014	0.047	37	1,132
10	37.50	925	0.220	0.060	0.021	0.050	40	1,146
9	33.91	405	0.180	0.065	0.026	0.050	17	502
8	31.41	722	0.154	0.068	0.030	0.049	31	894
7	29.66	172	0.137	0.069	0.032	0.049	7	213
6	27.16	815	0.115	0.070	0.035	0.048	34	1,010
5	22.50	952	0.079	0.072	0.040	0.046	38	1,179
4	17.50	963	0.048	0.071	0.042	0.044	37	1,193
3	12.50	975	0.024	0.066	0.039	0.041	35	1,207
2	7.50	986	0.009	0.053	0.031	0.034	29	1,221
1	2.50	997	0.001	0.024	0.013	0.017	15	1,235
DragonWave Horizon C	110.00	32	1.890	1.980	1.140	0.369	10	39
DragonWave A-ANT-23G	110.00	15	1.890	1.980	1.140	0.369	5	19
NextNet BTS-2500	110.00	105	1.890	1.980	1.140	0.369	34	130

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Argus LLPX310R	110.00	86	1.890	1.980	1.140	0.369	27	106
Side Arms	110.00	560	1.890	1.980	1.140	0.369	179	694
DragonWave A-ANT-11G	110.00	95	1.890	1.980	1.140	0.369	30	118
Kathrein 860-10025	100.00	7	1.562	0.666	0.620	0.178	1	8
Powerwave TT19-	100.00	48	1.562	0.666	0.620	0.178	7	59
Powerwave LGP21401	100.00	85	1.562	0.666	0.620	0.178	13	105
Raycap DC6-48-60-18-	100.00	66	1.562	0.666	0.620	0.178	10	81
Ericsson RRUS-11	100.00	300	1.562	0.666	0.620	0.178	46	372
Ericsson RRUS-32	100.00	231	1.562	0.666	0.620	0.178	36	286
Powerwave 7770.00	100.00	105	1.562	0.666	0.620	0.178	16	130
KMW AM-X-CD-16-65-00	100.00	97	1.562	0.666	0.620	0.178	15	120
CCI OPA-65R-LCUU-H6	100.00	146	1.562	0.666	0.620	0.178	23	181
Andrew SBNH-1D6565C	100.00	61	1.562	0.666	0.620	0.178	9	75
CCI OPA-65R-LCUU-H8	100.00	88	1.562	0.666	0.620	0.178	14	109
Flat Platform w/ Han	100.00	2,000	1.562	0.666	0.620	0.178	309	2,477
Kathrein Smart Bias	89.50	10	1.251	0.058	0.295	0.044	0	12
Ericsson KRY 112 144	89.50	33	1.251	0.058	0.295	0.044	1	41
Ericsson KRY 112 489	89.50	46	1.251	0.058	0.295	0.044	2	57
RFS APX16DWV-16DWV-	89.50	119	1.251	0.058	0.295	0.044	5	147
Commscope LNX-	89.50	151	1.251	0.058	0.295	0.044	6	187
Flat Low Profile Pla	89.50	1,500	1.251	0.058	0.295	0.044	57	1,858
Alcatel-Lucent RRH2X	80.00	132	1.000	-0.110	0.131	-0.021	-2	163
Alcatel-Lucent RRH2x	80.00	170	1.000	-0.110	0.131	-0.021	-3	211
RFS DB-T1-6Z-8AB-OZ	80.00	88	1.000	-0.110	0.131	-0.021	-2	109
Antel BXA-171063-12C	80.00	77	1.000	-0.110	0.131	-0.021	-1	95
Antel BXA-70063-6CF-	80.00	102	1.000	-0.110	0.131	-0.021	-2	126
Round Low Profile PI	80.00	1,500	1.000	-0.110	0.131	-0.021	-28	1,858
Scala 840 10212	77.00	7	0.926	-0.121	0.098	-0.031	0	8
TX RX Systems 421-86	77.00	15	0.926	-0.121	0.098	-0.031	0	19
Stand Offs	77.00	150	0.926	-0.121	0.098	-0.031	-4	186
Scala 840 10212	60.00	7	0.562	-0.039	0.011	-0.003	0	8
Stand Off	60.00	75	0.562	-0.039	0.011	-0.003	0	93
Radio Waves SP2-4.7	60.00	26	0.562	-0.039	0.011	-0.003	0	32
		24,810	67.675	22.027	21.312	5.550	1,299	30,730

