



June 29, 2017

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

Regarding: Notice of Exempt Modification – Addition of 3 radios
Property Address: 75 Wells Road, Wethersfield, CT (the “Property”)

Applicant: AT&T Mobility (“AT&T”, Site # CT1074)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 101 foot 6 Inch Monopole tower (“tower”) at the above-referenced address, latitude 41.705825, longitude - 72.6634161. AT&T’s facility consists of nine (9) wireless telecommunications antennas at 106 feet. The tower is controlled and owned by Frontier Communications. Assessor’s information is attached hereto.

AT&T desires to modify its existing telecommunications facility by adding (3) remote radios. The centerline height of said antennas is and will remain at 106 feet.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor of the Town of Wethersfield, The Building Director of the Town of Wethersfield and the Director of Planning and Economic Development of the Town of Wethersfield. A copy of this letter is also being sent to Frontier Communications, the owner of the structure that AT&T is located.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T’s antennas and associated lines will be installed at 106 foot level of the 101 foot 6 Inch Monopole tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.



5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Malouf Engineering Intl., Inc. dated June 28, 2017).

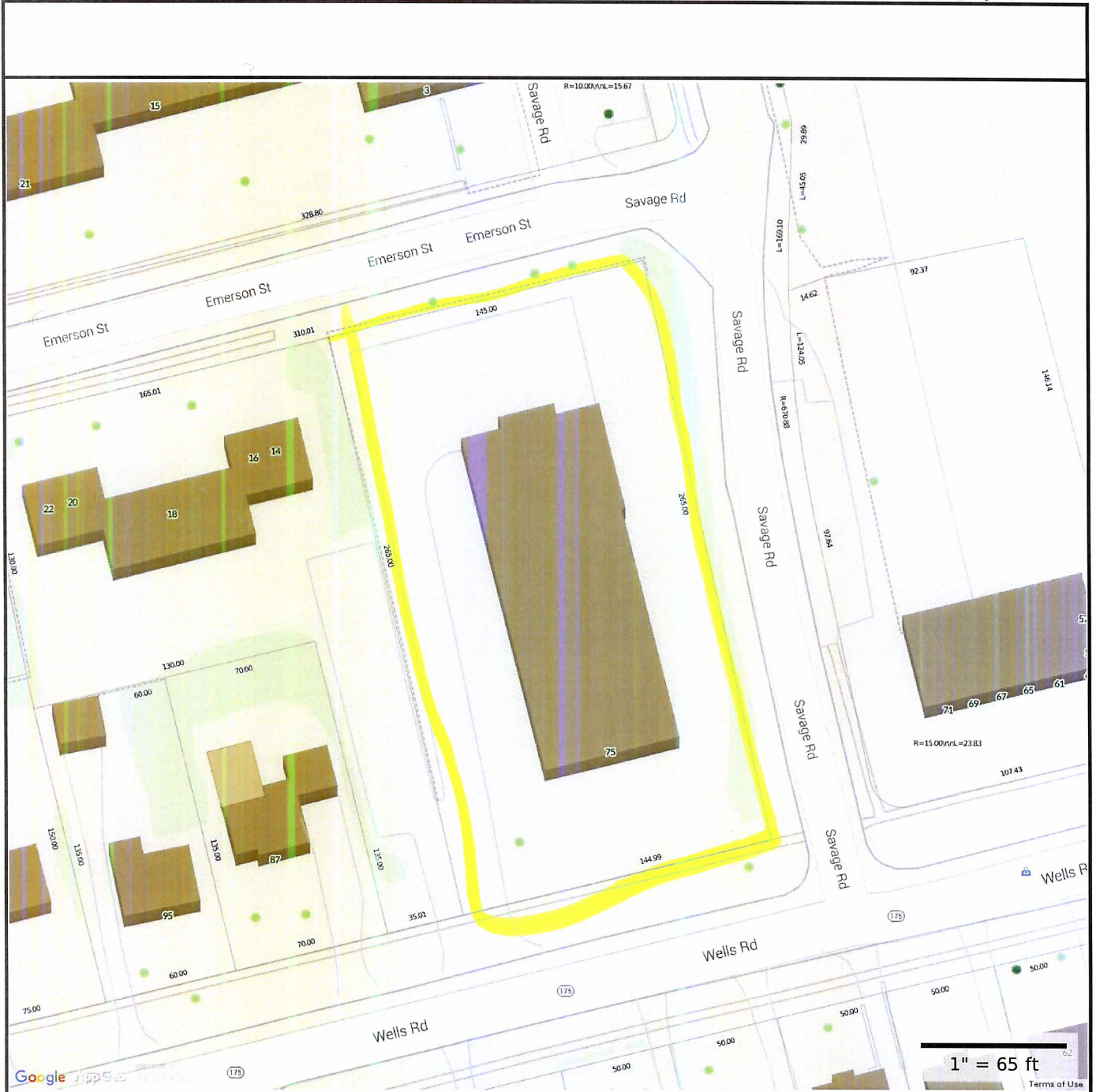
For the foregoing reasons AT&T respectfully requests that the proposed addition of radios be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Paul Montinieri, Mayor, Town of Wethersfield
Steve Lattarulo, Chief Building Official, Town of Wethersfield
Peter Gillespie, Director of Planning and Economic Development, Town of Wethersfield
Frontier Communications, c/o Mary Anne Kolb

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

Town of Wethersfield, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

PROJECT INFORMATION

SCOPE OF WORK: • AT&T ANTENNAS: (3) EXISTING ANTENNAS PER SECTOR FOR 3 SECTORS, FOR A TOTAL OF (9) EXISTING ANTENNAS TO REMAIN.
 • AT&T RRUS: (1) NEW RRUS PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUS; (2) EXISTING RRU PER SECTOR TO BE REUSED, FOR A TOTAL OF (6) EXISTING RRUS; (1) EXISTING RRU PER SECTOR TO BE REMOVED, FOR A TOTAL OF (3) EXISTING RRUS.

