



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

February 1, 2016

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

RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 806368
AT&T Site ID: CT1100
374 Three Mile Road, Glastonbury, CT 06033
Latitude: 41° 41' 36.93"/ Longitude: -72° 32' 50.11"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 137-foot level of the existing 145-foot monopole at 374 Three Mile Road in Glastonbury, CT. The tower is owned by Crown Castle. The property is owned by John Flanagan. AT&T now intends to replace three (3) antennas with three (3) new CCI 700 MHz antennas. These antennas would be installed at the 137-foot level of the tower. AT&T also intends to install three (3) RRU12s and three (3) A2s.

This facility was approved by the Connecticut Siting Council in Docket 174 on October 21, 1996. This approval included the conditions that:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed communications service, sufficient to accommodate the antennas of Springwich Cellular Limited Partnership and the Town of Glastonbury, and not to exceed a height of 150 feet above ground level (AGL).
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include relocation of the tower within the leased parcel to prevent the fall zone of the tower from crossing the nearby Connecticut Light and Power Company transmission lines; plans for the tower foundation; specifications for the placement of all antennas to be attached to this tower; plans for the equipment building and security fence; plans for the access road and utility line installation from Three Mile Road; plans for site clearing and tree trimming; plans for water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and plans for the construction of an architecturally treated gate at the entrance to the

access road from Three Mile Road; and plans for the installation of a propane tank to fuel the emergency generator.

3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

8. The Certificate Holder shall notify the Council upon completion of construction and provide the final cost to construct the facility.

This modification complies with the aforementioned condition(s).

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mr. Richard J. Johnson, Town Manager, Town of Glastonbury, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.

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3. The proposed modification 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 Communication 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.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mr. Richard J. Johnson, Town Manager
Town Hall
2155 Main Street
Glastonbury, CT 06033

John R. Flanagan
366 Three Mile Road
Glastonbury, CT 06033

PROJECT INFORMATION

SCOPE OF WORK: REMOVE (1) EXISTING LTE ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNAS TO BE REMOVED.
 NEW AT&T ANTENNAS: (1) NEW ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS; (6) EXISTING GSM/UMTS ANTENNAS TO REMAIN (2 PER SECTOR)
 AT&T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUs.
 (1) NEW A2 MODULE PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW A2 MODULES.

SITE ADDRESS: 366 THREE MILE ROAD
GLASTONBURY, CT 06033

LATITUDE: 41.6935750 41° 41' 36.87"N
 LONGITUDE: -72.5473600 72° 32' 50.496"W

USID: 25956

TOWER OWNER: TBD

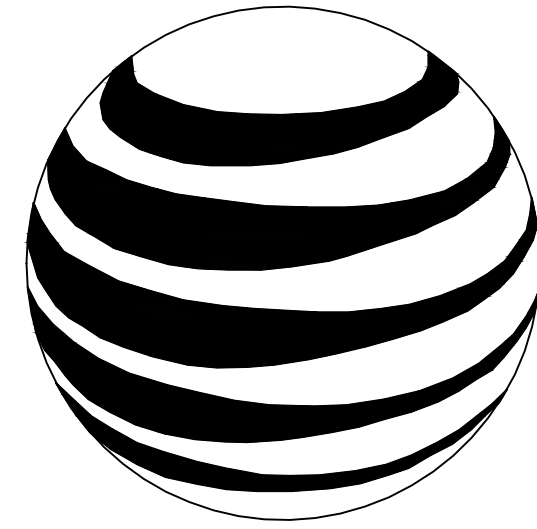
TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 150'-0"±

RAD CENTER: 141'-0"±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



at&t
MOBILITY

FA CODE: 10035094
SITE NUMBER: CT1100
SITE NAME: GLASTONBURY THREE MILE

PROJECT TEAM

CLIENT REPRESENTATIVE

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

SITE ACQUISITION:

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

ZONING:

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

ENGINEERING:

COMPANY: COM-EX CONSULTANTS, LLC
 ADDRESS: 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

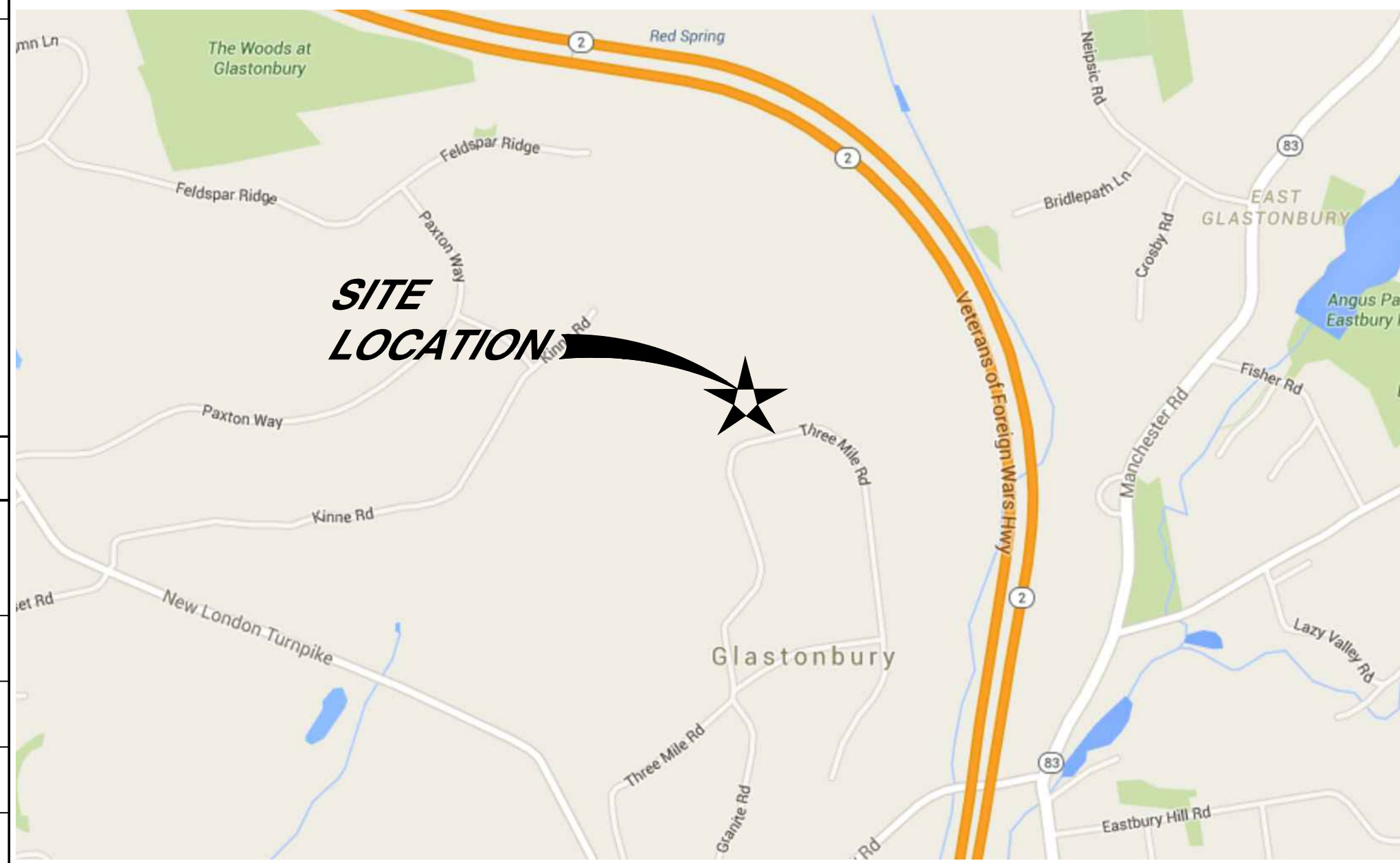
DRAWING INDEX

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VICINITY MAP

DIRECTIONS TO SITE:
 HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD, 0.3 MI. TURN LEFT ONTO CAPITAL BLVD, 0.3 MI. TURN LEFT ONTO WEST ST, 0.2 MI. TURN LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD, 4.5 MI. TAKE EXIT 25 TO MERGE ONTO CT-3 N TOWARD GLASTONBURY, 2.3 MI. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR CT-2 E/NORWICH AND MERGE ONTO CT-2 E, 5.5 MI. TAKE EXIT 10 FOR CT-83 TOWARD E GLASTONBURY/MANCHESTER, 0.2 MI. TURN RIGHT ONTO CT-83 S/MANCHESTER RD, 492 FT. TURN RIGHT ONTO NEW LONDON TURNPIKE, 0.7 MI. TAKE THE 2ND RIGHT ONTO THREE MILE RD, 0.3 MI. TURN LEFT TO STAY ON THREE MILE ROAD. DESTINATION WILL BE ON THE LEFT, 0.3 MI. 366 THREE MILE RD, GLASTONBURY, CT 06033.



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:		



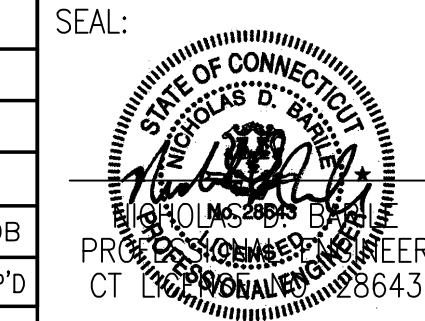
CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811



SITE NUMBER: CT1100
SITE NAME: GLASTONBURY THREE MILE
 366 THREE MILE ROAD
 GLASTONBURY, CT 06033
 HARTFORD COUNTY



0	12/10/15	ISSUED AS FINAL	AM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: AM	DRAWN BY: AM	



AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER 15104-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.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

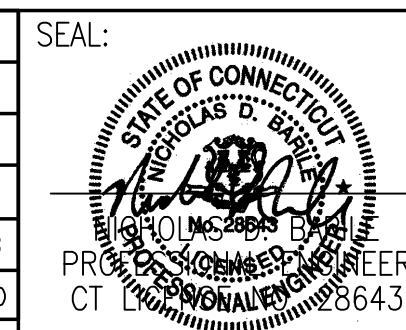
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - INTERNATIONAL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



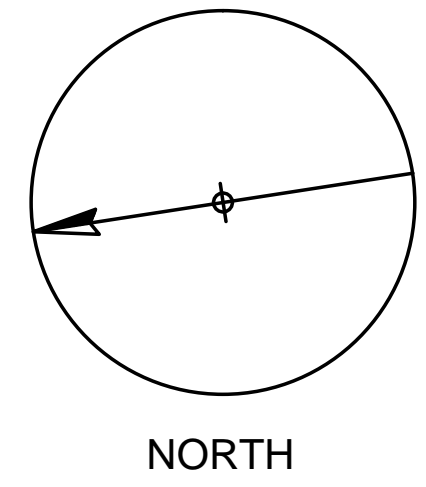
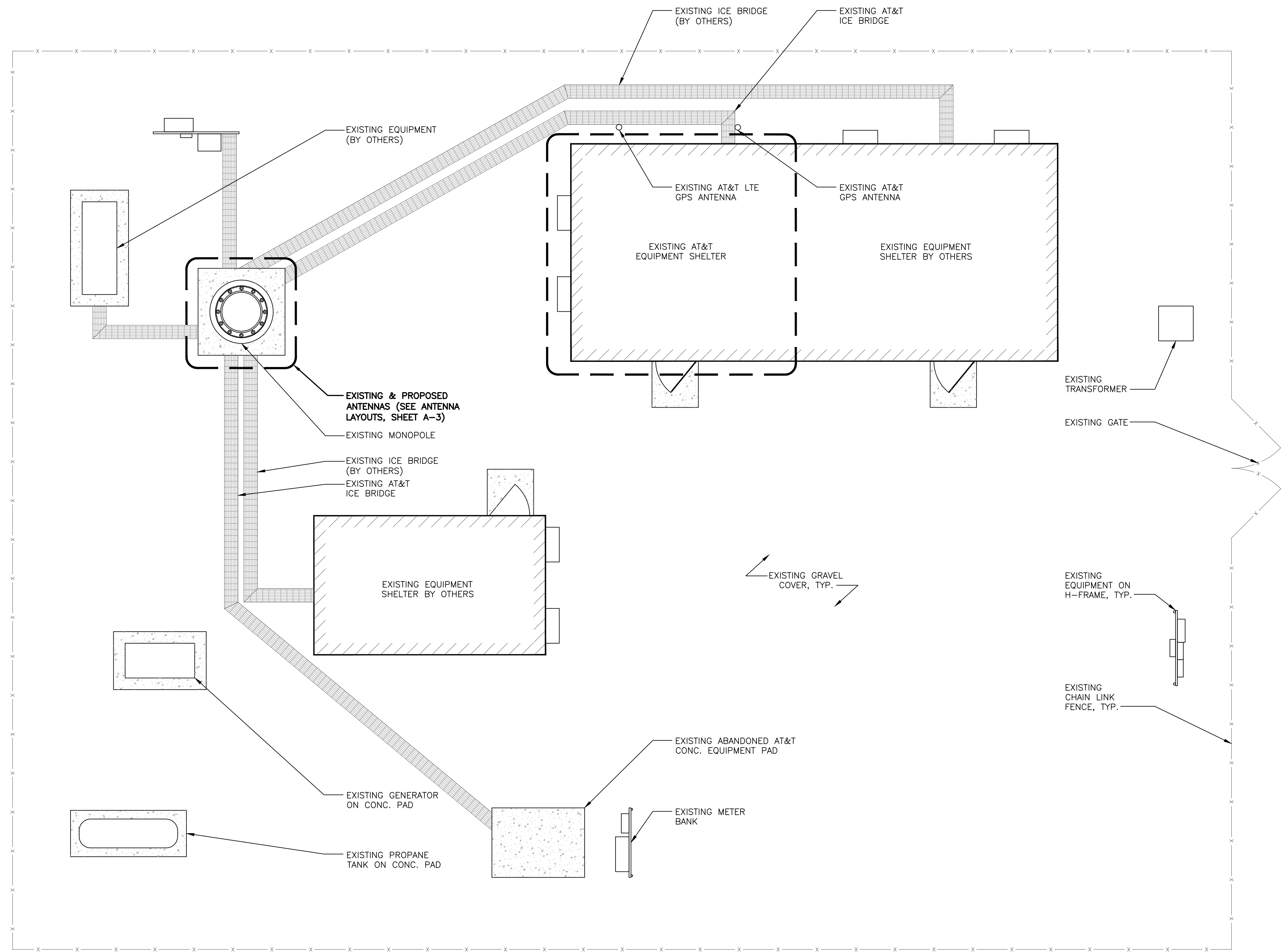
SITE NUMBER: CT1100
SITE NAME: GLASTONBURY THREE MILE
 366 THREE MILE ROAD
 GLASTONBURY, CT 06033
 HARTFORD COUNTY



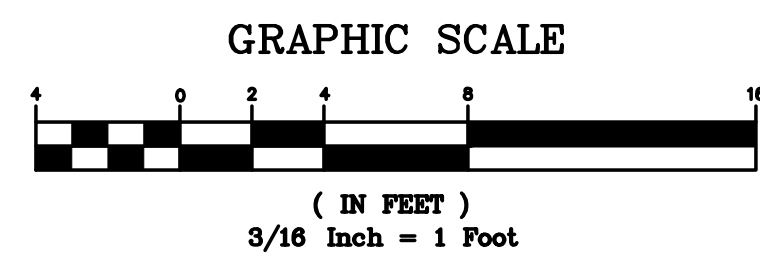
0	12/10/15	ISSUED AS FINAL	AM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: AM		DRAWN BY: AM



AT&T		
DRAWING TITLE: GROUNDING NOTES & GENERAL NOTES		
JOB NUMBER 15104-EMP	DRAWING NUMBER GN-1	REV 0



COMPOUND LAYOUT
SCALE: 3/16" = 1'-0"



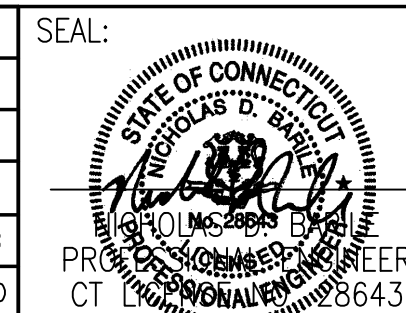
COM-EX
Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