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)
31	107.50	270	1.805	1.562	0.986	0.316	74	233
30	102.50	270	1.641	0.911	0.727	0.220	52	233
29	97.50	273	1.485	0.464	0.525	0.140	33	235
28	92.50	281	1.336	0.174	0.369	0.075	18	242
27	89.75	29	1.258	0.067	0.300	0.046	1	25
26	87.25	327	1.189	-0.005	0.247	0.024	7	282
25	82.50	372	1.063	-0.088	0.165	-0.009	-3	320
24	78.52	261	0.963	-0.117	0.114	-0.027	-6	225
23	77.02	6	0.927	-0.121	0.098	-0.031	0	6
22	76.00	312	0.902	-0.122	0.088	-0.033	-9	269
21	72.50	786	0.821	-0.115	0.060	-0.036	-24	677
20	68.75	396	0.738	-0.098	0.038	-0.032	-11	341
19	66.62	279	0.693	-0.085	0.029	-0.027	-7	240
18	65.37	160	0.668	-0.077	0.024	-0.023	-3	138
17	63.96	447	0.639	-0.067	0.020	-0.019	-7	385
16	61.46	507	0.590	-0.049	0.013	-0.009	-4	437
15	57.50	880	0.516	-0.022	0.008	0.007	5	758
14	52.50	892	0.431	0.008	0.006	0.026	20	768
13	48.75	450	0.371	0.027	0.008	0.036	14	388
12	46.25	453	0.334	0.037	0.010	0.042	16	390