SITE ADDRESS: 75 WELLS ROAD
 WETHERSFIELD, CT 06109

LATITUDE: 41.705825 41° 42' 20.97"N
 LONGITUDE: -72.6634161 -72° 39' 48.29796"W

USID: 59365

TOWER OWNER: FRONTIER COMMUNICATIONS

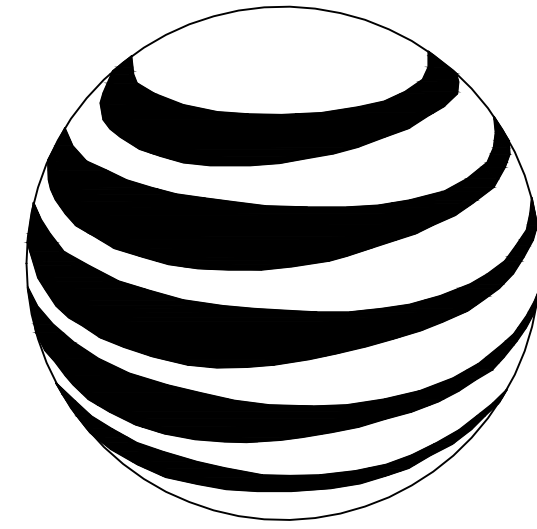
TYPE OF SITE: MONOPOLE/INDOOR EQUIPMENT

MONOPOLE HEIGHT: 101.5'±

RAD CENTER: 103.5'±

CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PROPOSED USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY



at&t
MOBILITY

FA CODE: 10035051
SITE NUMBER: CT1074
SITE NAME: WETHERSFIELD

PROJECT TEAM

CLIENT REPRESENTATIVE

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

SITE ACQUISITION:

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

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

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

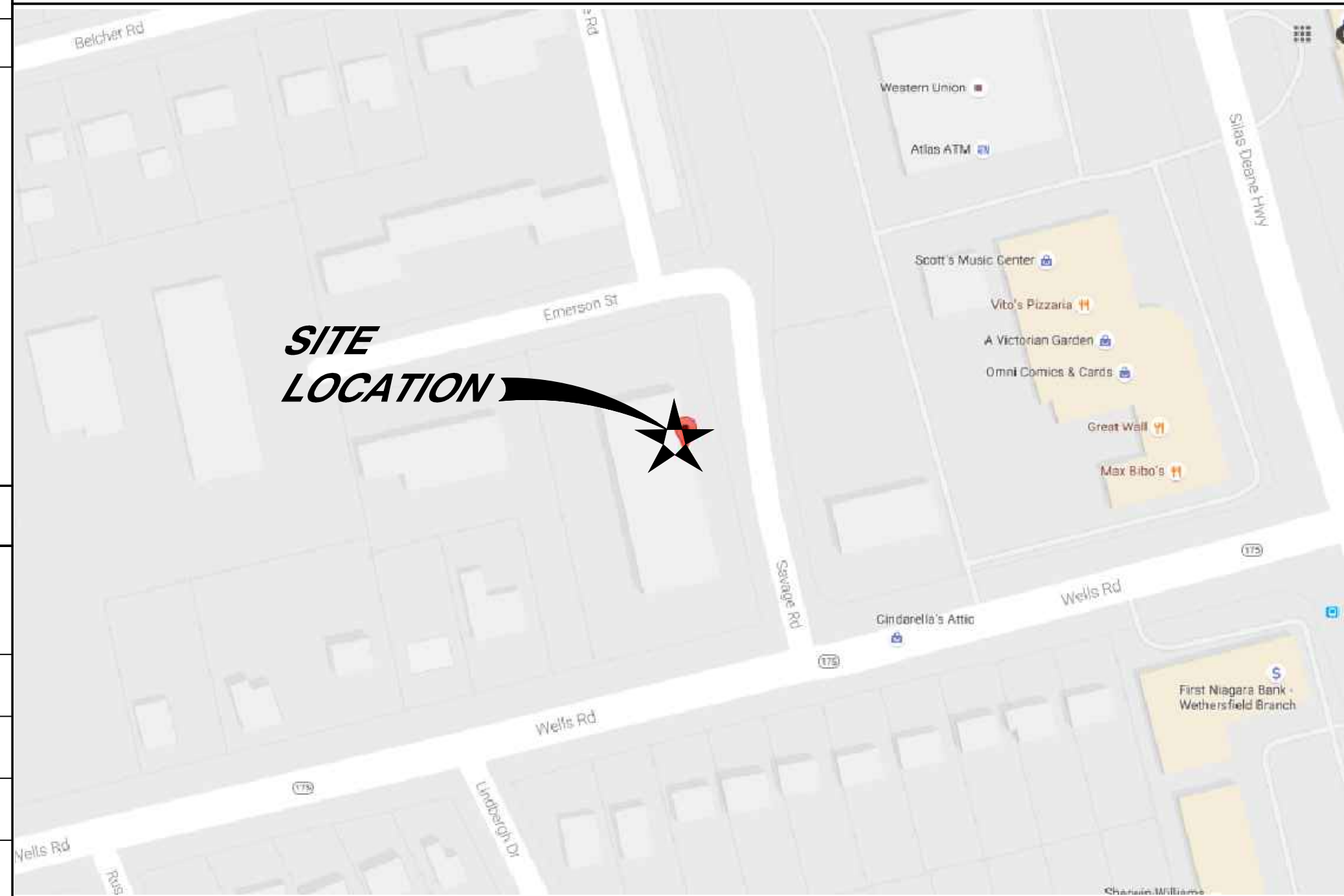
DRAWING INDEX

REV.

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

VICINITY MAP

WETHERSFIELD I-91 NORTH TO EXIT 24 (RT. 99) FOLLOW NORTH FOR APPROX. 3 MILES. TURN LEFT ONTO WELLS ROAD.(RT. 175) CENTRAL OFFICE ON RIGHT.



GENERAL NOTES

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

APPROVALS

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

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



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



SITE NUMBER: CT1074
SITE NAME: WETHERSFIELD
 75 WELLS ROAD
 WETHERSFIELD, CT 06109
 HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/17/16	ISSUED AS PRELIMINARY	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:
 NICHOLAS D. BARILE
 PROFESSIONAL ENGINEER
 CT LICENSE NO. 28643

AT&T		
DRAWING TITLE: TITLE SHEET		
JOB NUMBER 16062-EMP	DRAWING NUMBER T-1	REV A

GROUNDING NOTES:

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

GENERAL NOTES:

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

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 - CONNECTICUT BUILDING CODE: IBC 2016 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 10/03/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.



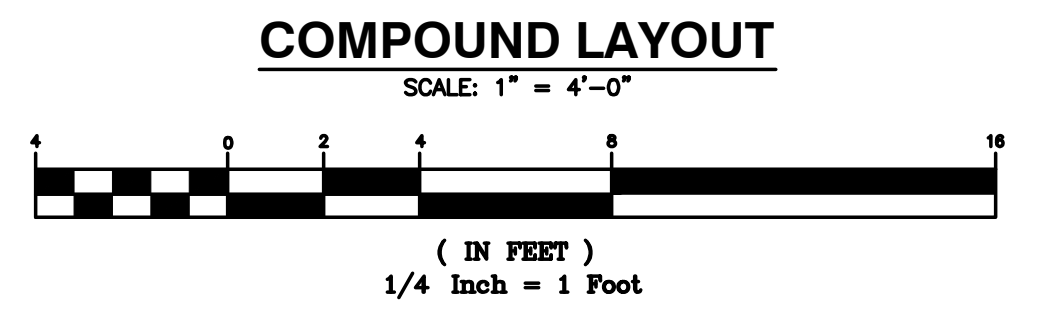
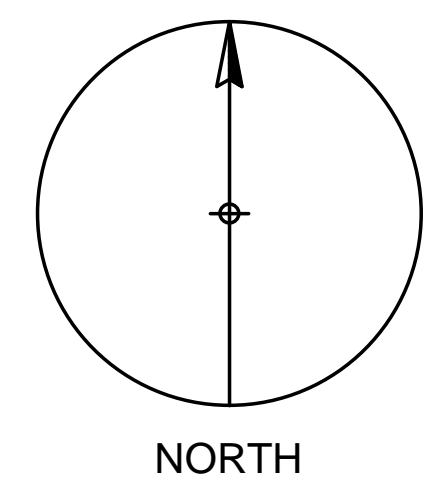
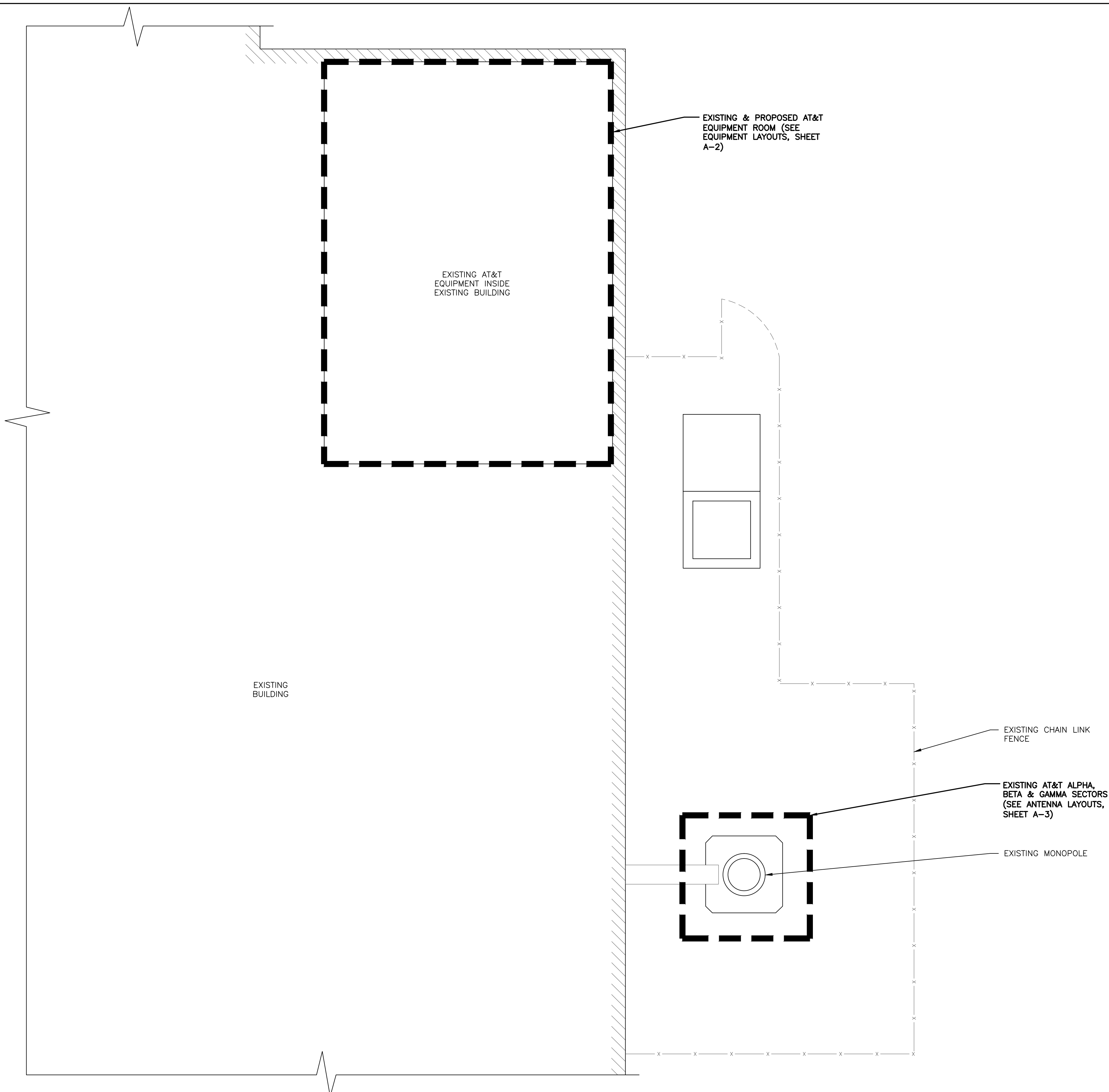
SITE NUMBER: CT1074
SITE NAME: WETHERSFIELD
 75 WELLS ROAD
 WETHERSFIELD, CT 06109
 HARTFORD COUNTY