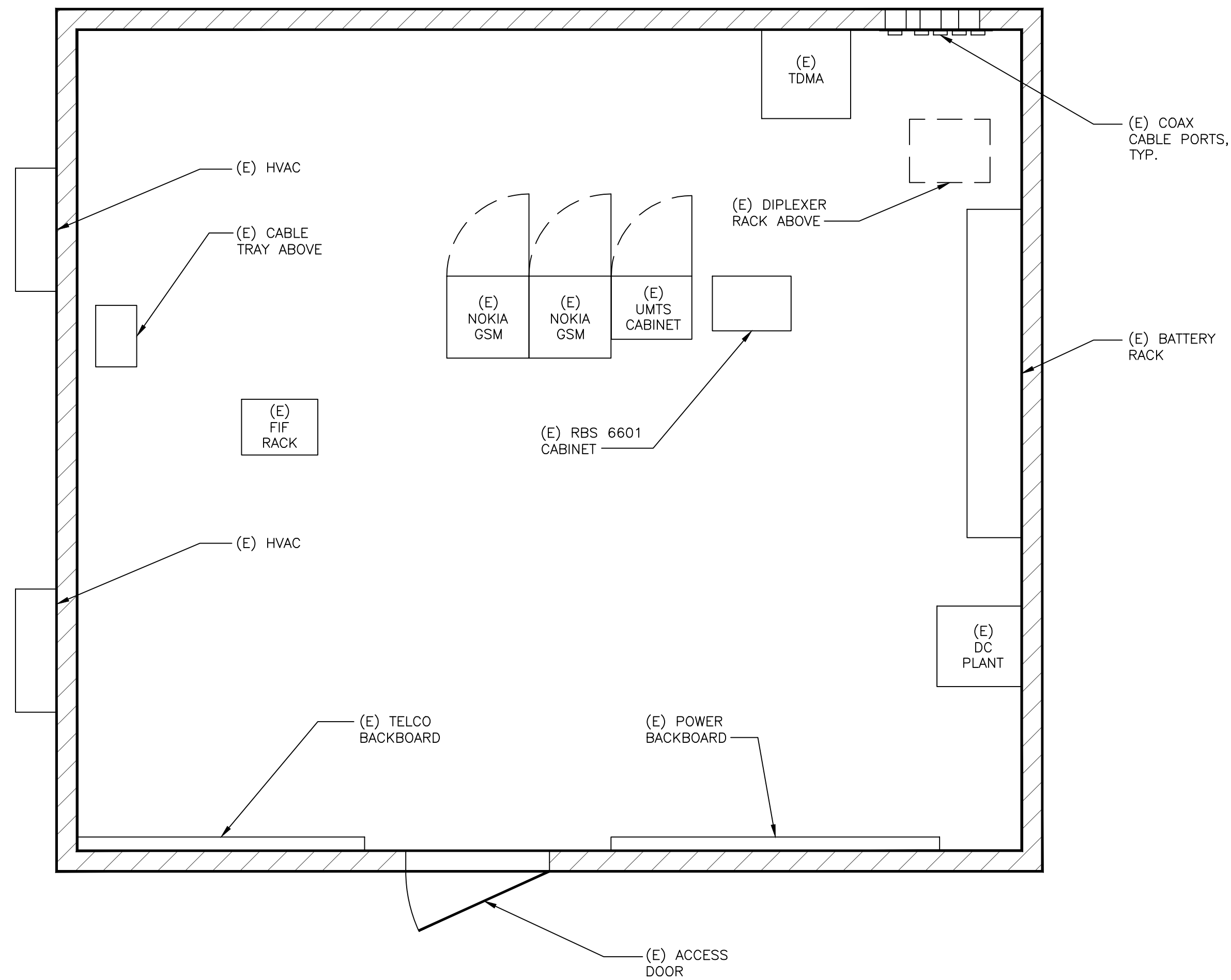
SITE NUMBER: CT1100
SITE NAME: GLASTONBURY
THREE MILE
366 THREE MILE ROAD
GLASTONBURY, CT 06033
HARTFORD COUNTY

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

0	12/10/15	ISSUED AS FINAL	AM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AM	DRAWN BY: AM		

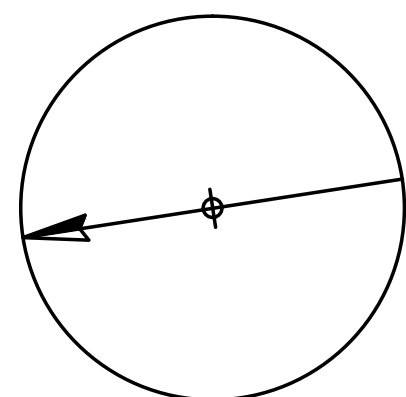
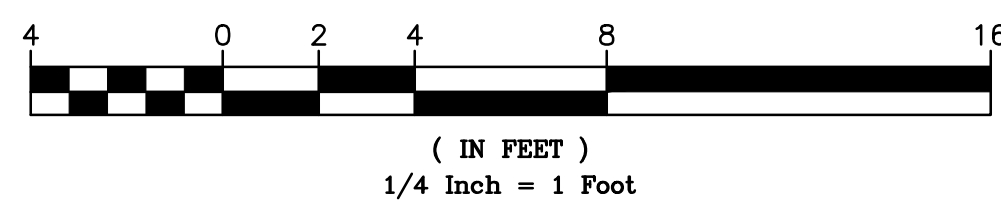


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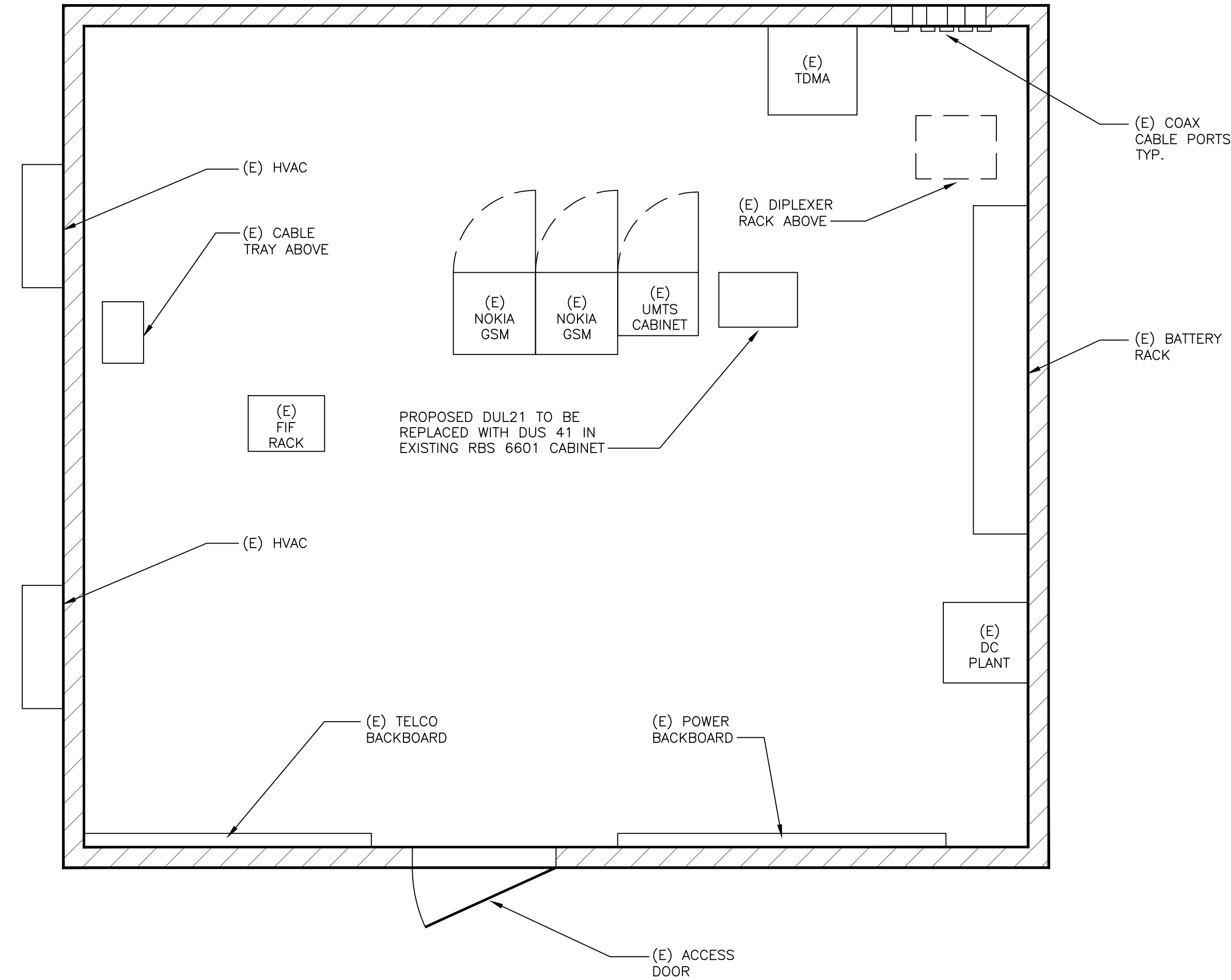


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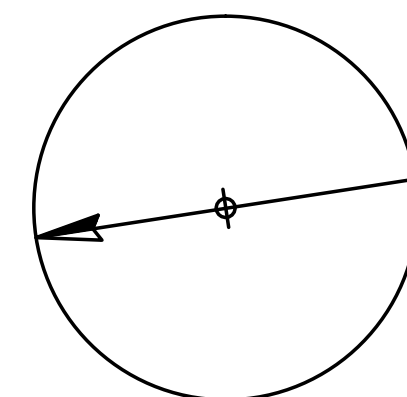
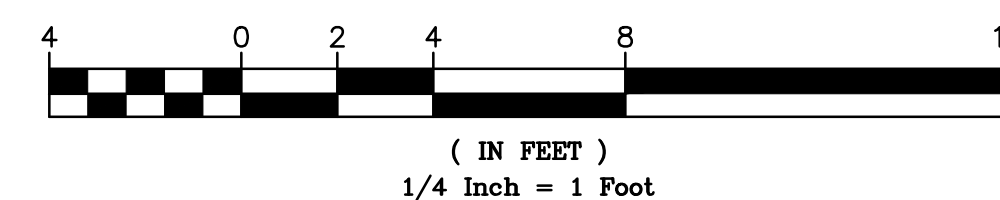


NORTH



PROPOSED EQUIPMENT LAYOUT

SCALE: 1/4" = 1'-0"



NORTH

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

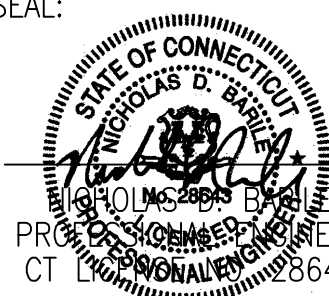
COM-EX
Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

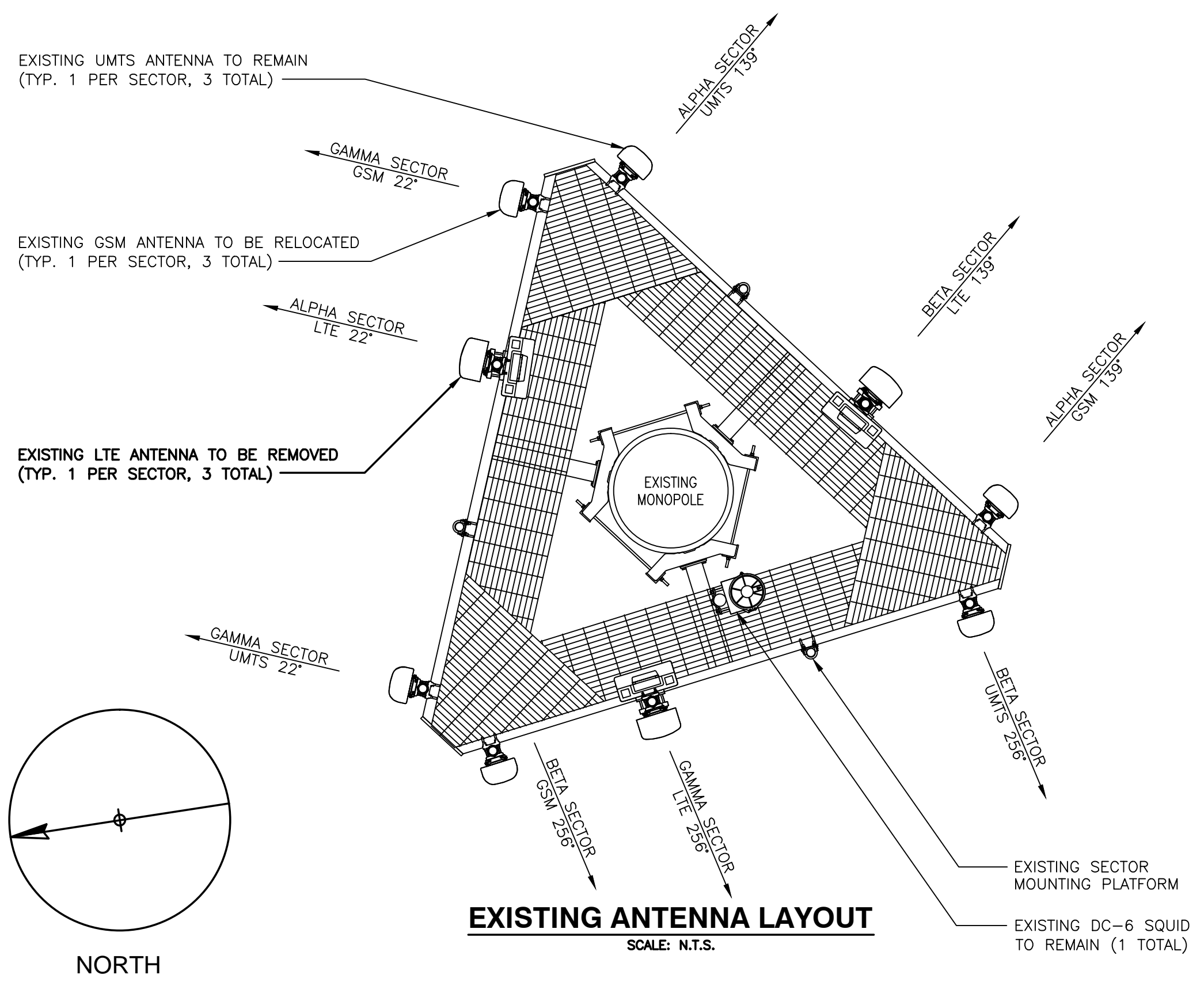
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SITE NAME: GLASTONBURY
THREE MILE
366 THREE MILE ROAD
GLASTONBURY, CT 06033
HARTFORD COUNTY