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11	42.50	914	0.282	0.049	0.014	0.047	37	787
10	37.50	925	0.220	0.060	0.021	0.050	40	797
9	33.91	405	0.180	0.065	0.026	0.050	17	349
8	31.41	722	0.154	0.068	0.030	0.049	31	622
7	29.66	172	0.137	0.069	0.032	0.049	7	148
6	27.16	815	0.115	0.070	0.035	0.048	34	702
5	22.50	952	0.079	0.072	0.040	0.046	38	820
4	17.50	963	0.048	0.071	0.042	0.044	37	830
3	12.50	975	0.024	0.066	0.039	0.041	35	839
2	7.50	986	0.009	0.053	0.031	0.034	29	849
1	2.50	997	0.001	0.024	0.013	0.017	15	859
DragonWave Horizon C	110.00	32	1.890	1.980	1.140	0.369	10	27
DragonWave A-ANT-23G	110.00	15	1.890	1.980	1.140	0.369	5	13
NextNet BTS-2500	110.00	105	1.890	1.980	1.140	0.369	34	90
Argus LLPX310R	110.00	86	1.890	1.980	1.140	0.369	27	74
Side Arms	110.00	560	1.890	1.980	1.140	0.369	179	482
DragonWave A-ANT-11G	110.00	95	1.890	1.980	1.140	0.369	30	82
Kathrein 860-10025	100.00	7	1.562	0.666	0.620	0.178	1	6
Powerwave TT19-	100.00	48	1.562	0.666	0.620	0.178	7	41
Powerwave LGP21401	100.00	85	1.562	0.666	0.620	0.178	13	73
Raycap DC6-48-60-18-	100.00	66	1.562	0.666	0.620	0.178	10	57
Ericsson RRUS-11	100.00	300	1.562	0.666	0.620	0.178	46	258
Ericsson RRUS-32	100.00	231	1.562	0.666	0.620	0.178	36	199
Powerwave 7770.00	100.00	105	1.562	0.666	0.620	0.178	16	90
KMW AM-X-CD-16-65-00	100.00	97	1.562	0.666	0.620	0.178	15	84
CCI OPA-65R-LCUU-H6	100.00	146	1.562	0.666	0.620	0.178	23	126
Andrew SBNH-1D6565C	100.00	61	1.562	0.666	0.620	0.178	9	52
CCI OPA-65R-LCUU-H8	100.00	88	1.562	0.666	0.620	0.178	14	76
Flat Platform w/ Han	100.00	2,000	1.562	0.666	0.620	0.178	309	1,723
Kathrein Smart Bias	89.50	10	1.251	0.058	0.295	0.044	0	9
Ericsson KRY 112 144	89.50	33	1.251	0.058	0.295	0.044	1	28
Ericsson KRY 112 489	89.50	46	1.251	0.058	0.295	0.044	2	40
RFS APX16DWV-16DWV-	89.50	119	1.251	0.058	0.295	0.044	5	102
Commscope LNX-	89.50	151	1.251	0.058	0.295	0.044	6	130
Flat Low Profile Pla	89.50	1,500	1.251	0.058	0.295	0.044	57	1,292
Alcatel-Lucent RRH2X	80.00	132	1.000	-0.110	0.131	-0.021	-2	114
Alcatel-Lucent RRH2x	80.00	170	1.000	-0.110	0.131	-0.021	-3	147
RFS DB-T1-6Z-8AB-0Z	80.00	88	1.000	-0.110	0.131	-0.021	-2	76
Antel BXA-171063-12C	80.00	77	1.000	-0.110	0.131	-0.021	-1	66
Antel BXA-70063-6CF-	80.00	102	1.000	-0.110	0.131	-0.021	-2	88
Round Low Profile PI	80.00	1,500	1.000	-0.110	0.131	-0.021	-28	1,292
Scala 840 10212	77.00	7	0.926	-0.121	0.098	-0.031	0	6
TX RX Systems 421-86	77.00	15	0.926	-0.121	0.098	-0.031	0	13
Stand Offs	77.00	150	0.926	-0.121	0.098	-0.031	-4	129
Scala 840 10212	60.00	7	0.562	-0.039	0.011	-0.003	0	6
Stand Off	60.00	75	0.562	-0.039	0.011	-0.003	0	65
Radio Waves SP2-4.7	60.00	26	0.562	-0.039	0.011	-0.003	0	22
		24,810	67.675	22.027	21.312	5.550	1,299	21,371