A	11/17/16	ISSUED AS PRELIMINARY	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:
 NICHOLAS D. BARILE
 PROFESSIONAL ENGINEER
 CT LICENSE NO. 28643

AT&T		
DRAWING TITLE: GROUNDING & GENERAL NOTES		
JOB NUMBER 16062-EMP	DRAWING NUMBER GN-1	REV A



NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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

EMPIRE
telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

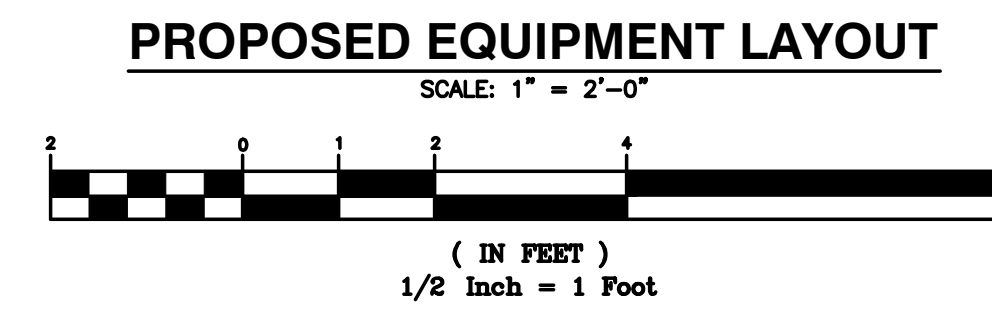
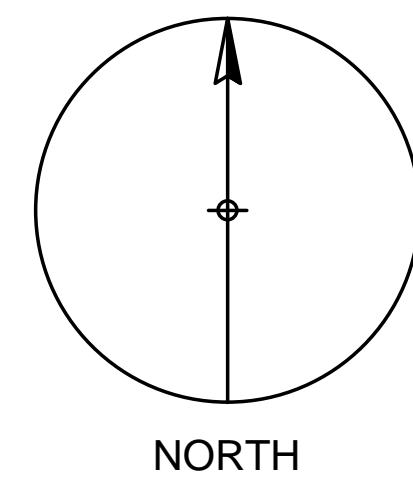
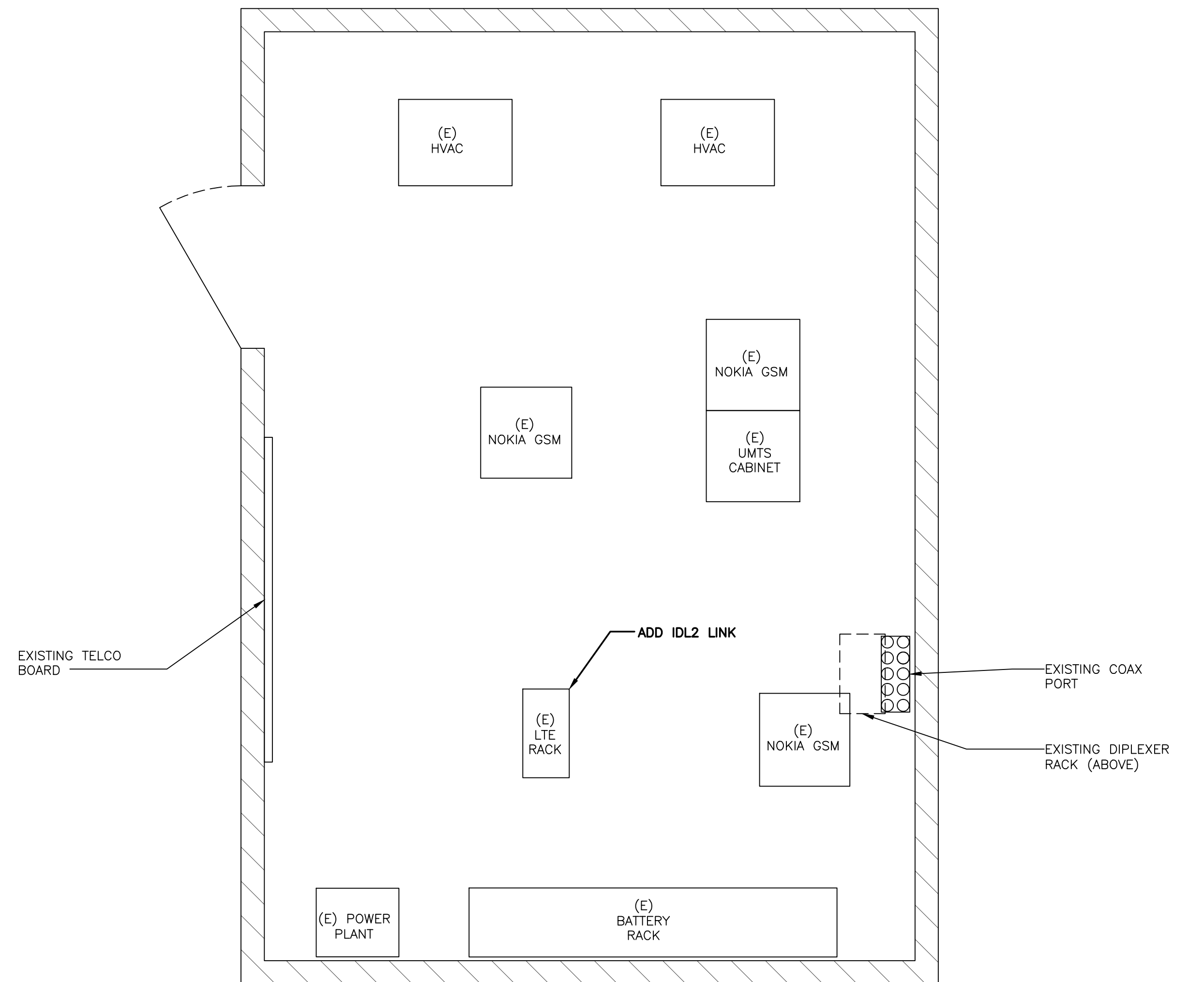
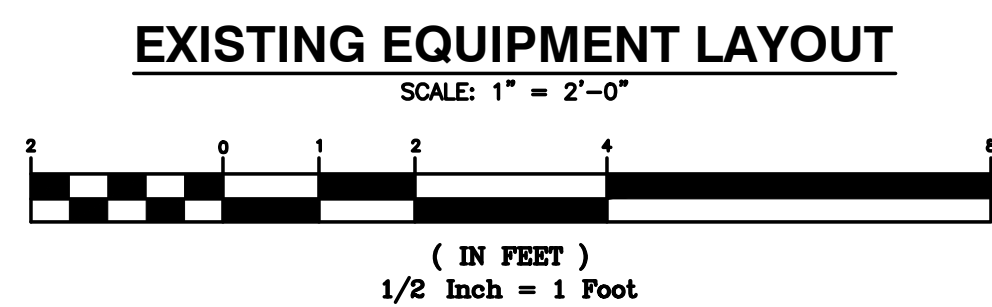
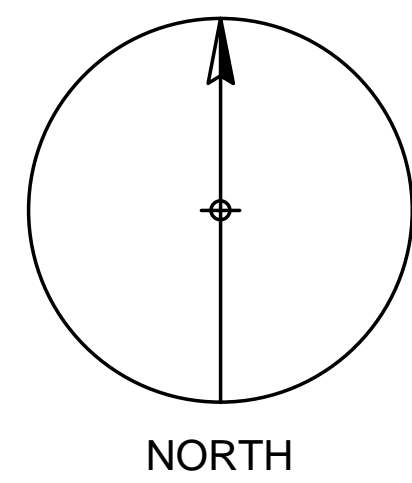
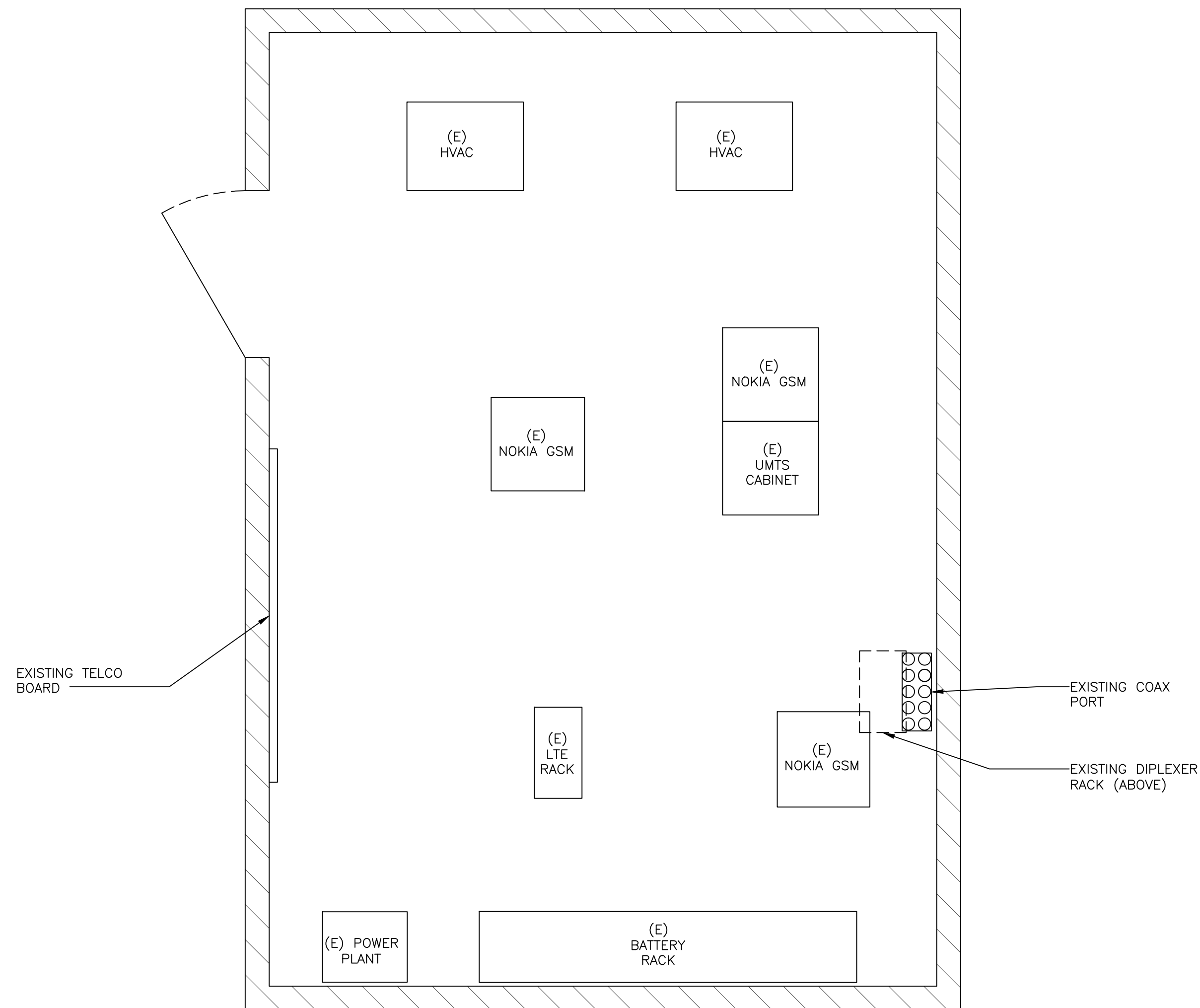
SITE NUMBER: CT1074
SITE NAME: WETHERSFIELD
75 WELLS ROAD
WETHERSFIELD, CT 06109
HARTFORD COUNTY