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

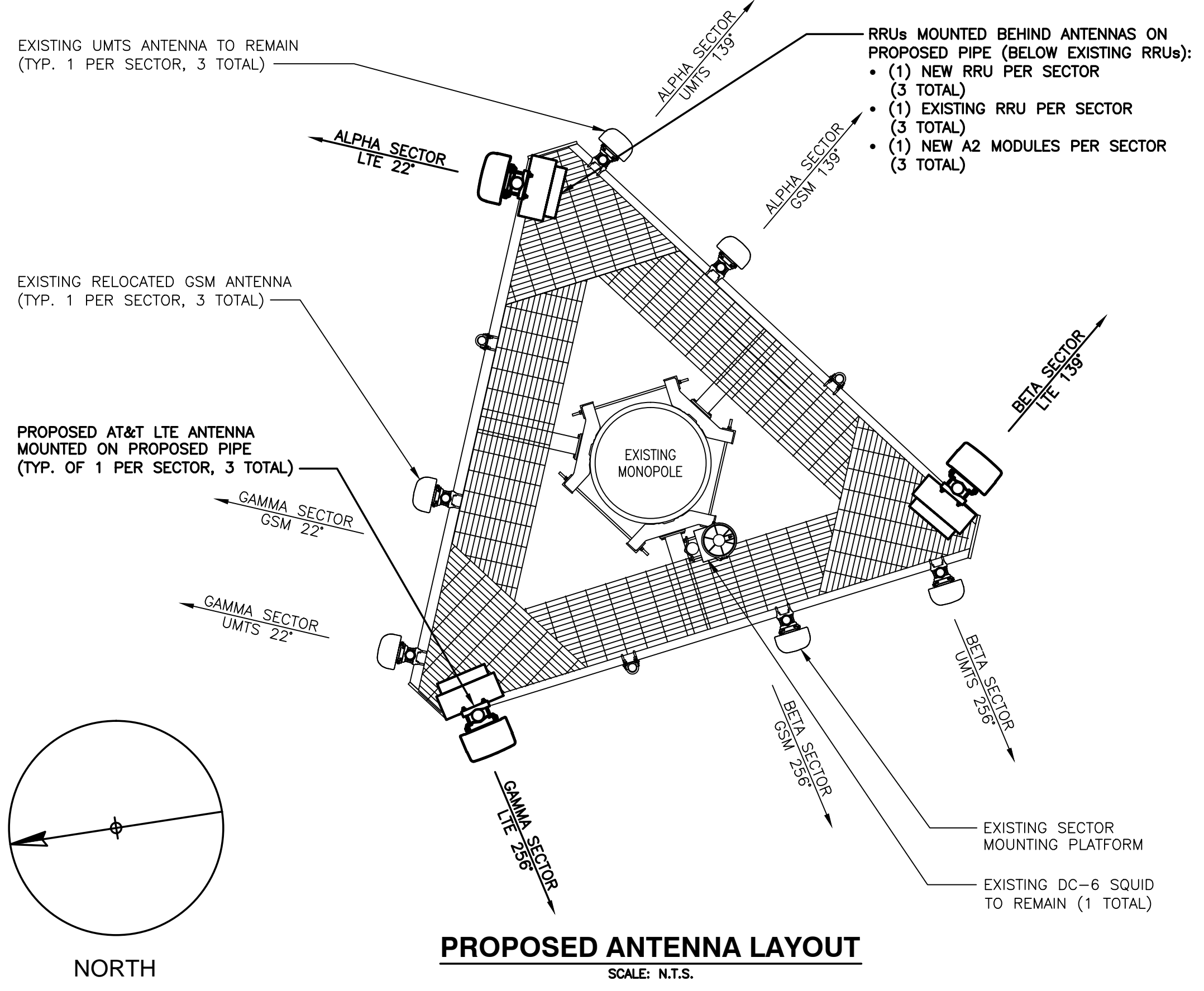
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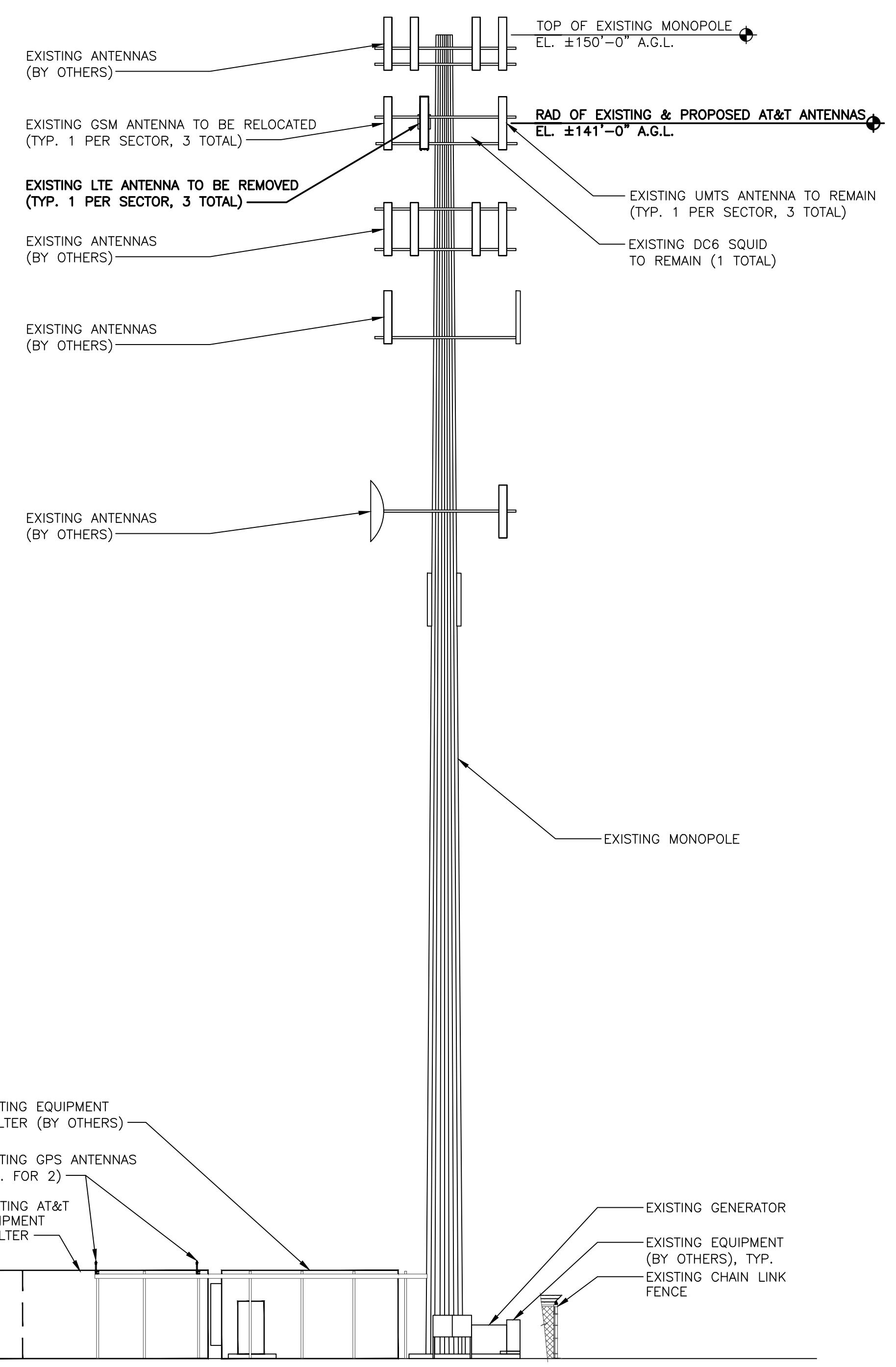
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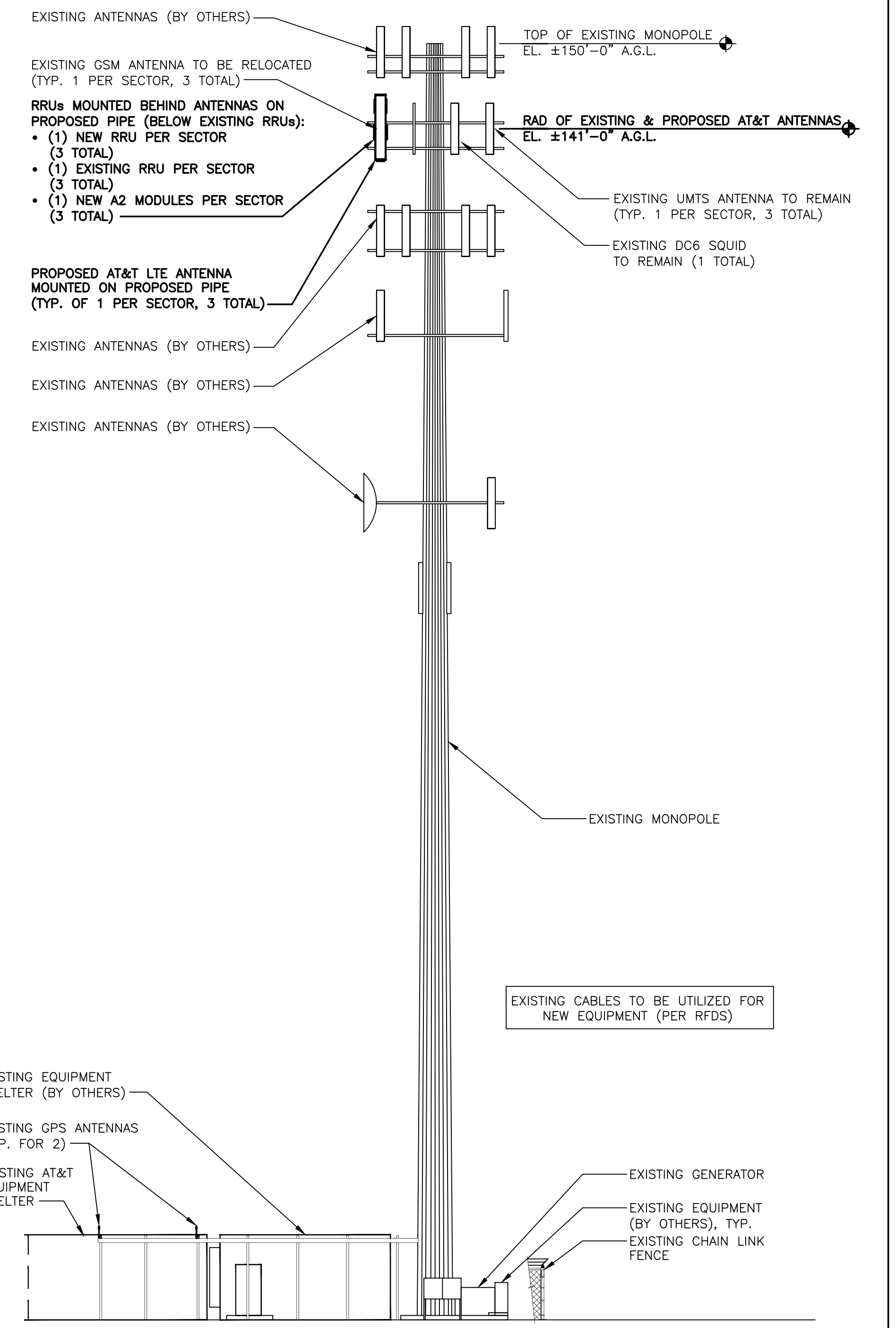
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SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.



EXISTING TOWER ELEVATION
SCALE: NTS



PROPOSED TOWER ELEVATION
SCALE: NTS

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

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

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

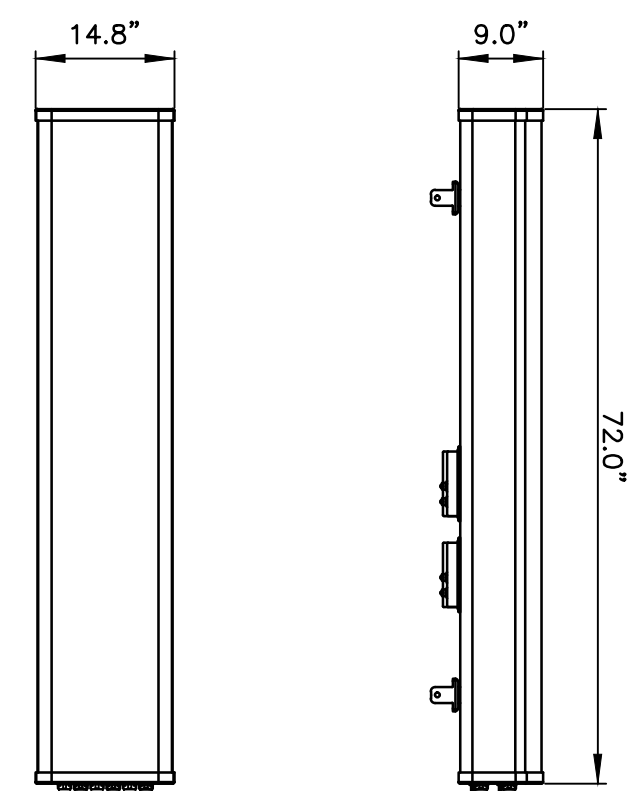
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SITE NAME: GLASTONBURY THREE MILE
366 THREE MILE ROAD
GLASTONBURY, CT 06033
HARTFORD COUNTY

at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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NO.	DATE	REVISIONS	BY	CHK	APP'D
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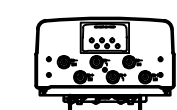
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STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

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DRAWING NUMBER: A-3
REV: 0



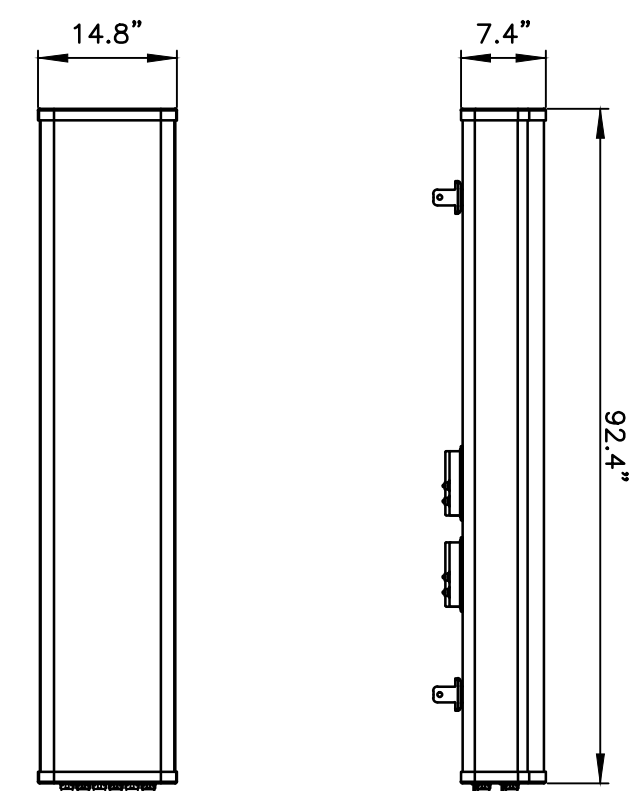
FRONT VIEW

SIDE VIEW



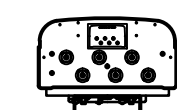
BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	51.0 LBS



FRONT VIEW

SIDE VIEW

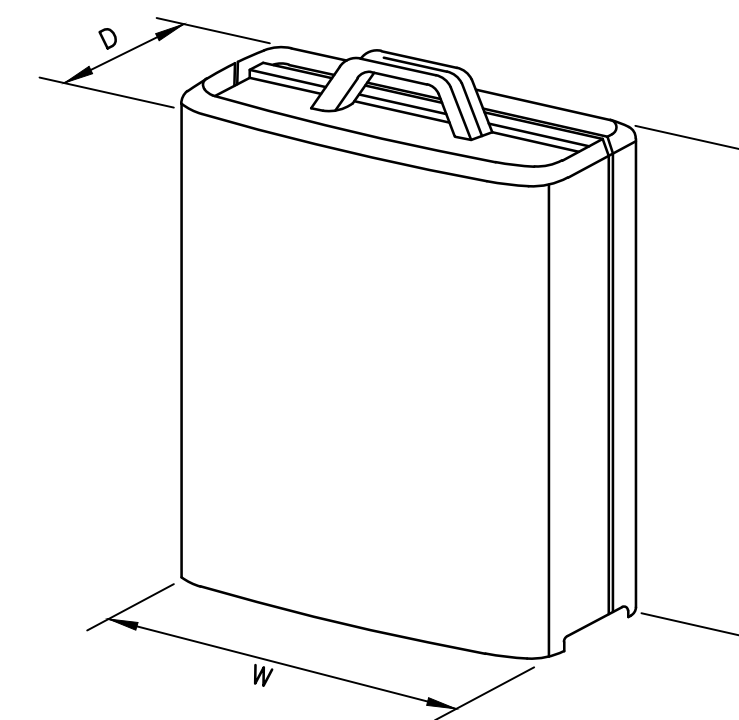


BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H8
WEIGHT	68.0 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.



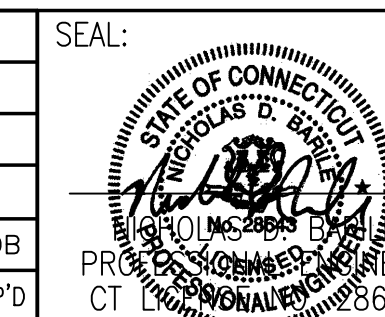
MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

*DENOTES EXISTING.