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:28 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	-29.50	-1.29	0.00	-113.67	0.00	113.67	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.063
5.00	-28.27	-1.27	0.00	-107.22	0.00	107.22	1,541.15	770.57	1,839.28	908.35	0.01	-0.03	0.061
10.00	-27.07	-1.25	0.00	-100.85	0.00	100.85	1,517.03	758.51	1,758.81	868.61	0.05	-0.05	0.058
15.00	-25.87	-1.22	0.00	-94.60	0.00	94.60	1,491.77	745.88	1,678.72	829.05	0.12	-0.08	0.056
20.00	-24.69	-1.19	0.00	-88.49	0.00	88.49	1,465.38	732.69	1,599.10	789.74	0.22	-0.10	0.054
25.00	-23.68	-1.17	0.00	-82.52	0.00	82.52	1,437.85	718.92	1,520.08	750.71	0.34	-0.13	0.051
29.33	-23.47	-1.17	0.00	-77.46	0.00	77.46	1,413.09	706.55	1,452.23	717.20	0.46	-0.15	0.049
30.00	-22.57	-1.14	0.00	-76.68	0.00	76.68	1,409.19	704.59	1,441.78	712.04	0.48	-0.15	0.048
32.83	-22.07	-1.12	0.00	-73.47	0.00	73.47	1,130.07	565.03	1,157.93	571.86	0.58	-0.17	0.059
35.00	-20.93	-1.08	0.00	-71.03	0.00	71.03	1,119.12	559.56	1,130.16	558.15	0.66	-0.18	0.057
40.00	-19.79	-1.05	0.00	-65.61	0.00	65.61	1,081.75	540.87	1,055.58	521.31	0.86	-0.20	0.055
45.00	-19.23	-1.04	0.00	-60.35	0.00	60.35	1,044.38	522.19	983.54	485.73	1.08	-0.23	0.053
47.50	-18.68	-1.03	0.00	-57.75	0.00	57.75	1,025.69	512.85	948.47	468.41	1.20	-0.24	0.051
47.50	-18.68	-1.03	0.00	-57.75	0.00	57.75	1,025.69	512.85	948.47	468.41	1.20	-0.24	0.051
50.00	-17.57	-1.01	0.00	-55.18	0.00	55.18	1,007.01	503.50	914.04	451.41	1.33	-0.25	0.050
55.00	-16.48	-1.00	0.00	-50.14	0.00	50.14	969.64	484.82	847.09	418.35	1.60	-0.27	0.047
60.00	-15.72	-1.01	0.00	-45.12	0.00	45.12	932.27	466.13	782.69	386.54	1.90	-0.30	0.044
62.92	-15.16	-1.02	0.00	-42.17	0.00	42.17	910.47	455.23	746.30	368.57	2.09	-0.31	0.043
65.00	-14.97	-1.02	0.00	-40.06	0.00	40.06	894.90	447.45	720.83	355.99	2.22	-0.32	0.041
65.75	-14.62	-1.03	0.00	-39.29	0.00	39.29	664.38	332.19	545.54	269.42	2.27	-0.32	0.045
67.50	-14.13	-1.04	0.00	-37.49	0.00	37.49	658.03	329.02	532.49	262.97	2.39	-0.33	0.043
67.50	-14.13	-1.04	0.00	-37.49	0.00	37.49	658.03	329.02	532.49	262.97	2.39	-0.33	0.043
70.00	-13.16	-1.06	0.00	-34.90	0.00	34.90	648.81	324.40	513.97	253.83	2.57	-0.34	0.040
75.00	-12.77	-1.07	0.00	-29.60	0.00	29.60	629.79	314.89	477.45	235.80	2.93	-0.36	0.036
77.00	-12.55	-1.07	0.00	-27.47	0.00	27.47	618.88	309.44	460.75	227.55	3.09	-0.37	0.034
77.04	-12.22	-1.08	0.00	-27.42	0.00	27.42	618.65	309.32	460.40	227.37	3.09	-0.37	0.034
77.04	-12.22	-1.08	0.00	-27.42	0.00	27.42	618.65	309.32	460.40	227.37	3.09	-0.37	0.140
80.00	-9.20	-1.11	0.00	-24.23	0.00	24.23	602.06	301.03	435.93	215.29	3.32	-0.38	0.128
85.00	-8.79	-1.11	0.00	-18.70	0.00	18.70	574.04	287.02	396.08	195.61	3.76	-0.45	0.111
89.50	-6.46	-1.02	0.00	-13.72	0.00	13.72	548.81	274.41	361.85	178.70	4.21	-0.51	0.089
90.00	-6.11	-1.00	0.00	-13.21	0.00	13.21	546.01	273.00	358.14	176.87	4.26	-0.51	0.086
95.00	-5.77	-0.97	0.00	-8.20	0.00	8.20	517.98	258.99	322.11	159.08	4.83	-0.56	0.063
100.00	-1.44	-0.37	0.00	-3.36	0.00	3.36	489.95	244.98	288.00	142.23	5.44	-0.59	0.027
100.00	-1.44	-0.37	0.00	-3.36	0.00	3.36	459.24	229.62	229.69	150.79	5.44	-0.59	0.025
105.00	-1.10	-0.30	0.00	-1.49	0.00	1.49	459.24	229.62	229.69	150.79	6.07	-0.61	0.012