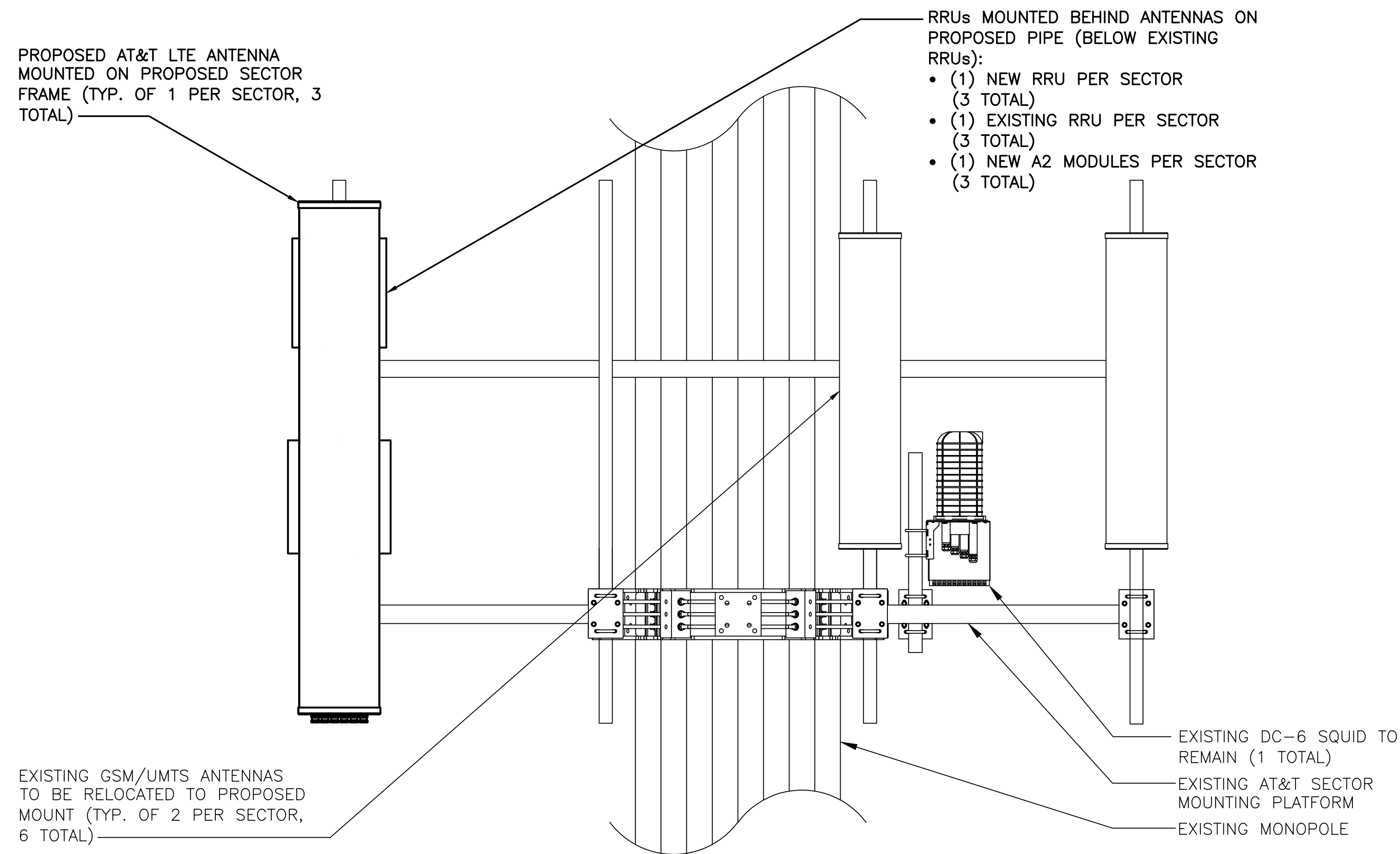
RRUS DETAIL

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NO.	DATE	REVISIONS	BY	CHK	APP'D
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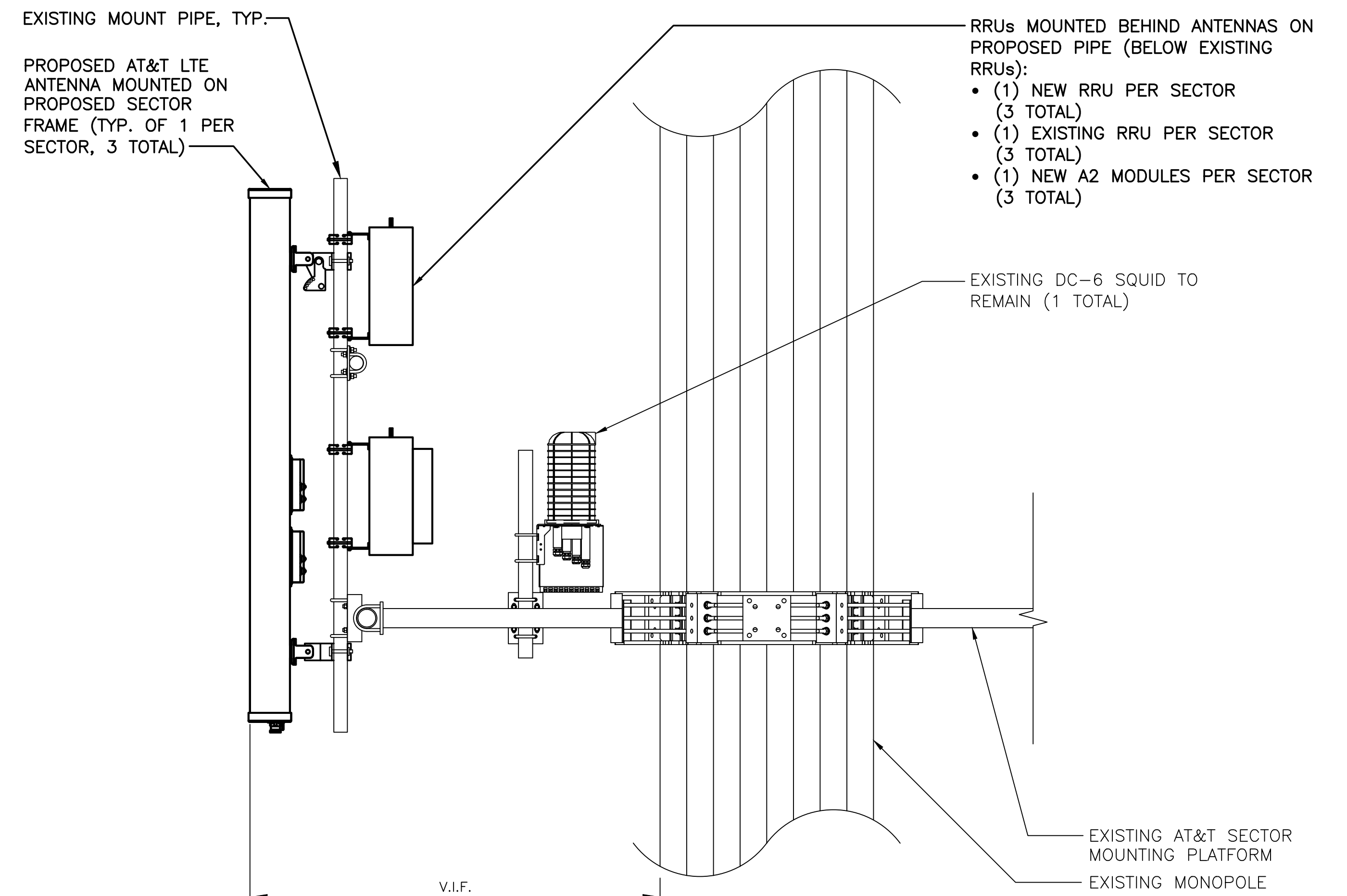


AT&T		
DRAWING TITLE:		
DETAILS		
JOB NUMBER	DRAWING NUMBER	REV
15104-EMP	A-4	0



PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

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

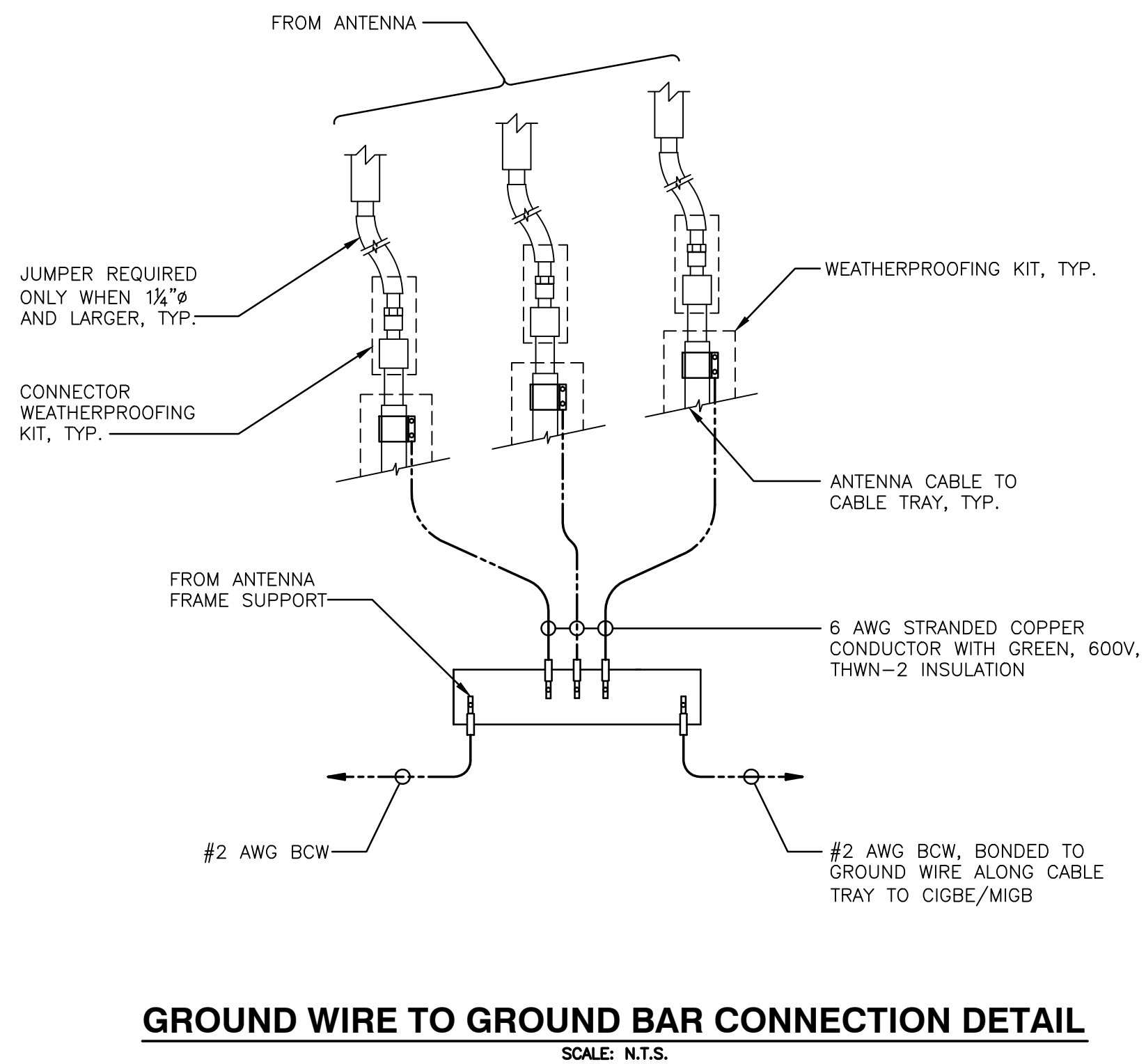
FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	POWERWAVE	7770	55"x11"x5"
	A3	-	-	-
	A4	CCI	HPA-65R-BUU-H6	72"x14.9"x9"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	POWERWAVE	7770	55"x11"x5"
	B3	-	-	-
	B4	CCI	HPA-65R-BUU-H8	92.4"x14.8"x7.4"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	POWERWAVE	7770	55"x11"x5"
	G3	-	-	-
	G4	CCI	HPA-65R-BUU-H8	92.4"x14.8"x7.4"

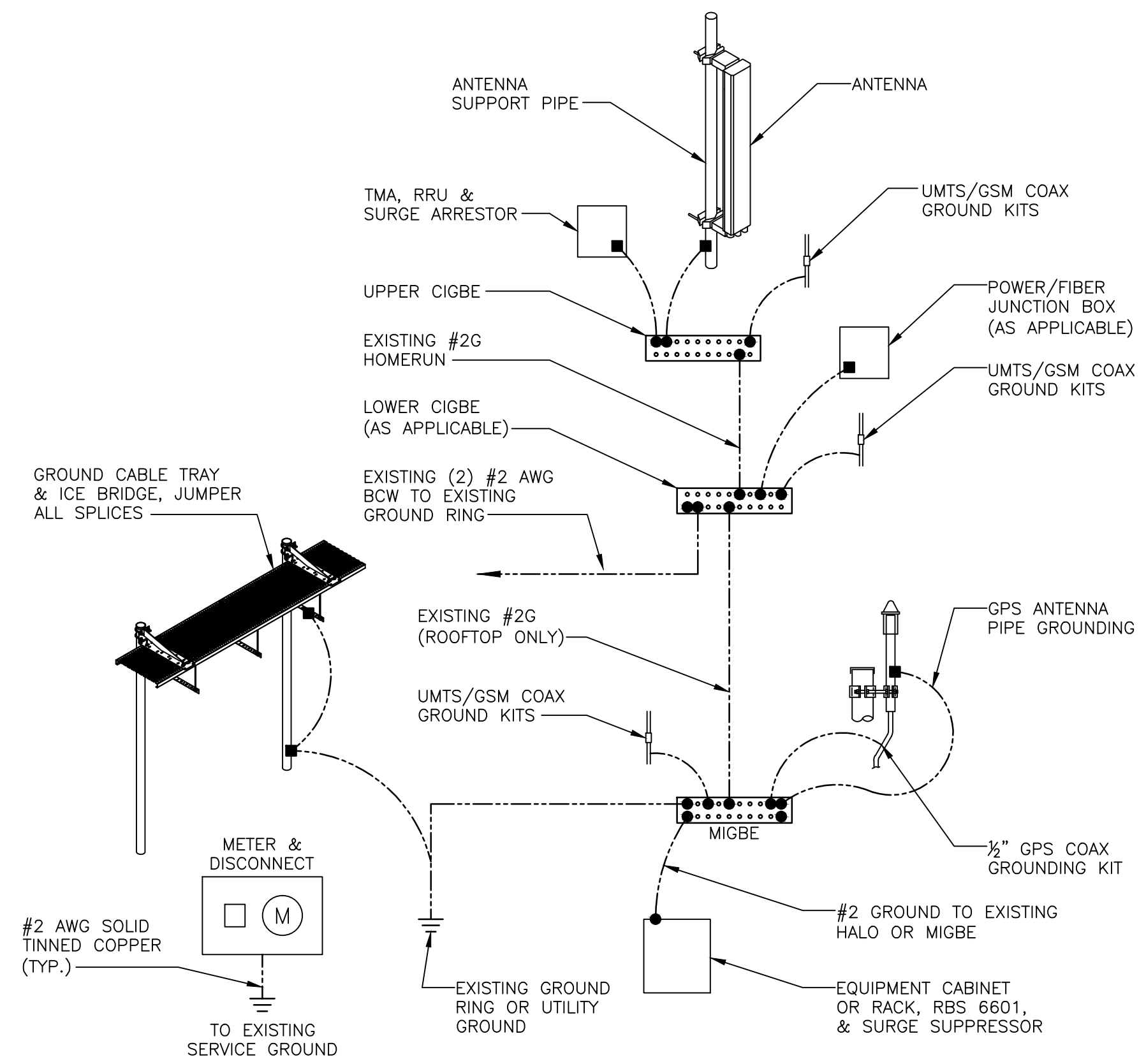
PROPOSED RRU SCHEDULE

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

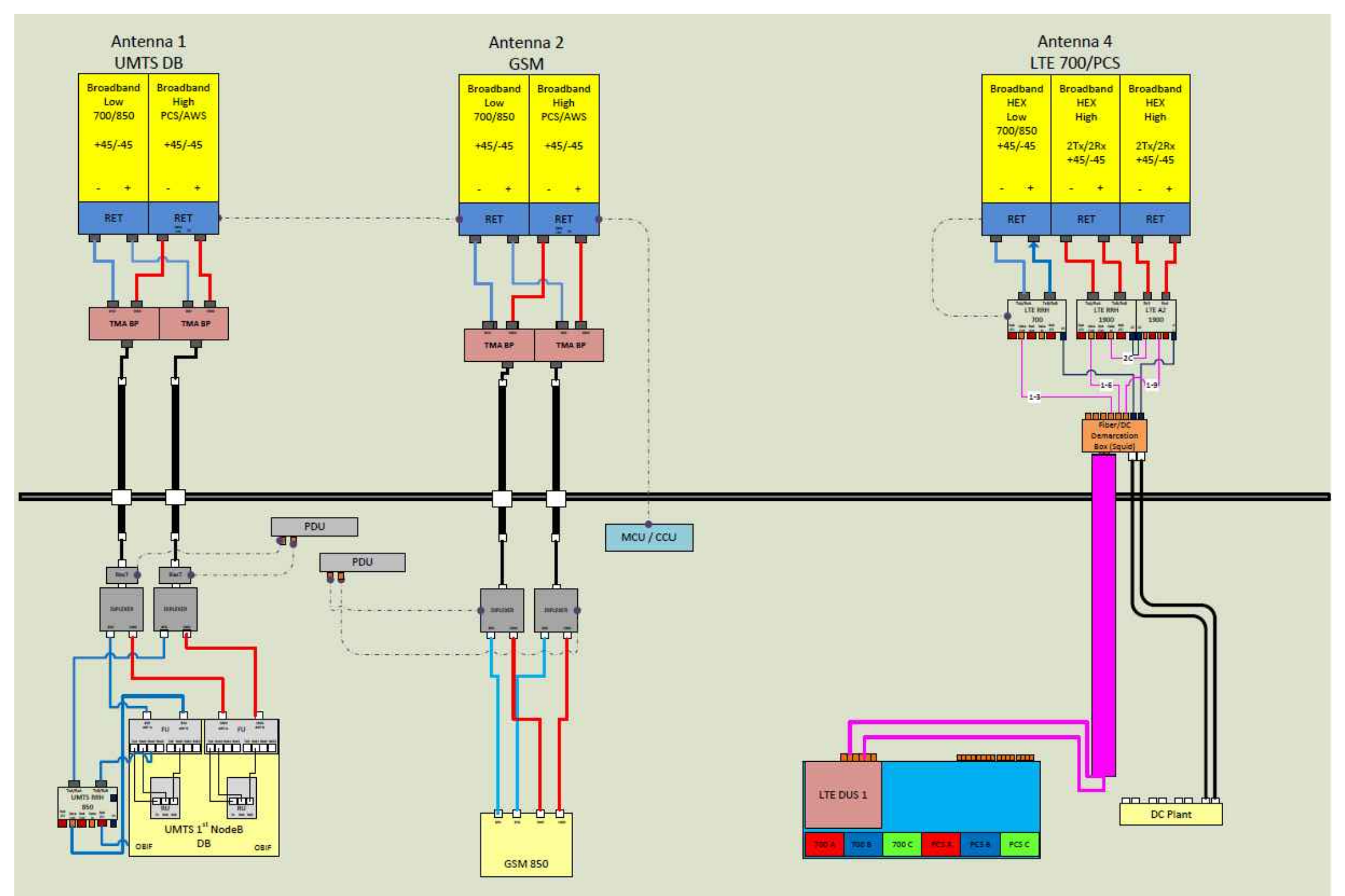
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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