110.00	0.00	-0.29	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	6.71	-0.61	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:28 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	-20.51	-1.29	0.00	-111.67	0.00	111.67	1,564.13	782.07	1,919.99	948.21	0.00	0.00	0.059
5.00	-19.66	-1.27	0.00	-105.23	0.00	105.23	1,541.15	770.57	1,839.28	908.35	0.01	-0.03	0.057
10.00	-18.82	-1.24	0.00	-98.89	0.00	98.89	1,517.03	758.51	1,758.81	868.61	0.05	-0.05	0.054
15.00	-17.99	-1.21	0.00	-92.69	0.00	92.69	1,491.77	745.88	1,678.72	829.05	0.12	-0.08	0.052
20.00	-17.17	-1.18	0.00	-86.63	0.00	86.63	1,465.38	732.69	1,599.10	789.74	0.21	-0.10	0.050
25.00	-16.47	-1.15	0.00	-80.74	0.00	80.74	1,437.85	718.92	1,520.08	750.71	0.33	-0.13	0.048
29.33	-16.32	-1.15	0.00	-75.76	0.00	75.76	1,413.09	706.55	1,452.23	717.20	0.45	-0.15	0.046
30.00	-15.70	-1.12	0.00	-75.00	0.00	75.00	1,409.19	704.59	1,441.78	712.04	0.47	-0.15	0.045
32.83	-15.35	-1.10	0.00	-71.84	0.00	71.84	1,130.07	565.03	1,157.93	571.86	0.57	-0.16	0.054
35.00	-14.55	-1.06	0.00	-69.45	0.00	69.45	1,119.12	559.56	1,130.16	558.15	0.64	-0.17	0.053
40.00	-13.76	-1.03	0.00	-64.14	0.00	64.14	1,081.75	540.87	1,055.58	521.31	0.84	-0.20	0.051
45.00	-13.37	-1.02	0.00	-59.00	0.00	59.00	1,044.38	522.19	983.54	485.73	1.06	-0.22	0.049
47.50	-12.99	-1.00	0.00	-56.46	0.00	56.46	1,025.69	512.85	948.47	468.41	1.18	-0.23	0.048
47.50	-12.99	-1.00	0.00	-56.46	0.00	56.46	1,025.69	512.85	948.47	468.41	1.18	-0.23	0.048
50.00	-12.22	-0.98	0.00	-53.95	0.00	53.95	1,007.01	503.50	914.04	451.41	1.30	-0.24	0.046
55.00	-11.46	-0.98	0.00	-49.04	0.00	49.04	969.64	484.82	847.09	418.35	1.57	-0.27	0.044
60.00	-10.93	-0.98	0.00	-44.15	0.00	44.15	932.27	466.13	782.69	386.54	1.86	-0.29	0.041
62.92	-10.54	-0.99	0.00	-41.28	0.00	41.28	910.47	455.23	746.30	368.57	2.04	-0.30	0.040
65.00	-10.41	-0.99	0.00	-39.22	0.00	39.22	894.90	447.45	720.83	355.99	2.18	-0.31	0.038
65.75	-10.17	-1.00	0.00	-38.47	0.00	38.47	664.38	332.19	545.54	269.42	2.23	-0.31	0.041
67.50	-9.82	-1.01	0.00	-36.72	0.00	36.72	658.03	329.02	532.49	262.97	2.34	-0.32	0.040
67.50	-9.82	-1.01	0.00	-36.72	0.00	36.72	658.03	329.02	532.49	262.97	2.34	-0.32	0.040
70.00	-9.15	-1.03	0.00	-34.20	0.00	34.20	648.81	324.40	513.97	253.83	2.52	-0.33	0.038
75.00	-8.88	-1.04	0.00	-29.03	0.00	29.03	629.79	314.89	477.45	235.80	2.87	-0.35	0.033
77.00	-8.72	-1.05	0.00	-26.94	0.00	26.94	618.88	309.44	460.75	227.55	3.02	-0.36	0.031
77.04	-8.50	-1.05	0.00	-26.90	0.00	26.90	618.65	309.32	460.40	227.37	3.03	-0.36	0.031
77.04	-8.50	-1.05	0.00	-26.90	0.00	26.90	618.65	309.32	460.40	227.37	3.03	-0.36	0.132
80.00	-6.40	-1.09	0.00	-23.78	0.00	23.78	602.06	301.03	435.93	215.29	3.25	-0.37	0.121
85.00	-6.11	-1.08	0.00	-18.36	0.00	18.36	574.04	287.02	396.08	195.61	3.68	-0.44	0.105
89.50	-4.49	-1.00	0.00	-13.48	0.00	13.48	548.81	274.41	361.85	178.70	4.12	-0.50	0.084
90.00	-4.24	-0.98	0.00	-12.98	0.00	12.98	546.01	273.00	358.14	176.87	4.17	-0.50	0.081
95.00	-4.01	-0.95	0.00	-8.07	0.00	8.07	517.98	258.99	322.11	159.08	4.73	-0.55	0.058
100.00	-1.00	-0.37	0.00	-3.32	0.00	3.32	489.95	244.98	288.00	142.23	5.32	-0.58	0.025
100.00	-1.00	-0.37	0.00	-3.32	0.00	3.32	459.24	229.62	229.69	150.79	5.32	-0.58	0.024
105.00	-0.77	-0.29	0.00	-1.47	0.00	1.47	459.24	229.62	229.69	150.79	5.94	-0.60	0.011
110.00	0.00	-0.29	0.00	0.00	0.00	0.00	459.24	229.62	229.69	150.79	6.57	-0.60	0.000