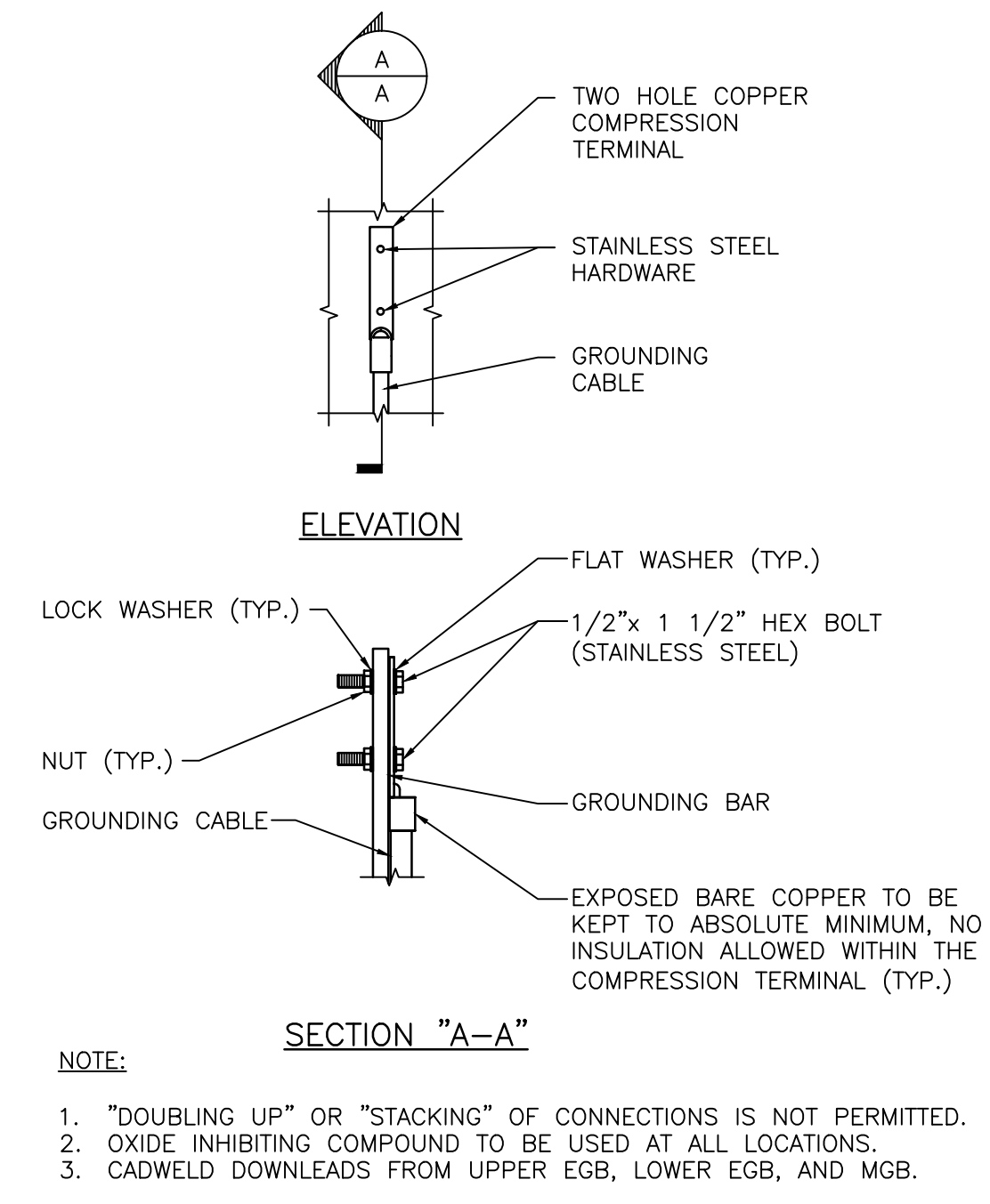
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
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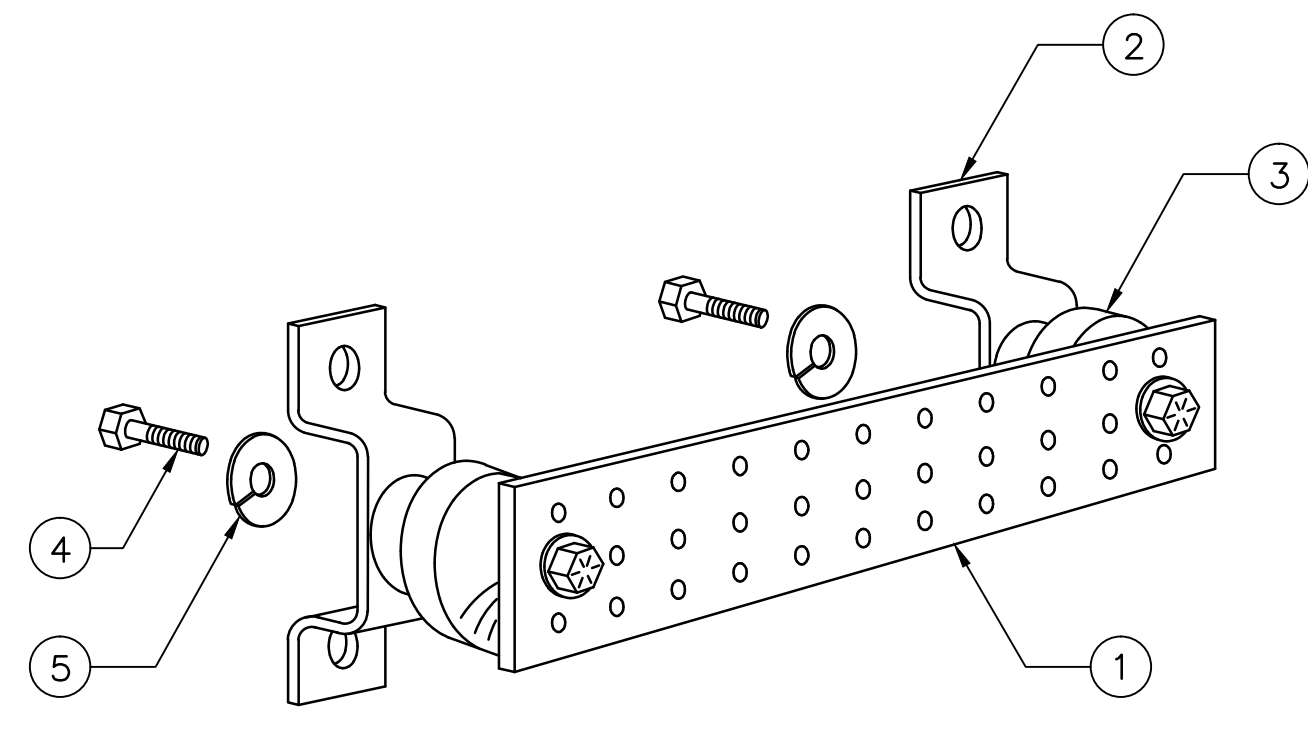
GROUNDING RISER DIAGRAM
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TYPICAL PLUMBING DIAGRAM (PER SECTOR)
SCALE: N.T.S.



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.



Date: **December 21, 2015**

Rebecca Klein
Crown Castle
525 Alderman Lane
Fort Mill, SC 29715

Aero Solutions, LLC.
5555 Central Avenue, Suite 100
Boulder, CO.80301
(720)-304-6882

Subject: Structural Analysis Report

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CT1100
Carrier Site Name: Glastonbury Three Mile

Crown Castle Designation: **Crown Castle BU Number:** 806368
Crown Castle Site Name: HRT 049B 943215
Crown Castle JDE Job Number: 355201
Crown Castle Work Order Number: 1168099
Crown Castle Application Number: 318969 Rev. 1

Engineering Firm Designation: **Aero Solutions, LLC. Project Number:** 003-15-0759

Site Data: **374 Three Mile Rd., GLASTONBURY, Hartford County, CT**
Latitude 41° 41' 36.93", Longitude -72° 32' 50.11"
145 Foot - Monopole Tower

Dear Rebecca Klein,

Aero Solutions, LLC. is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 856167, in accordance with application 318969, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at Aero Solutions, LLC. appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Rudolf Oplatka, E.I.

Respectfully submitted by:

Ryan Spalding, P.E.
Structural Engineer
CT PE#: 30849
Expires: 1/31/2016

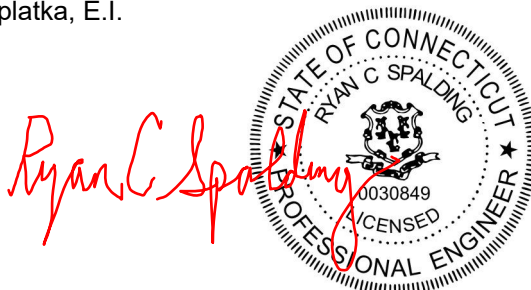


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1) INTRODUCTION

This tower is a 145 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in January of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 60 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
137.0	138.0	1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		2	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	ericsson	RRUS 12 B2/RRUS A2			
		3	powerwave technologies	7770.00 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note				
147.0	148.0	3	alcatel lucent	RRH2X60-PCS			2				
		6	alcatel lucent	RRH2x60-AWS							
		9	andrew	SBNHH-1D65B w/ Mount Pipe							
	147.0	148.0	2	antel	LPA-80063/6CF w/ Mount Pipe			1			
			1	rfs celwave	DB-T1-6Z-8AB-0Z						
			1	rfs celwave	DB-T1-6Z-8AB-0Z				2	1-5/8"	2
			4	swedcom	SC-E 6014 rev2 w/ Mount Pipe				12 1	1-5/8" 1-1/4"	1
1	tower mounts	Platform Mount [LP 1001-1]									
	145.0	6	rfs celwave	FD9R6004/2C-3L							
137.0	138.0	3	communication components inc.	DTMABP7819VG12A			1				
		3	ericsson	RRUS-11							
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			3				
		6	powerwave technologies	7020.00			1				
		3	powerwave	7770.00 w/ Mount Pipe							

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
	137.0		technologies					
		4	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			3	
		3	ericsson	RRUS-11				
		6	powerwave technologies	LGP13519				
		3	powerwave technologies	TT19-08BP111-001		1 2 1 12	3/8" 3/4" 1/2" 1-1/4"	1
		1	raycap	DC6-48-60-18-8F				
126.0	130.0	2	gps	GPS_A				
	128.0	12	decibel	DB844G65ZAXY w/ Mount Pipe	12	1-1/4"	1	
	126.0	1	tower mounts	Platform Mount [LP 712-1]	2	1/2"		
		1	tower mounts	Side Arm Mount [SO 203-3]				
116.0	117.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe			2	
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe				
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			1	
		3	ericsson	KRY 112 144/1				
	3	ericsson	RRUS 11 B12		13	1-5/8"	2	
116.0	1	tower mounts	Platform Mount [LP 712-1]			1		
95.0	97.0	1	ems wireless	RR65-18-02DP w/ Mount Pipe				
	96.0	1		DA1900-39	3	1-1/4"	1	
	95.0	2	tower mounts	Side Arm Mount [SO 701-1]				
87.0	87.0	3	allgon	7250.02				
		1	tower mounts	Pipe Mount [PM 601-3]			1	

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
149	149	15	ALP	9212 Direct Antennas		
140	140	15	ALP	11011 Direct Antennas		
130	130	15	ALP	9212 Direct Antennas		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti	262197	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEL	974245	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEL	262188	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD	1037241	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
 - 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
 - 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
 - 4) The modifications were installed per the referenced documents.
- This analysis may be affected if any assumptions are not valid or have been made in error. Aero Solutions, LLC. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	145 - 92.5	Pole	TP35.64x20.5x0.3438	1	-18.29	1948.09	74.9	Pass
L2	92.5 - 44.71	Pole	TP48.61x33.5106x0.4375	2	-31.34	3390.15	78.1	Pass
L3	44.71 - 0	Pole	TP60.5x45.8529x0.4688	3	-50.26	4563.49	80.0	Pass
							Summary	
						Pole (L3)	80.0	Pass
						Rating =	80.0	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	76.1	Pass
1	Base Plate	0	57.0	Pass
1, 2	Base Foundation (Compared w/ Design Loads)	0	88.0	Pass

Structure Rating (max from all components) =	88%
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Notes:

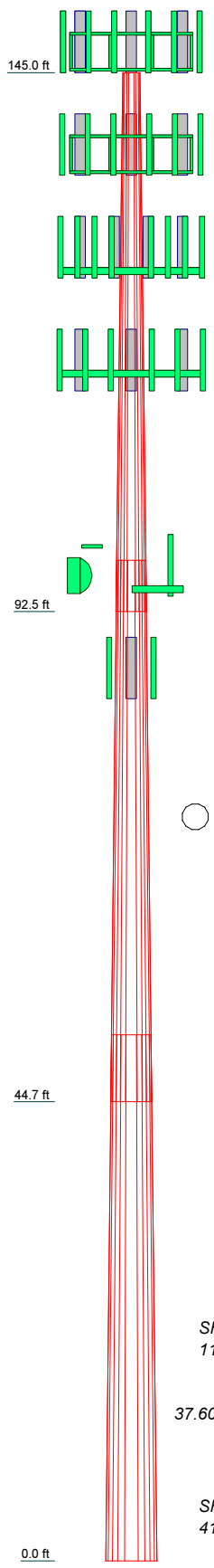
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	52.5000	52.7900	51.2900
Number of Sides	12	12	12
Thickness (in)	0.3438	0.4375	0.4688
Socket Length (ft)	5.0000	6.5800	45.8529
Top Dia (in)	20.5000	33.5106	60.5000
Bot Dia (in)	35.6400	48.6100	60.5000
Grade	5.5	A572-65	13.9
Weight (K)	5.5	10.3	13.9



DESIGNED APPURTENANCE LOADING

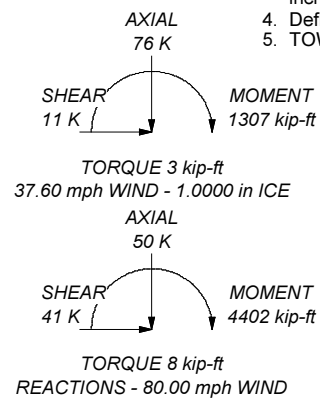
TYPE	ELEVATION	TYPE	ELEVATION
DB-T1-6Z-8AB-0Z	147	7770.00 w/ Mount Pipe	137
(2) FD9R6004/2C-3L	147	Platform Mount [LP 1001-1]	137
(2) SC-E 6014 rev2 w/ Mount Pipe	147	(2) GPS_A	126
RRH2X60-PCS	147	(4) DB844G65ZAXY w/ Mount Pipe	126
(3) SBNHH-1D65B w/ Mount Pipe	147	(4) DB844G65ZAXY w/ Mount Pipe	126
DB-T1-6Z-8AB-0Z	147	(4) DB844G65ZAXY w/ Mount Pipe	126
(2) RRH2x60-AWS	147	Platform Mount [LP 712-1]	126
(2) FD9R6004/2C-3L	147	Side Arm Mount [SO 203-3]	126
(2) SC-E 6014 rev2 w/ Mount Pipe	147	Transition Ladder	126
(2) RRH2x60-AWS	147	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
RRH2X60-PCS	147	KRY 112 144/1	116
(3) SBNHH-1D65B w/ Mount Pipe	147	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
(2) LPA-80063/6CF w/ Mount Pipe	147	LNK-6515DS-VTM w/ Mount Pipe	116
(2) FD9R6004/2C-3L	147	RRUS 11 B12	116
(2) RRH2x60-AWS	147	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
RRH2X60-PCS	147	KRY 112 144/1	116
(3) SBNHH-1D65B w/ Mount Pipe	147	Platform Mount [LP 1001-1]	147
DTMABP7819VG12A	137	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
RRUS-11	137	LNK-6515DS-VTM w/ Mount Pipe	116
(2) 7020.00	137	RRUS 11 B12	116
7770.00 w/ Mount Pipe	137	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) LGP13519	137	KRY 112 144/1	116
TT19-08BP111-001	137	Platform Mount [LP 712-1]	116
DC6-48-60-18-8F	137	Transition Ladder	116
HPA-65R-BUU-H6 w/ Mount Pipe	137	RR65-18-02DP w/ Mount Pipe	95
RRUS 12 B2/RRUS A2	137	Side Arm Mount [SO 701-1]	95
7770.00 w/ Mount Pipe	137	Side Arm Mount [SO 701-1]	95
DTMABP7819VG12A	137	6' x 2" Mount Pipe	95
RRUS-11	137	Ice Shield 1.5' x 2.0'	95
(2) 7020.00	137	DA1900-39	95
7770.00 w/ Mount Pipe	137	7250.02	87
(2) LGP13519	137	7250.02	87
TT19-08BP111-001	137	Pipe Mount [PM 601-3]	87
HPA-65R-BUU-H8 w/ Mount Pipe	137	4' Horizontal Unistrut	87
RRUS 12 B2/RRUS A2	137	4' Horizontal Unistrut	87
7770.00 w/ Mount Pipe	137	4' Horizontal Unistrut	87
DTMABP7819VG12A	137	7250.02	87
RRUS-11	137	7250.02	87
(2) 7020.00	137	REACTIONS - 80.00 mph WIND	

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60.00 mph wind.
5. TOWER RATING: 80%



Aero Solutions, LLC.		Job: BU# 806368 HRT 049B 943215	
5555 Central Avenue, Suite 100		Project: Existing 145 ft. Monopole	
Boulder, CO.80301		Client: Crown Castle	Drawn by: roplatka
Phone: (720)-304-6882		Code: TIA/EIA-222-F	Date: 12/21/15
FAX: (720)-304-6883		Path:	App'd: NTS
		Dwg No. E-1	

P:\004_C01_01\TOWER\049B_HRT_049B_943215\03-15-07\03\Engineering\Aero Solutions\Working\RIGAS\049B_HRT_049B_943215.dwg

Tower Input Data

There is a pole section.
 This tower is designed using the TIA/EIA-222-F standard.
 The following design criteria apply:

- 4) Tower is located in Hartford County, Connecticut.
- 5) Basic wind speed of 80.00 mph.
- 6) Nominal ice thickness of 1.0000 in.
- 7) Ice thickness is considered to increase with height.
- 8) Ice density of 56.00 pcf.
- 9) A wind speed of 37.60 mph is used in combination with ice.
- 10) Deflections calculated using a wind speed of 60.00 mph.
- 11) A non-linear (P-delta) analysis was used.
- 12) Pressures are calculated at each section.
- 13) Stress ratio used in pole design is 1.333.
- 14) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check <div style="background-color: #e0e0e0; text-align: center; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	145.0000- 92.5000	52.5000	5.00	12	20.5000	35.6400	0.3438	1.3750	A572-65 (65 ksi)
L2	92.5000- 44.7100	52.7900	6.58	12	33.5106	48.6100	0.4375	1.7500	A572-65 (65 ksi)
L3	44.7100- 0.0000	51.2900		12	45.8529	60.5000	0.4688	1.8750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	21.2232	22.3104	1156.9477	7.2159	10.6190	108.9507	2344.2898	10.9805	4.5728	13.303
	36.8972	39.0685	6212.5548	12.6361	18.4615	336.5137	12588.320	19.2283	8.6303	25.106
L2	36.1733	46.5917	6504.9565	11.8402	17.3585	374.7421	13180.805	22.9310	7.8083	17.848

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
	50.3248	67.8630	20100.989 4	17.2458	25.1800	798.2925	40730.054 3	33.4001	11.8550	27.097
L3	49.4158	68.5018	18009.297 9	16.2475	23.7518	758.2281	36491.720 2	33.7145	11.0323	23.536
	62.6342	90.6097	41678.805 4	21.4912	31.3390	1329.9341	84452.559 3	44.5953	14.9578	31.91