Site Number: 302481

Code: ANSI/TIA-222-G

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Site Name: Hrfr - South, CT

Engineering Number: 64749021

1/15/2016 11:21:28 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	23.47	0.00	29.70	0.00	0.00	1632.27	77.04	1.00
0.9D + 1.6W	23.38	0.00	22.25	0.00	0.00	1603.99	77.04	0.96
1.2D + 1.0Di + 1.0Wi	6.33	0.00	76.34	0.00	0.00	476.96	77.04	0.35
(1.2 + 0.2Sds) * DL + E ELFM	1.04	0.00	29.50	0.00	0.00	91.62	77.04	0.08
(1.2 + 0.2Sds) * DL + E EMAM	1.29	0.00	29.50	0.00	0.00	113.67	77.04	0.14
(0.9 - 0.2Sds) * DL + E ELFM	1.03	0.00	20.51	0.00	0.00	90.11	77.04	0.08
(0.9 - 0.2Sds) * DL + E EMAM	1.29	0.00	20.51	0.00	0.00	111.67	77.04	0.13
1.0D + 1.0W	5.85	0.00	24.81	0.00	0.00	402.30	77.04	0.26

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Req'd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Req'd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	47.5	(4) SOL-#20 All Thre	369.9	14.4	16.8	0.0	12.0	0	0	0.0	12.0	0	0	295.8	315.5	0.938
47.5	67.5	(4) SOL-#20 All Thre	403.4	12.1	16.8	0.0	12.0	0	0	0.0	12.0	0	0	178.9	330.5	0.541
67.5	77.0	(4) SOL-#20 All Thre	408.9	12.3	16.8	81.4	12.0	7	7	0.0	12.0	0	0	121.4	330.5	0.367

Base/Flange Plate	Plate Type	Baseplate
	Pole Diameter	30 in
	Pole Thickness	0.25 in
	Plate Length	44 in
	Plate Thickness	2 in
	Plate Fy	60 ksi
	Weld Length	0.1875 in
	ϕ_s Resistance	1598.36 k-in
	Applied	1066.86 k-in
Stiffeners	#	0