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 145.0000- 92.5000				1	1	1		
L2 92.5000- 44.7100				1	1	1		
L3 44.7100- 0.0000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
HJ7-50A(1-5/8)	C	No	Inside Pole	145.0000 - 0.0000	12	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
						2" Ice	0.0000	1.04
						4" Ice	0.0000	1.04
HB114-21U3M12- XXXF(1-1/4)	C	No	Inside Pole	145.0000 - 0.0000	1	No Ice	0.0000	1.22
						1/2" Ice	0.0000	1.22
						1" Ice	0.0000	1.22
						2" Ice	0.0000	1.22
						4" Ice	0.0000	1.22
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	145.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	2.81
						1" Ice	0.0000	4.94
						2" Ice	0.0000	11.02
						4" Ice	0.0000	30.52
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	145.0000 - 0.0000	1	No Ice	0.1980	1.30
						1/2" Ice	0.2980	2.81
						1" Ice	0.3980	4.94
						2" Ice	0.5980	11.02
						4" Ice	0.9980	30.52

LCF114-50J(1-1/4")	C	No	Inside Pole	137.0000 - 0.0000	12	No Ice	0.0000	0.70
						1/2" Ice	0.0000	0.70
						1" Ice	0.0000	0.70
						2" Ice	0.0000	0.70
						4" Ice	0.0000	0.70
LCF12-50J(1/2)	C	No	Inside Pole	137.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
2" Rigid Conduit	C	No	Inside Pole	137.0000 - 0.0000	1	No Ice	0.0000	2.80
						1/2" Ice	0.0000	2.80
						1" Ice	0.0000	2.80
						2" Ice	0.0000	2.80
						4" Ice	0.0000	2.80
FB-L98B-002-75000(3/8)	C	No	Inside Pole	137.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
						2" Ice	0.0000	0.06
						4" Ice	0.0000	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	137.0000 - 0.0000	2	No Ice	0.0000	0.58
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
						2" Ice	0.0000	0.58
						4" Ice	0.0000	0.58

LDF4-50A(1/2")	A	No	Inside Pole	126.0000 - 0.0000	2	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
						2" Ice	0.0000	0.15
						4" Ice	0.0000	0.15
LDF6-50A(1-1/4")	A	No	Inside Pole	126.0000 - 0.0000	12	No Ice	0.0000	0.66
						1/2" Ice	0.0000	0.66
						1" Ice	0.0000	0.66
						2" Ice	0.0000	0.66
						4" Ice	0.0000	0.66

LDF7-50A(1-5/8")	A	No	Inside Pole	116.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
						2" Ice	0.0000	0.82
						4" Ice	0.0000	0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	A	No	Inside Pole	116.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
						2" Ice	0.0000	1.07
						4" Ice	0.0000	1.07

LDF6-50A(1-1/4")	B	No	CaAa (Out Of Face)	95.0000 - 0.0000	3	No Ice	0.0000	0.66
						1/2" Ice	0.0000	1.91
						1" Ice	0.0000	3.78
						2" Ice	0.0000	9.33
						4" Ice	0.0000	27.78

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	145.0000-92.5000	A	0.000	0.000	0.000	0.000	0.53
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	10.395	1.42
L2	92.5000-44.7100	A	0.000	0.000	0.000	0.000	0.91
		B	0.000	0.000	0.000	0.000	0.09
		C	0.000	0.000	0.000	9.462	1.38
L3	44.7100-0.0000	A	0.000	0.000	0.000	0.000	0.86
		B	0.000	0.000	0.000	0.000	0.09
		C	0.000	0.000	0.000	8.853	1.29

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	145.0000-92.5000	A	1.164	0.000	0.000	0.000	0.000	0.53
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	22.615	1.90
L2	92.5000-44.7100	A	1.090	0.000	0.000	0.000	0.000	0.91
		B		0.000	0.000	0.000	0.000	0.67
		C		0.000	0.000	0.000	20.586	1.82
L3	44.7100-0.0000	A	1.000	0.000	0.000	0.000	0.000	0.86
		B		0.000	0.000	0.000	0.000	0.57

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		C		0.000	0.000	0.000	18.603	1.67

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	145.0000-92.5000	-0.2371	0.1369	-0.4416	0.2550
L2	92.5000-44.7100	-0.2434	0.1405	-0.4744	0.2739
L3	44.7100-0.0000	-0.2464	0.1423	-0.4772	0.2755

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 1.00	40.0000	147.0000	No Ice	5.6000	2.3333	0.04
						1/2" Ice	5.9154	2.5580	0.08
						Ice	6.2395	2.7914	0.12
						1" Ice	6.9136	3.2840	0.21
						2" Ice	8.3654	4.3728	0.45
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 -2.00	40.0000	147.0000	No Ice	0.3665	0.0846	0.00
						1/2" Ice	0.4506	0.1362	0.01
						Ice	0.5433	0.1965	0.01
						1" Ice	0.7546	0.3430	0.02
						2" Ice	1.2808	0.7396	0.06
(2) SC-E 6014 rev2 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	40.0000	147.0000	No Ice	3.7829	4.3959	0.03
						1/2" Ice	4.1817	5.0091	0.07
						Ice	4.5912	5.6403	0.12
						1" Ice	5.4423	6.9563	0.22
						2" Ice	7.2927	9.8967	0.54
RRH2X60-PCS	A	From Leg	4.0000 0.00 1.00	40.0000	147.0000	No Ice	2.5667	2.0106	0.06
						1/2" Ice	2.7914	2.2184	0.08
						Ice	3.0247	2.4349	0.10
						1" Ice	3.5173	2.8938	0.16
						2" Ice	4.6062	3.9152	0.31
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	40.0000	147.0000	No Ice	9.0648	7.5338	0.07
						1/2" Ice	9.9207	8.9185	0.15
						Ice	10.7907	10.3273	0.23
						1" Ice	12.3046	12.3982	0.42
						2" Ice	15.4656	16.8831	0.97
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 1.00	40.0000	147.0000	No Ice	5.6000	2.3333	0.04
						1/2" Ice	5.9154	2.5580	0.08
						Ice	6.2395	2.7914	0.12
						1" Ice	6.9136	3.2840	0.21
						2" Ice	8.3654	4.3728	0.45
(2) RRH2x60-AWS	A	From Leg	4.0000 0.00 1.00	40.0000	147.0000	No Ice	2.1904	1.4290	0.04
						1/2" Ice	2.3976	1.6109	0.06
						Ice	2.6134	1.8015	0.08
						1" Ice	3.0710	2.2085	0.13
						2" Ice	4.0899	3.1263	0.26

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
(2) FD9R6004/2C-3L	B	From Leg	4.0000	20.0000	147.0000	4" Ice			
						No Ice	0.3665	0.0846	0.00
						1/2"	0.4506	0.1362	0.01
						Ice	0.5433	0.1965	0.01
						1" Ice	0.7546	0.3430	0.02
(2) SC-E 6014 rev2 w/ Mount Pipe	B	From Leg	4.0000	20.0000	147.0000	2" Ice	1.2808	0.7396	0.06
						4" Ice			
						No Ice	3.7829	4.3959	0.03
						1/2"	4.1817	5.0091	0.07
						Ice	4.5912	5.6403	0.12
(2) RRH2x60-AWS	B	From Leg	4.0000	20.0000	147.0000	1" Ice	5.4423	6.9563	0.22
						2" Ice	7.2927	9.8967	0.54
						4" Ice			
						No Ice	2.1904	1.4290	0.04
						1/2"	2.3976	1.6109	0.06
RRH2X60-PCS	B	From Leg	4.0000	20.0000	147.0000	Ice	2.6134	1.8015	0.08
						1" Ice	3.0710	2.2085	0.13
						2" Ice	4.0899	3.1263	0.26
						4" Ice			
						No Ice	2.5667	2.0106	0.06
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000	20.0000	147.0000	1/2"	2.7914	2.2184	0.08
						Ice	3.0247	2.4349	0.10
						1" Ice	3.5173	2.8938	0.16
						2" Ice	4.6062	3.9152	0.31
						4" Ice			
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.0000	-10.0000	147.0000	No Ice	9.0648	7.5338	0.07
						1/2"	9.9207	8.9185	0.15
						Ice	10.7907	10.3273	0.23
						1" Ice	12.3046	12.3982	0.42
						2" Ice	15.4656	16.8831	0.97
(2) FD9R6004/2C-3L	C	From Leg	4.0000	-10.0000	147.0000	4" Ice			
						No Ice	10.5771	10.6706	0.05
						1/2"	11.2413	11.9322	0.14
						Ice	11.8720	12.9107	0.25
						1" Ice	13.1633	14.9215	0.48
(2) RRH2x60-AWS	C	From Leg	4.0000	-10.0000	147.0000	2" Ice	15.8657	19.1577	1.09
						4" Ice			
						No Ice	0.3665	0.0846	0.00
						1/2"	0.4506	0.1362	0.01
						Ice	0.5433	0.1965	0.01
RRH2X60-PCS	C	From Leg	4.0000	-10.0000	147.0000	1" Ice	0.7546	0.3430	0.02
						2" Ice	1.2808	0.7396	0.06
						4" Ice			
						No Ice	2.1904	1.4290	0.04
						1/2"	2.3976	1.6109	0.06
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000	-10.0000	147.0000	Ice	2.6134	1.8015	0.08
						1" Ice	3.0710	2.2085	0.13
						2" Ice	4.0899	3.1263	0.26
						4" Ice			
						No Ice	2.5667	2.0106	0.06
Platform Mount [LP 1001-1]	C	None	0.0000	147.0000	147.0000	1/2"	2.7914	2.2184	0.08
						Ice	3.0247	2.4349	0.10
						1" Ice	3.5173	2.8938	0.16
						2" Ice	4.6062	3.9152	0.31
						4" Ice			
Platform Mount [LP 1001-1]	C	None	0.0000	147.0000	147.0000	No Ice	9.0648	7.5338	0.07
						1/2"	9.9207	8.9185	0.15
						Ice	10.7907	10.3273	0.23
						1" Ice	12.3046	12.3982	0.42
Platform Mount [LP 1001-1]	C	None	0.0000	147.0000	147.0000	2" Ice	15.4656	16.8831	0.97
						4" Ice			
						No Ice	47.7000	47.7000	3.02
						1/2"	59.5000	59.5000	3.62
Platform Mount [LP 1001-1]	C	None	0.0000	147.0000	147.0000	Ice	71.3000	71.3000	4.22
						1" Ice	94.9000	94.9000	5.43

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
						2" Ice	142.1000	142.1000	7.85
						4" Ice			

DTMABP7819VG12A	A	From Leg	4.0000 0.00 1.00	22.0000	137.0000	No Ice	1.1389	0.3907	0.02
						1/2" Ice	1.2835	0.4884	0.03
						1" Ice	1.4368	0.5947	0.04
						2" Ice	1.7693	0.8334	0.06
						4" Ice	2.5380	1.4144	0.14
RRUS-11	A	From Leg	4.0000 0.00 0.00	22.0000	137.0000	No Ice	3.2486	1.3726	0.05
						1/2" Ice	3.4905	1.5510	0.07
						1" Ice	3.7411	1.7380	0.09
						2" Ice	4.2682	2.1381	0.15
						4" Ice	5.4260	3.0418	0.31
(2) 7020.00	A	From Leg	4.0000 0.00 1.00	22.0000	137.0000	No Ice	0.1191	0.2042	0.00
						1/2" Ice	0.1714	0.2791	0.01
						1" Ice	0.2323	0.3627	0.01
						2" Ice	0.3801	0.5559	0.02
						4" Ice	0.7793	1.0459	0.07
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	22.0000	137.0000	No Ice	6.1194	4.2543	0.06
						1/2" Ice	6.6258	5.0137	0.10
						1" Ice	7.1283	5.7109	0.16
						2" Ice	8.1643	7.1553	0.29
						4" Ice	10.3599	10.4117	0.66
(2) LGP13519	A	From Leg	4.0000 0.00 0.00	22.0000	137.0000	No Ice	0.3379	0.2074	0.01
						1/2" Ice	0.4220	0.2804	0.01
						1" Ice	0.5147	0.3621	0.01
						2" Ice	0.7260	0.5513	0.02
						4" Ice	1.2523	1.0335	0.07
TT19-08BP111-001	A	From Leg	4.0000 0.00 0.00	22.0000	137.0000	No Ice	0.6449	0.5198	0.02
						1/2" Ice	0.7568	0.6232	0.02
						1" Ice	0.8773	0.7354	0.03
						2" Ice	1.1444	0.9856	0.05
						4" Ice	1.7822	1.5896	0.12
DC6-48-60-18-8F	A	From Leg	4.0000 0.00 0.00	22.0000	137.0000	No Ice	2.5667	2.5667	0.02
						1/2" Ice	2.7978	2.7978	0.04
						1" Ice	3.0377	3.0377	0.07
						2" Ice	3.5432	3.5432	0.13
						4" Ice	4.6580	4.6580	0.30
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	22.0000	137.0000	No Ice	10.5975	8.1125	0.08
						1/2" Ice	11.2684	9.3041	0.16
						1" Ice	11.9061	10.2095	0.25
						2" Ice	13.2089	12.1748	0.46
						4" Ice	15.9341	16.3544	1.02
RRUS 12 B2/RRUS A2	A	From Leg	4.0000 0.00 1.00	22.0000	137.0000	No Ice	3.6692	2.1579	0.07
						1/2" Ice	3.9256	2.3649	0.10
						1" Ice	4.1907	2.5806	0.13
						2" Ice	4.7468	3.0380	0.20
						4" Ice	5.9627	4.0563	0.40
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	22.0000	137.0000	No Ice	6.1194	4.2543	0.06
						1/2" Ice	6.6258	5.0137	0.10
						1" Ice	7.1283	5.7109	0.16
						2" Ice	8.1643	7.1553	0.29
						4" Ice	10.3599	10.4117	0.66
DTMABP7819VG12A	B	From Leg	4.0000 0.00	19.0000	137.0000	No Ice	1.1389	0.3907	0.02
						1/2" Ice	1.2835	0.4884	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			1.00			Ice 1.4368	0.5947	0.04
						1" Ice 1.7693	0.8334	0.06
						2" Ice 2.5380	1.4144	0.14
						4" Ice		
RRUS-11	B	From Leg	4.0000	19.0000	137.0000	No Ice 3.2486	1.3726	0.05
			0.00			1/2" 3.4905	1.5510	0.07
			0.00			Ice 3.7411	1.7380	0.09
						1" Ice 4.2682	2.1381	0.15
						2" Ice 5.4260	3.0418	0.31
						4" Ice		
(2) 7020.00	B	From Leg	4.0000	19.0000	137.0000	No Ice 0.1191	0.2042	0.00
			0.00			1/2" 0.1714	0.2791	0.01
			1.00			Ice 0.2323	0.3627	0.01
						1" Ice 0.3801	0.5559	0.02
						2" Ice 0.7793	1.0459	0.07
						4" Ice		
7770.00 w/ Mount Pipe	B	From Leg	4.0000	19.0000	137.0000	No Ice 6.1194	4.2543	0.06
			0.00			1/2" 6.6258	5.0137	0.10
			1.00			Ice 7.1283	5.7109	0.16
						1" Ice 8.1643	7.1553	0.29
						2" Ice 10.3599	10.4117	0.66
						4" Ice		
(2) LGP13519	B	From Leg	4.0000	19.0000	137.0000	No Ice 0.3379	0.2074	0.01
			0.00			1/2" 0.4220	0.2804	0.01
			0.00			Ice 0.5147	0.3621	0.01
						1" Ice 0.7260	0.5513	0.02
						2" Ice 1.2523	1.0335	0.07
						4" Ice		
TT19-08BP111-001	B	From Leg	4.0000	19.0000	137.0000	No Ice 0.6449	0.5198	0.02
			0.00			1/2" 0.7568	0.6232	0.02
			0.00			Ice 0.8773	0.7354	0.03
						1" Ice 1.1444	0.9856	0.05
						2" Ice 1.7822	1.5896	0.12
						4" Ice		
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.0000	19.0000	137.0000	No Ice 13.5328	9.5823	0.10
			0.00			1/2" 14.3352	11.0517	0.20
			1.00			Ice 15.1425	12.4963	0.30
						1" Ice 16.7076	14.7516	0.55
						2" Ice 19.9544	19.4621	1.22
						4" Ice		
RRUS 12 B2/RRUS A2	B	From Leg	4.0000	19.0000	137.0000	No Ice 3.6692	2.1579	0.07
			0.00			1/2" 3.9256	2.3649	0.10
			1.00			Ice 4.1907	2.5806	0.13
						1" Ice 4.7468	3.0380	0.20
						2" Ice 5.9627	4.0563	0.40
						4" Ice		
7770.00 w/ Mount Pipe	B	From Leg	4.0000	19.0000	137.0000	No Ice 6.1194	4.2543	0.06
			0.00			1/2" 6.6258	5.0137	0.10
			1.00			Ice 7.1283	5.7109	0.16
						1" Ice 8.1643	7.1553	0.29
						2" Ice 10.3599	10.4117	0.66
						4" Ice		
DTMABP7819VG12A	C	From Leg	4.0000	16.0000	137.0000	No Ice 1.1389	0.3907	0.02
			0.00			1/2" 1.2835	0.4884	0.03
			1.00			Ice 1.4368	0.5947	0.04
						1" Ice 1.7693	0.8334	0.06
						2" Ice 2.5380	1.4144	0.14
						4" Ice		
RRUS-11	C	From Leg	4.0000	16.0000	137.0000	No Ice 3.2486	1.3726	0.05
			0.00			1/2" 3.4905	1.5510	0.07
			0.00			Ice 3.7411	1.7380	0.09
						1" Ice 4.2682	2.1381	0.15
						2" Ice 5.4260	3.0418	0.31
						4" Ice		
(2) 7020.00	C	From Leg	4.0000	16.0000	137.0000	No Ice 0.1191	0.2042	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	0.1714	0.2791	0.01
			1.00			Ice	0.2323	0.3627	0.01
						1" Ice	0.3801	0.5559	0.02
						2" Ice	0.7793	1.0459	0.07
						4" Ice			
7770.00 w/ Mount Pipe	C	From Leg	4.0000	16.0000	137.0000	No Ice	6.1194	4.2543	0.06
			0.00			1/2"	6.6258	5.0137	0.10
			1.00			Ice	7.1283	5.7109	0.16
						1" Ice	8.1643	7.1553	0.29
						2" Ice	10.3599	10.4117	0.66
						4" Ice			
(2) LGP13519	C	From Leg	4.0000	16.0000	137.0000	No Ice	0.3379	0.2074	0.01
			0.00			1/2"	0.4220	0.2804	0.01
			0.00			Ice	0.5147	0.3621	0.01
						1" Ice	0.7260	0.5513	0.02
						2" Ice	1.2523	1.0335	0.07
						4" Ice			
TT19-08BP111-001	C	From Leg	4.0000	16.0000	137.0000	No Ice	0.6449	0.5198	0.02
			0.00			1/2"	0.7568	0.6232	0.02
			0.00			Ice	0.8773	0.7354	0.03
						1" Ice	1.1444	0.9856	0.05
						2" Ice	1.7822	1.5896	0.12
						4" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.0000	16.0000	137.0000	No Ice	13.5328	9.5823	0.10
			0.00			1/2"	14.3352	11.0517	0.20
			1.00			Ice	15.1425	12.4963	0.30
						1" Ice	16.7076	14.7516	0.55
						2" Ice	19.9544	19.4621	1.22
						4" Ice			
RRUS 12 B2/RRUS A2	C	From Leg	4.0000	16.0000	137.0000	No Ice	3.6692	2.1579	0.07
			0.00			1/2"	3.9256	2.3649	0.10
			1.00			Ice	4.1907	2.5806	0.13
						1" Ice	4.7468	3.0380	0.20
						2" Ice	5.9627	4.0563	0.40
						4" Ice			
7770.00 w/ Mount Pipe	C	From Leg	4.0000	16.0000	137.0000	No Ice	6.1194	4.2543	0.06
			0.00			1/2"	6.6258	5.0137	0.10
			1.00			Ice	7.1283	5.7109	0.16
						1" Ice	8.1643	7.1553	0.29
						2" Ice	10.3599	10.4117	0.66
						4" Ice			
Platform Mount [LP 1001-1]	C	None		0.0000	137.0000	No Ice	47.7000	47.7000	3.02
						1/2"	59.5000	59.5000	3.62
						Ice	71.3000	71.3000	4.22
						1" Ice	94.9000	94.9000	5.43
						2" Ice	142.1000	142.1000	7.85
						4" Ice			

(2) GPS_A	A	From Leg	4.0000	0.0000	126.0000	No Ice	0.2975	0.2975	0.00
			0.00			1/2"	0.3739	0.3739	0.00
			4.00			Ice	0.4589	0.4589	0.01
						1" Ice	0.6549	0.6549	0.02
						2" Ice	1.1506	1.1506	0.08
						4" Ice			
(4) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.0000	0.0000	126.0000	No Ice	4.9042	4.9208	0.03
			0.00			1/2"	5.3460	5.5962	0.08
			2.00			Ice	5.7972	6.2837	0.13
						1" Ice	6.7311	7.7123	0.26
						2" Ice	8.7345	10.8330	0.62
						4" Ice			
(4) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.0000	0.0000	126.0000	No Ice	4.9042	4.9208	0.03
			0.00			1/2"	5.3460	5.5962	0.08
			2.00			Ice	5.7972	6.2837	0.13
						1" Ice	6.7311	7.7123	0.26
						2" Ice	8.7345	10.8330	0.62
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
(4) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.0000	126.0000	4" Ice			
						No Ice	4.9042	4.9208	0.03
						1/2"	5.3460	5.5962	0.08
						Ice	5.7972	6.2837	0.13
						1" Ice	6.7311	7.7123	0.26
Platform Mount [LP 712-1]	C	None		0.0000	126.0000	2" Ice	8.7345	10.8330	0.62
						4" Ice			
						No Ice	24.5300	24.5300	1.34
						1/2"	29.9400	29.9400	1.65
						Ice	35.3500	35.3500	1.96
Side Arm Mount [SO 203-3]	C	From Leg	4.0000 0.00 0.00	0.0000	126.0000	1" Ice	46.1700	46.1700	2.58
						2" Ice	67.8100	67.8100	3.82
						4" Ice			
						No Ice	7.1200	7.1200	0.38
						1/2"	9.8800	9.8800	0.46
Transition Ladder	C	From Leg	3.0000 0.00 -4.00	0.0000	126.0000	Ice	12.6400	12.6400	0.55
						1" Ice	18.1600	18.1600	0.72
						2" Ice	29.2000	29.2000	1.06
						4" Ice			
						No Ice	6.0000	6.0000	0.16
*** ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	50.0000	116.0000	1/2"	7.3471	6.4800	0.17
						Ice	7.8631	7.2567	0.23
						1" Ice	8.9261	8.8640	0.38
						2" Ice	11.1755	12.2932	0.81
						4" Ice			
KRY 112 144/1	A	From Leg	4.0000 0.00 1.00	50.0000	116.0000	1/2"	0.4969	0.2733	0.01
						Ice	0.5941	0.3511	0.02
						1" Ice	0.8145	0.5326	0.03
						2" Ice	1.3590	0.9992	0.08
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	50.0000	116.0000	1/2"	7.3345	6.4680	0.17
						Ice	7.8499	7.2437	0.23
						1" Ice	8.9116	8.8487	0.38
						2" Ice	11.1584	12.2734	0.81
						4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	50.0000	116.0000	1/2"	12.4043	11.3657	0.17
						Ice	13.1351	12.9138	0.27
						1" Ice	14.6007	15.2672	0.51
						2" Ice	17.8748	20.1392	1.15
						4" Ice			
RRUS 11 B12	A	From Leg	4.0000 0.00 1.00	50.0000	116.0000	1/2"	3.5497	1.5404	0.07
						Ice	3.8025	1.7284	0.10
						1" Ice	4.3340	2.1302	0.15
						2" Ice	5.5006	3.0377	0.31
						4" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	40.0000	116.0000	1/2"	7.3471	6.4800	0.17
						Ice	7.8631	7.2567	0.23
						1" Ice	8.9261	8.8640	0.38
						2" Ice	11.1755	12.2932	0.81
						4" Ice			
KRY 112 144/1	B	From Leg	4.0000 0.00 1.00	40.0000	116.0000	1/2"	0.4969	0.2733	0.01
						Ice	0.5941	0.3511	0.02
						No Ice	0.4083	0.2042	0.01

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz ft	Lateral ft						Vert ft
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	40.0000		116.0000	1" Ice	0.8145	0.5326	0.03
							2" Ice	1.3590	0.9992	0.08
							4" Ice			
							No Ice	6.8135	5.6315	0.11
							1/2" Ice	7.3345	6.4680	0.17
							Ice	7.8499	7.2437	0.23
							1" Ice	8.9116	8.8487	0.38
LNx-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	40.0000		116.0000	2" Ice	11.1584	12.2734	0.81
							4" Ice			
							No Ice	11.6828	9.8418	0.08
							1/2" Ice	12.4043	11.3657	0.17
							Ice	13.1351	12.9138	0.27
							1" Ice	14.6007	15.2672	0.51
							2" Ice	17.8748	20.1392	1.15
RRUS 11 B12	B	From Leg	4.0000 0.00 1.00	40.0000		116.0000	4" Ice			
							No Ice	3.3056	1.3611	0.05
							1/2" Ice	3.5497	1.5404	0.07
							Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
							2" Ice	5.5006	3.0377	0.31
							4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	60.0000		116.0000	No Ice	6.8135	5.6315	0.11
							1/2" Ice	7.3345	6.4680	0.17
							Ice	7.8499	7.2437	0.23
							1" Ice	8.9116	8.8487	0.38
							2" Ice	11.1584	12.2734	0.81
							4" Ice			
							No Ice	6.8253	5.6424	0.11
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	60.0000		116.0000	1/2" Ice	7.3471	6.4800	0.17
							Ice	7.8631	7.2567	0.23
							1" Ice	8.9261	8.8640	0.38
							2" Ice	11.1755	12.2932	0.81
							4" Ice			
							No Ice	0.4083	0.2042	0.01
							1/2" Ice	0.4969	0.2733	0.01
KRY 112 144/1	C	From Leg	4.0000 0.00 1.00	60.0000		116.0000	Ice	0.5941	0.3511	0.02
							1" Ice	0.8145	0.5326	0.03
							2" Ice	1.3590	0.9992	0.08
							4" Ice			
							No Ice	11.6828	9.8418	0.08
							1/2" Ice	12.4043	11.3657	0.17
							Ice	13.1351	12.9138	0.27
LNx-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	60.0000		116.0000	1" Ice	14.6007	15.2672	0.51
							2" Ice	17.8748	20.1392	1.15
							4" Ice			
							No Ice	3.3056	1.3611	0.05
							1/2" Ice	3.5497	1.5404	0.07
							Ice	3.8025	1.7284	0.10
							1" Ice	4.3340	2.1302	0.15
RRUS 11 B12	C	From Leg	4.0000 0.00 1.00	60.0000		116.0000	2" Ice	5.5006	3.0377	0.31
							4" Ice			
							No Ice	24.5300	24.5300	1.34
							1/2" Ice	29.9400	29.9400	1.65
							Ice	35.3500	35.3500	1.96
							1" Ice	46.1700	46.1700	2.58
							2" Ice	67.8100	67.8100	3.82
Platform Mount [LP 712-1]	C	None				116.0000	4" Ice			
							No Ice	6.0000	6.0000	0.16
							1/2" Ice	8.0000	8.0000	0.24
							Ice	10.0000	10.0000	0.32
							1" Ice	14.0000	14.0000	0.48
							2" Ice	22.0000	22.0000	0.80
							4" Ice			
Transition Ladder	C	From Leg	3.0000 0.00 -4.00			116.0000	No Ice	4.5931	3.3194	0.03
							1" Ice			
RR65-18-02DP w/ Mount	B	From Leg	3.0000	0.0000		95.0000	No Ice	4.5931	3.3194	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
Pipe			0.00 2.00			1/2" Ice 1" Ice 2" Ice 4" Ice	5.0883 4.0888 5.5778 4.7844 6.5876 6.2255 8.7306 9.3076	0.07 0.12 0.22 0.56
Side Arm Mount [SO 701-1]	B	From Leg	1.5000 0.00 0.00	0.0000	95.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.8500 1.6700 1.1400 2.3400 1.4300 3.0100 2.0100 4.3500 3.1700 7.0300	0.07 0.08 0.09 0.12 0.18
Side Arm Mount [SO 701-1]	C	From Leg	1.5000 0.00 0.00	30.0000	95.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.8500 1.6700 1.1400 2.3400 1.4300 3.0100 2.0100 4.3500 3.1700 7.0300	0.07 0.08 0.09 0.12 0.18
6' x 2" Mount Pipe	C	From Leg	3.0000 0.00 0.00	30.0000	95.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.4250 1.4250 1.9250 1.9250 2.2939 2.2939 3.0596 3.0596 4.7022 4.7022	0.02 0.03 0.05 0.09 0.23
Ice Shield 1.5' x 2.0'	C	From Leg	3.0000 0.00 4.00	30.0000	95.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.3500 0.4667 0.4840 0.6395 0.6265 0.8210 0.9377 1.2099 1.6636 2.0914	0.03 0.04 0.06 0.12 0.27

7250.02	A	From Leg	1.0000 0.00 0.00	30.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.9987 1.8731 4.3864 2.3281 4.7816 2.7011 5.5941 3.4693 7.5364 5.0947	0.02 0.04 0.06 0.12 0.32
7250.02	B	From Leg	1.0000 0.00 0.00	30.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.9987 1.8731 4.3864 2.3281 4.7816 2.7011 5.5941 3.4693 7.5364 5.0947	0.02 0.04 0.06 0.12 0.32
7250.02	C	From Leg	1.0000 0.00 0.00	30.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.9987 1.8731 4.3864 2.3281 4.7816 2.7011 5.5941 3.4693 7.5364 5.0947	0.02 0.04 0.06 0.12 0.32
Pipe Mount [PM 601-3]	C	None		0.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.3900 4.3900 5.4800 5.4800 6.5700 6.5700 8.7500 8.7500 13.1100 13.1100	0.20 0.24 0.28 0.36 0.53
4' Horizontal Unistrut	A	From Leg	0.5000 0.00 0.00	0.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.7000 0.0219 1.0252 0.0456 1.3590 0.0780 2.0525 0.1688 3.5432 0.4540	0.05 0.06 0.07 0.10 0.21
4' Horizontal Unistrut	B	From Leg	0.5000 0.00 0.00	0.0000	87.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.7000 0.0219 1.0252 0.0456 1.3590 0.0780 2.0525 0.1688 3.5432 0.4540	0.05 0.06 0.07 0.10 0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _{Front} ft ²	C _A A _{Side} ft ²	Weight K	
4' Horizontal Unistrut	C	From Leg	0.5000	0.0000	87.0000	4" Ice	0.7000	0.0219	0.05
			0.00			No Ice	1.0252	0.0456	0.06
			0.00			1/2" Ice	1.3590	0.0780	0.07
						1" Ice	2.0525	0.1688	0.10
						2" Ice	3.5432	0.4540	0.21
							4" Ice		

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
DA1900-39	C	Paraboloid w/Shroud (HP)	From Leg	3.0000	30.0000		95.0000	3.5417	No Ice	9.8500	0.05
				0.00					1/2" Ice	10.3200	0.10
				1.00					1" Ice	10.7900	0.15
									2" Ice	11.7300	0.26
									4" Ice	13.6000	0.47

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service

Comb. No.	Description
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	145 - 92.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-36.12	7.27	-2.65
			Max. Mx	11	-18.32	977.08	-15.96
			Max. My	8	-18.31	17.50	-977.85
			Max. Vy	11	-27.82	977.08	-15.96
			Max. Vx	8	27.87	17.50	-977.85
			Max. Torque	8			-6.76
L2	92.5 - 44.71	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-52.97	8.01	-4.97
			Max. Mx	11	-31.35	2440.89	-27.77
			Max. My	8	-31.35	31.03	-2438.95
			Max. Vy	5	34.69	-2437.99	23.52
			Max. Vx	8	34.53	31.03	-2438.95
			Max. Torque	2			7.65
L3	44.71 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-75.83	7.76	-6.29
			Max. Mx	5	-50.26	-4370.55	35.35
			Max. My	8	-50.26	45.34	-4363.68
			Max. Vy	5	40.70	-4370.55	35.35
			Max. Vx	8	40.54	45.34	-4363.68
			Max. Torque	2			7.78

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	75.83	-0.00	0.00
	Max. H _x	11	50.28	40.58	-0.23
	Max. H _z	2	50.28	-0.19	40.51
	Max. M _x	2	4358.88	-0.19	40.51
	Max. M _z	5	4370.55	-40.67	0.23
	Max. Torsion	2	7.78	-0.19	40.51
	Min. Vert	11	50.28	40.58	-0.23
	Min. H _x	5	50.28	-40.67	0.23
	Min. H _z	8	50.28	0.27	-40.51
	Min. M _x	8	-4363.68	0.27	-40.51
	Min. M _z	11	-4368.90	40.58	-0.23
	Min. Torsion	8	-7.71	0.27	-40.51

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	50.28	0.00	-0.00	2.33	3.53	0.00
Dead+Wind 0 deg - No Ice	50.28	0.19	-40.51	-4358.88	-30.17	-7.78
Dead+Wind 30 deg - No Ice	50.28	20.65	-35.14	-3787.05	-2227.63	-5.26
Dead+Wind 60 deg - No Ice	50.28	35.38	-20.43	-2208.04	-3807.74	-2.16
Dead+Wind 90 deg - No Ice	50.28	40.67	-0.23	-35.35	-4370.55	1.59
Dead+Wind 120 deg - No Ice	50.28	35.15	20.03	2147.54	-3770.14	5.14
Dead+Wind 150 deg - No Ice	50.28	20.25	34.91	3754.26	-2162.32	7.46
Dead+Wind 180 deg - No Ice	50.28	-0.27	40.51	4363.68	45.34	7.71
Dead+Wind 210 deg - No Ice	50.28	-20.57	35.16	3794.44	2226.34	5.71
Dead+Wind 240 deg - No Ice	50.28	-35.29	20.41	2210.75	3805.78	2.35
Dead+Wind 270 deg - No Ice	50.28	-40.58	0.23	40.16	4368.90	-1.49
Dead+Wind 300 deg - No Ice	50.28	-35.06	-20.01	-2140.64	3768.19	-5.02
Dead+Wind 330 deg - No Ice	50.28	-20.17	-34.93	-3752.04	2161.05	-7.43
Dead+Ice	75.83	0.00	-0.00	6.29	7.76	0.00
Dead+Wind 0 deg+Ice	75.83	0.03	-11.31	-1284.66	2.75	-2.38
Dead+Wind 30 deg+Ice	75.83	5.73	-9.80	-1113.24	-647.09	-1.41
Dead+Wind 60 deg+Ice	75.83	9.85	-5.68	-643.82	-1116.54	-0.27
Dead+Wind 90 deg+Ice	75.83	11.34	-0.04	0.18	-1285.65	0.96
Dead+Wind 120 deg+Ice	75.83	9.81	5.61	645.87	-1110.27	1.98
Dead+Wind 150 deg+Ice	75.83	5.66	9.76	1119.88	-636.24	2.50
Dead+Wind 180 deg+Ice	75.83	-0.05	11.31	1297.57	15.28	2.34
Dead+Wind 210 deg+Ice	75.83	-5.71	9.80	1126.78	661.02	1.52
Dead+Wind 240 deg+Ice	75.83	-9.83	5.68	656.20	1130.29	0.33
Dead+Wind 270 deg+Ice	75.83	-11.32	0.04	12.72	1299.48	-0.91
Dead+Wind 300 deg+Ice	75.83	-9.79	-5.61	-632.44	1124.03	-1.94
Dead+Wind 330 deg+Ice	75.83	-5.64	-9.76	-1107.61	650.16	-2.51
Dead+Wind 0 deg - Service	50.28	0.11	-22.79	-2452.50	-15.37	-4.42
Dead+Wind 30 deg - Service	50.28	11.62	-19.76	-2130.71	-1252.33	-2.98
Dead+Wind 60 deg - Service	50.28	19.90	-11.49	-1241.87	-2141.79	-1.21
Dead+Wind 90 deg - Service	50.28	22.88	-0.13	-18.84	-2458.58	0.91
Dead+Wind 120 deg - Service	50.28	19.77	11.27	1209.90	-2120.56	2.91
Dead+Wind 150 deg - Service	50.28	11.39	19.63	2114.30	-1215.53	4.21
Dead+Wind 180 deg - Service	50.28	-0.15	22.79	2457.33	27.15	4.35
Dead+Wind 210 deg - Service	50.28	-11.57	19.78	2136.98	1254.85	3.23
Dead+Wind 240 deg - Service	50.28	-19.85	11.48	1245.51	2143.92	1.34
Dead+Wind 270 deg - Service	50.28	-22.83	0.13	23.67	2460.87	-0.83
Dead+Wind 300 deg - Service	50.28	-19.72	-11.25	-1203.88	2122.69	-2.83
Dead+Wind 330 deg - Service	50.28	-11.34	-19.65	-2110.93	1218.05	-4.21