Code Rev. **G**

Date 1/15/2016
 Engineer ZAM
 Site # 302481
 Carrier AT&T Mobility

Moment 1632.3 k-ft
 Axial 29.7 k

Bolts	#	8
	Bolt Circle	44 in
	(R)adial / (S)quare	S
	Bolt Gap	6 in
	Diameter	2.25 in
	Hole Diameter	2.375 in
	Type	A615-75
	Fy	75 ksi
	Fu	100 ksi
	ϕ_s Resistance	259.82 k
Applied	94.83 k	
Reinforcement	#	4
	DYW. Circle	38.6 in
	Offset Angle	0°
	Type	#20
	Diameter	2.5 in
Fu	100 ksi	
Extra Bolts O	#	0

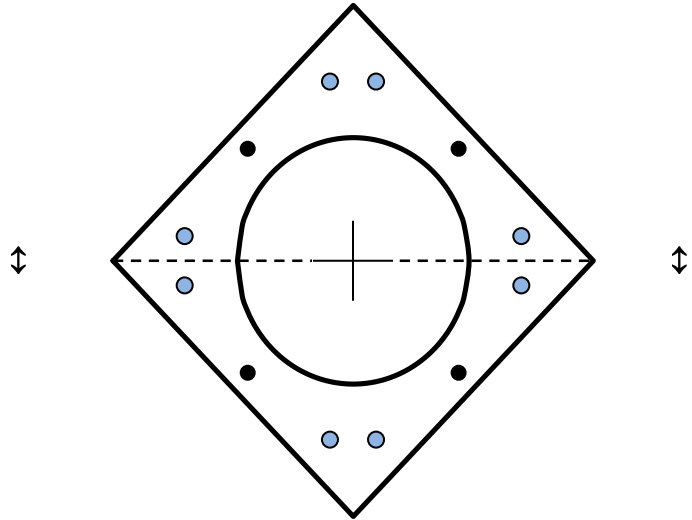


Plate Stress Ratio:
0.67 (Pass)

Bolt Stress Ratio:
0.36 (Pass)

Base/Flange Plate	Plate Type	Flange @ 100.0 ft
	Pole Diameter	12.75 in
	Pole Thickness	0.375 in
	Plate Diameter	28.5 in
	Plate Thickness	1.5 in
	Plate Fy	36 ksi
	Weld Length	0.25 in
	ϕ_s Resistance	60.83 k-in
	Applied	13.51 k-in
	Stiffeners	#

Code Rev. **G**

Date **1/15/2016**
 Engineer **ZAM**
 Site # **302481**
 Carrier **AT&T Mobility**

Moment **15.9 k-ft**
 Axial **1.6 k**

Required Flange Thickness:
0.71 in OK

Bolts	#	12
	Bolt Circle (R)adial / (S)quare	26 in R
	Diameter	1 in
	Hole Diameter	1.0625 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance	54.52 k
	Applied	2.31 k
	Reinforcement	#
Extra Bolts O	#	0

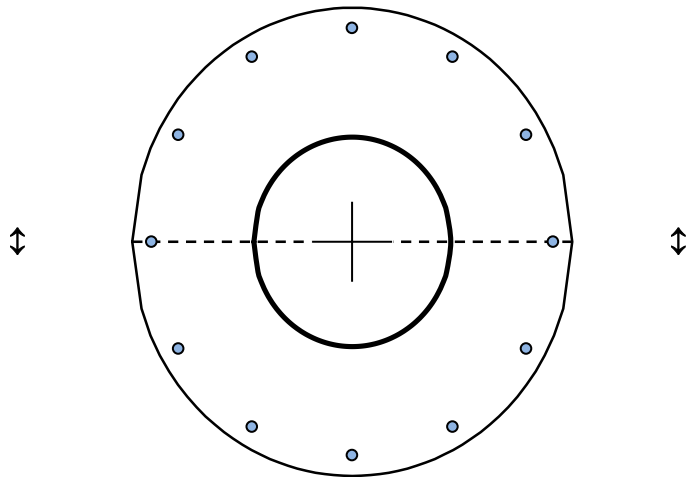


Plate Stress Ratio:
0.22 (Pass)

Bolt Stress Ratio:
0.04 (Pass)