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-50.28	0.00	-0.00	50.28	0.00	0.001%
2	0.19	-50.28	-40.51	-0.19	50.28	40.51	0.000%
3	20.65	-50.28	-35.14	-20.65	50.28	35.14	0.000%
4	35.38	-50.28	-20.43	-35.38	50.28	20.43	0.000%
5	40.67	-50.28	-0.23	-40.67	50.28	0.23	0.002%
6	35.15	-50.28	20.03	-35.15	50.28	-20.03	0.000%
7	20.25	-50.28	34.91	-20.25	50.28	-34.91	0.000%
8	-0.27	-50.28	40.51	0.27	50.28	-40.51	0.000%
9	-20.57	-50.28	35.16	20.57	50.28	-35.16	0.000%
10	-35.29	-50.28	20.41	35.29	50.28	-20.41	0.000%
11	-40.58	-50.28	0.23	40.58	50.28	-0.23	0.002%
12	-35.06	-50.28	-20.01	35.06	50.28	20.01	0.000%
13	-20.17	-50.28	-34.93	20.17	50.28	34.93	0.000%
14	0.00	-75.83	0.00	-0.00	75.83	0.00	0.002%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
15	0.03	-75.83	-11.31	-0.03	75.83	11.31	0.001%
16	5.73	-75.83	-9.80	-5.73	75.83	9.80	0.001%
17	9.85	-75.83	-5.68	-9.85	75.83	5.68	0.001%
18	11.34	-75.83	-0.04	-11.34	75.83	0.04	0.001%
19	9.81	-75.83	5.61	-9.81	75.83	-5.61	0.001%
20	5.66	-75.83	9.76	-5.66	75.83	-9.76	0.001%
21	-0.05	-75.83	11.31	0.05	75.83	-11.31	0.001%
22	-5.71	-75.83	9.80	5.71	75.83	-9.80	0.001%
23	-9.83	-75.83	5.68	9.83	75.83	-5.68	0.001%
24	-11.32	-75.83	0.04	11.32	75.83	-0.04	0.001%
25	-9.79	-75.83	-5.61	9.79	75.83	5.61	0.001%
26	-5.64	-75.83	-9.76	5.64	75.83	9.76	0.001%
27	0.11	-50.28	-22.79	-0.11	50.28	22.79	0.001%
28	11.62	-50.28	-19.76	-11.62	50.28	19.76	0.000%
29	19.90	-50.28	-11.49	-19.90	50.28	11.49	0.000%
30	22.88	-50.28	-0.13	-22.88	50.28	0.13	0.001%
31	19.77	-50.28	11.27	-19.77	50.28	-11.27	0.000%
32	11.39	-50.28	19.63	-11.39	50.28	-19.63	0.000%
33	-0.15	-50.28	22.79	0.15	50.28	-22.79	0.001%
34	-11.57	-50.28	19.78	11.57	50.28	-19.78	0.000%
35	-19.85	-50.28	11.48	19.85	50.28	-11.48	0.000%
36	-22.83	-50.28	0.13	22.83	50.28	-0.13	0.001%
37	-19.72	-50.28	-11.25	19.72	50.28	11.25	0.000%
38	-11.34	-50.28	-19.65	11.34	50.28	19.65	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00001447
2	Yes	12	0.00000001	0.00004789
3	Yes	13	0.00000001	0.00006378
4	Yes	13	0.00000001	0.00007034
5	Yes	11	0.00000001	0.00005809
6	Yes	13	0.00000001	0.00006882
7	Yes	13	0.00000001	0.00005886
8	Yes	12	0.00000001	0.00005975
9	Yes	13	0.00000001	0.00007462
10	Yes	13	0.00000001	0.00006608
11	Yes	11	0.00000001	0.00007323
12	Yes	13	0.00000001	0.00006033
13	Yes	13	0.00000001	0.00007183
14	Yes	7	0.00000001	0.00002914
15	Yes	11	0.00000001	0.00004241
16	Yes	11	0.00000001	0.00003018
17	Yes	11	0.00000001	0.00004115
18	Yes	11	0.00000001	0.00003104
19	Yes	11	0.00000001	0.00005493
20	Yes	11	0.00000001	0.00002968
21	Yes	11	0.00000001	0.00004363
22	Yes	11	0.00000001	0.00005616
23	Yes	11	0.00000001	0.00003826
24	Yes	11	0.00000001	0.00003210
25	Yes	11	0.00000001	0.00002993
26	Yes	11	0.00000001	0.00006212
27	Yes	11	0.00000001	0.00007808
28	Yes	12	0.00000001	0.00005016
29	Yes	12	0.00000001	0.00006047
30	Yes	11	0.00000001	0.00004071
31	Yes	12	0.00000001	0.00006082
32	Yes	12	0.00000001	0.00004536
33	Yes	11	0.00000001	0.00008609
34	Yes	12	0.00000001	0.00006768
35	Yes	12	0.00000001	0.00005373
36	Yes	11	0.00000001	0.00004286

37	Yes	12	0.00000001	0.00004734
38	Yes	12	0.00000001	0.00006587

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 92.5	44.469	35	2.9057	0.0263
L2	97.5 - 44.71	19.185	35	1.9698	0.0088
L3	51.29 - 0	5.050	35	0.9214	0.0027

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	DB-T1-6Z-8AB-0Z	35	44.469	2.9057	0.0271	18980
137.0000	DTMABP7819VG12A	35	39.840	2.7567	0.0236	11862
126.0000	(2) GPS_A	35	33.594	2.5490	0.0189	4994
116.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	35	28.165	2.3544	0.0150	3270
96.0000	DA1900-39	35	18.536	1.9367	0.0086	2021
95.0000	RR65-18-02DP w/ Mount Pipe	35	18.112	1.9146	0.0084	2019
87.0000	7250.02	35	14.926	1.7333	0.0067	2078

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 92.5	78.756	10	5.1478	0.0462
L2	97.5 - 44.71	34.018	10	3.4921	0.0155
L3	51.29 - 0	8.961	10	1.6348	0.0048

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	DB-T1-6Z-8AB-0Z	10	78.756	5.1478	0.0483	10839
137.0000	DTMABP7819VG12A	10	70.567	4.8842	0.0420	6774
126.0000	(2) GPS_A	10	59.518	4.5168	0.0337	2850
116.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	10	49.912	4.1725	0.0266	1865
96.0000	DA1900-39	10	32.870	3.4337	0.0153	1150
95.0000	RR65-18-02DP w/ Mount Pipe	10	32.117	3.3944	0.0149	1149
87.0000	7250.02	10	26.473	3.0735	0.0118	1180

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	145 - 92.5 (1)	TP35.64x20.5x0.3438	52.5000	0.0000	0.0	39.000	37.4725	-18.29	1461.43	0.013
L2	92.5 - 44.71 (2)	TP48.61x33.5106x0.4375	52.7900	0.0000	0.0	39.000	65.2117	-31.34	2543.25	0.012
L3	44.71 - 0 (3)	TP60.5x45.8529x0.4688	51.2900	0.0000	0.0	37.783	90.6097	-50.26	3423.47	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	145 - 92.5 (1)	TP35.64x20.5x0.3438	991.13	38.434	39.000	0.985	0.00	0.000	39.000	0.000
L2	92.5 - 44.71 (2)	TP48.61x33.5106x0.4375	2463.5 3	40.119	39.000	1.029	0.00	0.000	39.000	0.000
L3	44.71 - 0 (3)	TP60.5x45.8529x0.4688	4401.6 3	39.716	37.783	1.051	0.00	0.000	37.783	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	145 - 92.5 (1)	TP35.64x20.5x0.3438	28.08	0.749	26.000	0.059	5.88	0.107	26.000	0.004
L2	92.5 - 44.71 (2)	TP48.61x33.5106x0.4375	34.79	0.533	26.000	0.042	2.35	0.018	26.000	0.001
L3	44.71 - 0 (3)	TP60.5x45.8529x0.4688	40.89	0.451	26.000	0.035	2.16	0.009	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	145 - 92.5 (1)	0.013	0.985	0.000	0.059	0.004	0.999	1.333	H1-3+VT ✓
L2	92.5 - 44.71 (2)	0.012	1.029	0.000	0.042	0.001	1.041	1.333	H1-3+VT ✓
L3	44.71 - 0 (3)	0.015	1.051	0.000	0.035	0.000	1.066	1.333	H1-3+VT ✓

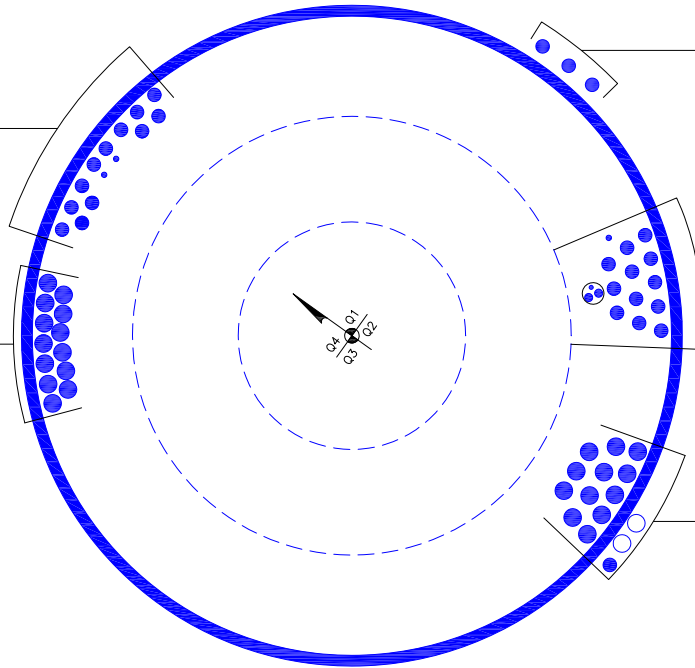
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF * P_{allow}$ K	% Capacity	Pass Fail
L1	145 - 92.5	Pole	TP35.64x20.5x0.3438	1	-18.29	1948.09	74.9	Pass
L2	92.5 - 44.71	Pole	TP48.61x33.5106x0.4375	2	-31.34	3390.15	78.1	Pass
L3	44.71 - 0	Pole	TP60.5x45.8529x0.4688	3	-50.26	4563.49	80.0	Pass
Summary								
Pole (L3)							80.0	Pass
RATING =							80.0	Pass

APPENDIX B
BASE LEVEL DRAWING

(ABANDONED)
(2) 1/2" TO 126 FT LEVEL
(12) 1-1/4" TO 126 FT LEVEL

(INSTALLED)
(13) 1 5/8" TO 116 FT LEVEL



(INSTALLED)
(3) 1-1/4" TO 95 FT LEVEL

(INSTALLED—IN A CONDUIT)
(1) 3/8" TO 137 FT LEVEL
(2) 3/4" TO 137 FT LEVEL
(INSTALLED)
(1) 1/2" TO 137 FT LEVEL
(12) 1-1/4" TO 137 FT LEVEL

(RESERVED)
(2) 1-5/8" TO 147 FT LEVEL
(INSTALLED)
(1) 1-1/4" TO 147 FT LEVEL
(12) 1-5/8" TO 147 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data	
BU#:	806368
Site Name:	HRT 049B 943215
App #:	318969 R1
Pole Manufacturer:	Other

Reactions		
Moment:	4401.628	ft-kips
Axial:	50.2571	kips
Shear:	40.887586	kips

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	70	in

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results
 Maximum Rod Tension: 148.4 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 76.1% **Pass**

Stiffened
Service, ASD
Fty*ASIF

Plate Data		
Diam:	76.5	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	9.73	in

Base Plate Results
 Flexural Check
 Base Plate Stress: 34.2 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 57.0% **Pass**

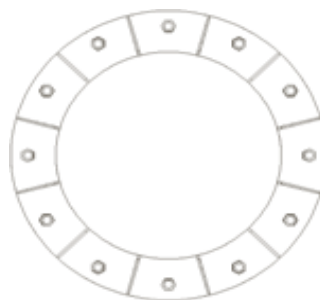
Stiffened
Service, ASD
0.75*Fy*ASIF
Y.L. Length:
N/A, Roark

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Both	
Groove Depth:	0.5	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.5	in
Width:	6	in
Height:	18	in
Thick:	1	in
Notch:	1	in
Grade:	65	ksi
Weld str.:	70	ksi

Stiffener Results
 Horizontal Weld : 38.8% **Pass**
 Vertical Weld: 31.1% **Pass**
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: 8.1% **Pass**
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: 37.6% **Pass**
 Plate Comp. (AISC Bracket): 37.2% **Pass**

Pole Results
 Pole Punching Shear Check: 9.1% **Pass**

Pole Data		
Diam:	60.5	in
Thick:	0.46875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



Stress Increase Factor	
ASIF:	1.333

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Foundation Comparative Analysis

Compares the original design base reactions with the current base reactions.

Site #: 806368
Site Name: HRT 049B 943215



Source

The original design base reactions were taken from the foundation drawings, CCI Document #974245, dated 03/29/1997.

Analysis

	Original Design Reactions	Existing+Proposed Reactions (TNX Output)	Existing+Proposed Loading Capacity (%)
Axial (kip)	50.6	50.0	98.8%
Moment (kip-ft)	5001.4	4403.0	88.0%
Shear (kip)	44.6	41.0	91.9%

*NOTE: Axial and shear capacity are negligible for typical monopole foundations, the moment governs.

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

AT&T Existing Facility

Site ID: CTL01100

Glastonbury Three Mile
366 Three Mile Road
Glastonbury, CT 06033

February 1, 2016

EBI Project Number: 6216000448

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	12.72 %

February 1, 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: **CTL01100 – Glastonbury Three Mile**

EBI Consulting was directed to analyze the proposed AT&T facility located at **366 Three Mile Road, Glastonbury, 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 **366 Three Mile Road, Glastonbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

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

- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, CCI HPA-65R-BUU-H8, Powerwave P65-17-XLH-RR and the Powerwave 7770.00** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **138 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	0.57	Antenna B1 MPE%	0.57	Antenna C1 MPE%	0.57
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	11.95 / 14.75 dBd	Gain:	13.15 / 14.95 dBd	Gain:	13.15 / 14.95 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 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):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,731.28	ERP (W):	3,114.88	ERP (W):	3,114.88
Antenna A2 MPE%	0.78	Antenna B2 MPE%	0.93	Antenna C2 MPE%	0.93
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave P65-17-XLH-RR	Make / Model:	Powerwave P65-17-XLH-RR
Gain:	11.4 / 13.4 dBd	Gain:	15.1 / 15.1 dBd	Gain:	15.1 / 15.1 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	3,883.12	ERP (W):	3,883.12
Antenna A3 MPE%	0.57	Antenna B3 MPE%	1.11	Antenna C3 MPE%	1.11

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	2.61 %
Nextel	0.40 %
T-Mobile	3.27 %
Verizon Wireless	2.61 %
Sprint	0.04 %
XM Satellite Radio	3.79 %
Site Total MPE %:	12.72 %

AT&T Sector 1 Total:	1.93 %
AT&T Sector 2 Total:	2.61 %
AT&T Sector 3 Total:	2.61 %
Site Total:	12.72 %

AT&T _ Per Sector (Sectors B & C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	138	1.71	850	567	0.30 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	138	2.71	1900	1000	0.27 %
AT&T 700 MHz LTE	2	619.61	138	2.56	700	467	0.55 %
AT&T 1900 MHz (PCS) LTE	2	937.82	138	3.87	1900	1000	0.39 %
AT&T 850 MHz GSM	2	970.78	138	4.01	850	567	0.71 %
AT&T 1900 MHz (PCS) GSM	2	970.78	138	4.01	1900	1000	0.40 %
						Total:	2.61 %

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:	1.93%
Sector 2:	2.61%
Sector 3 :	2.61%
AT&T Maximum Total (per sector):	2.61%
Site Total:	12.72 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.72%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



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