Site Name:	Hrfr - South, CT
Site Number:	302481
Engineering Number:	64749021
Engineer:	ZAM
Date:	1/15/2016

Design Base Loads (Factored) - Design per TIA-222-G Standard

Moment (Overturning) (M_u):	1632.3 k-ft
Shear/Leg (V_u):	23.5 k
Compression/Leg (P_u):	29.7 k
Uplift/Leg (T_u):	k
Tower Type (GT / SST / MP):	MP
Length / Width of Block:	6.0 ft
Thickness of Block:	6.0 ft
Block Height Above Ground:	0.5 ft
Depth Below Ground Surface to Water Table (w):	99.0 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil:	125.0 pcf
Unit Weight of Water:	62.4 pcf
Ultimate Compressive Bearing Pressure:	10000 psf
Capacity Increase (Due to Transient Loads):	1.00
Pullout Angle:	30.0 degrees
Rod Diameter:	1.00 in
Rod Ultimate Strength:	38 ksi
Rod Net Area:	2.65 in ²
Number of Rods:	18
Diameter of Cored Hole:	2.00 in
Ultimate Grout / Rock Interface Bond Strength:	200 psi
Ultimate Grout / Rock Anchor Interface Bond Strength:	600 psi
Overall Rod Embedment Length:	72 in
Rod Exposure Above Lock Off Nut in Foundation:	60 in
Rod Embedment Circle:	60 in
Free Stress Length:	0 in
Soil / Concrete Friction Coefficient:	0.44
Rock Anchor Design Plastic or Elastic:	Elastic
Ignore Pullout Weight Resistance (Y/N):	Y
Weight of Concrete (Buoyancy Effect Considered):	32.4 k
Compressive Bearing Resistance:	282.7 k
Pullout Weight / Rod:	k - Ignored
Rock / Grout Bond Strength / Rod:	90.5 k
Grout / Rod Bond Strength / Rod:	135.7 k
Rod Mechanical Strength / Rod:	100.7 k
Soil Strength Reduction Factor (ϕ_s):	0.75
Factored Nominal Moment Capacity per Leg ($\phi_s M_n$):	2188.0 k
Factored Nominal Uplift Capacity per Leg ($\phi_s T_n$):	1272.9 k
Factored Nominal Compressive Capacity per Leg ($\phi_s P_n$):	212.1 k
Factored Nominal Shear Capacity per Leg ($\phi_s V_n$):	815.7 k
M_u :	1773.3 k-ft
T_u :	0.0 k
P_u :	35.6 k
V_u :	23.5 k
$T_u/\phi_s T_n + M_u/\phi_s M_n$:	0.81 Result: OK
$P_u/\phi_s P_n$:	0.17 Result: OK
$V_u/\phi_s V_n$:	0.03 Result: OK

Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in ²
# of Vertical Steel Rebars:	74 Minimum # of vertical rebar met
Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Horizontal Tie / Stirrup Size #:	4
Horizontal Tie / Stirrup Area:	0.20 in ²
Horizontal Tie / Stirrup Spacing:	12.0 in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	40 ksi
Anchor Rod Nut Diameter:	2.02 in
Rebar Cage Diameter:	64.0 in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.75 ACI318-05 - 9.3.2.3
Strength Compression/Bearing Reduction Factor ($\phi_{P/B}$):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment (M_u):	1773.3 k-ft
Factored Nominal Moment Capacity ($\phi_B M_n$):	16253.8 k-ft - ACI318-05 - 10.2
$M_u/\phi_B M_n$:	0.11 Result: OK
Design Shear (V_u):	305.5 k
Factored Nominal Shear Capacity ($\phi_V V_n$):	402.2 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.76 Result: OK
Design Tension (T_u):	0.0 k
Factored Nominal Tension Capacity ($\phi_T T_n$):	6233.8 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00 Result: OK
Design Compression (P_u):	29.7 k
Factored Nominal Compression Capacity ($\phi_P P_n$):	6171.5 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.00 Result: OK