at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/17/16	ISSUED AS PRELIMINARY	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:
NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T		
DRAWING TITLE: COMPOUND LAYOUT		
JOB NUMBER 16062-EMP	DRAWING NUMBER A-1	REV A



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

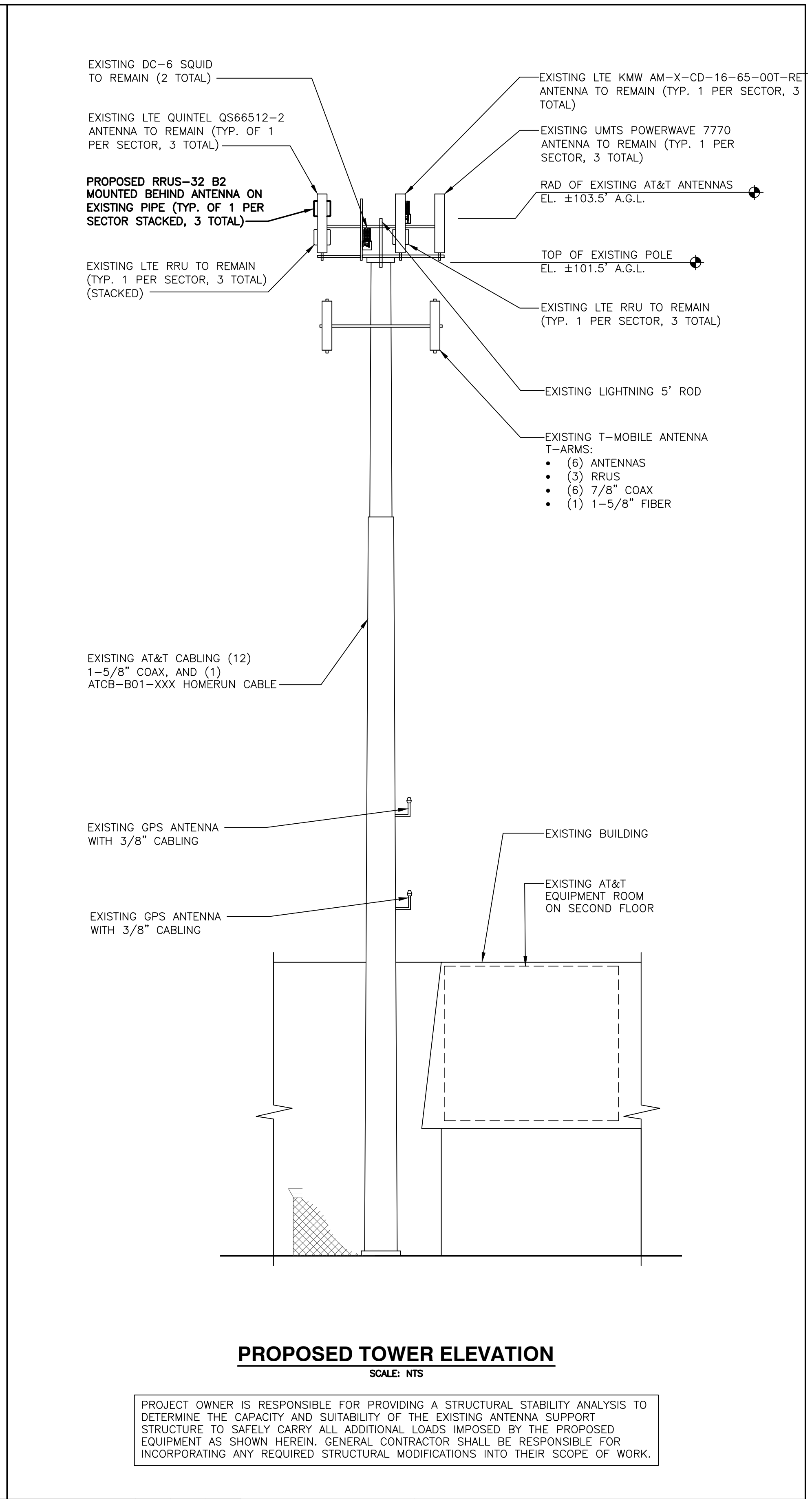
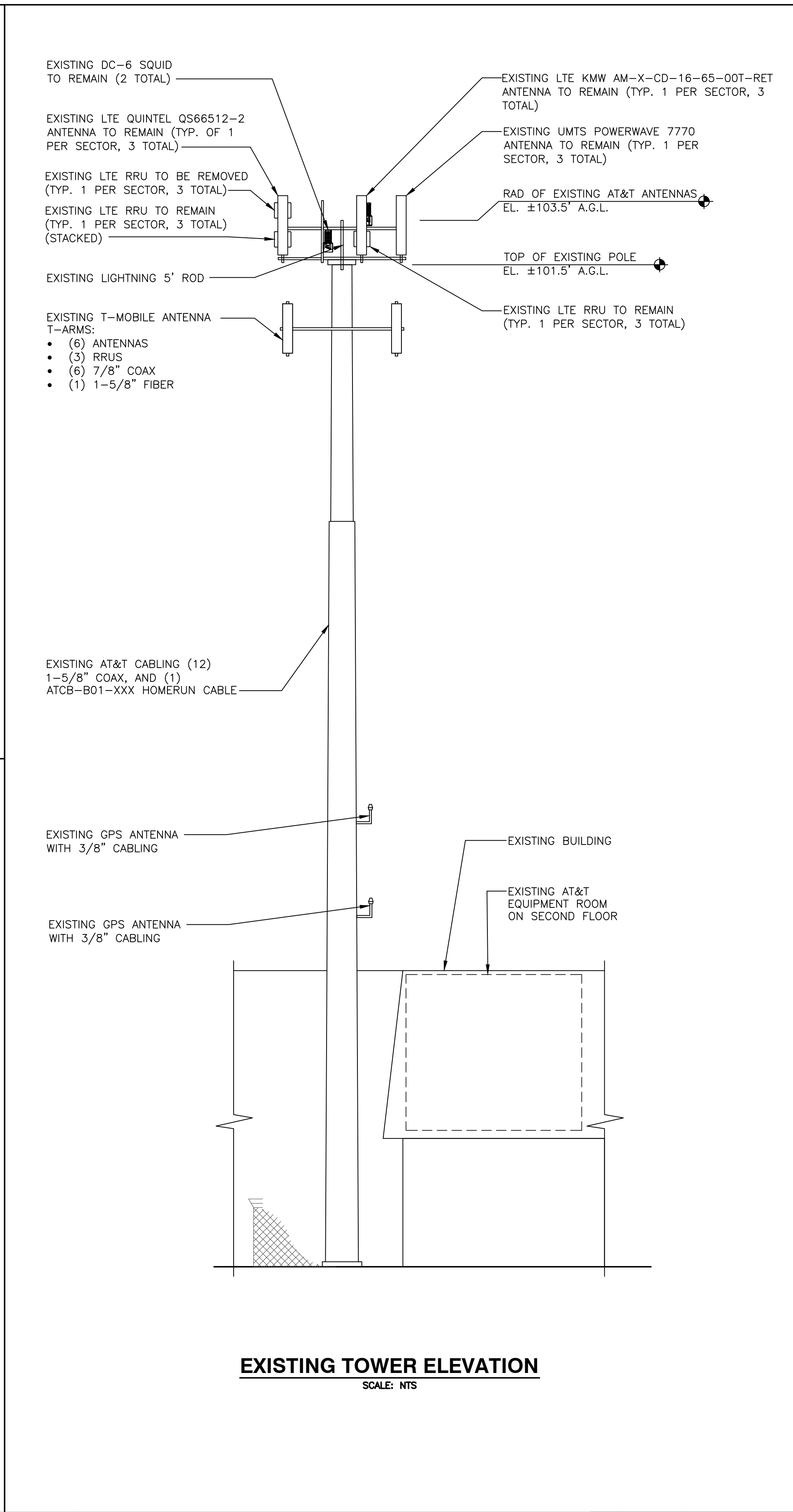
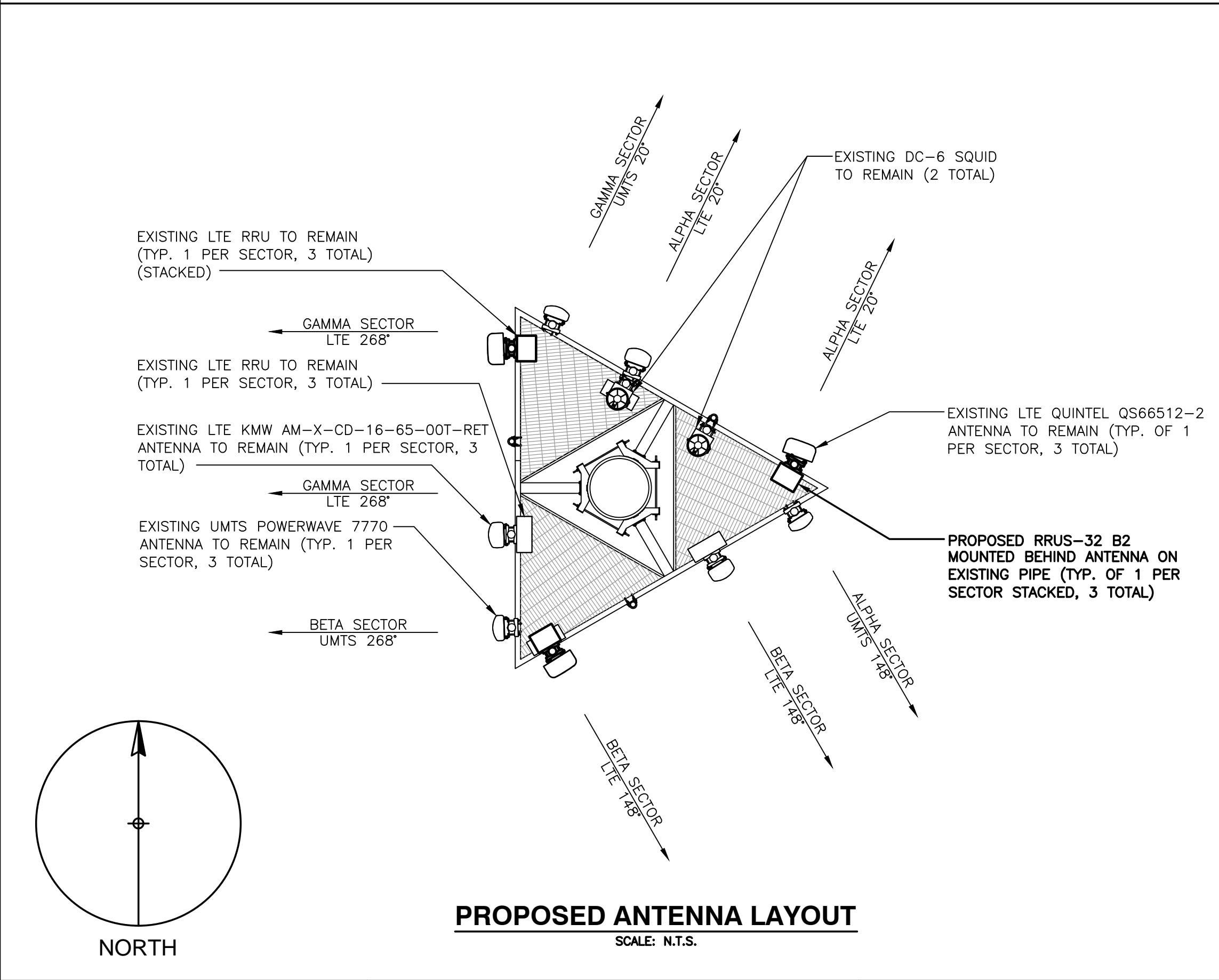
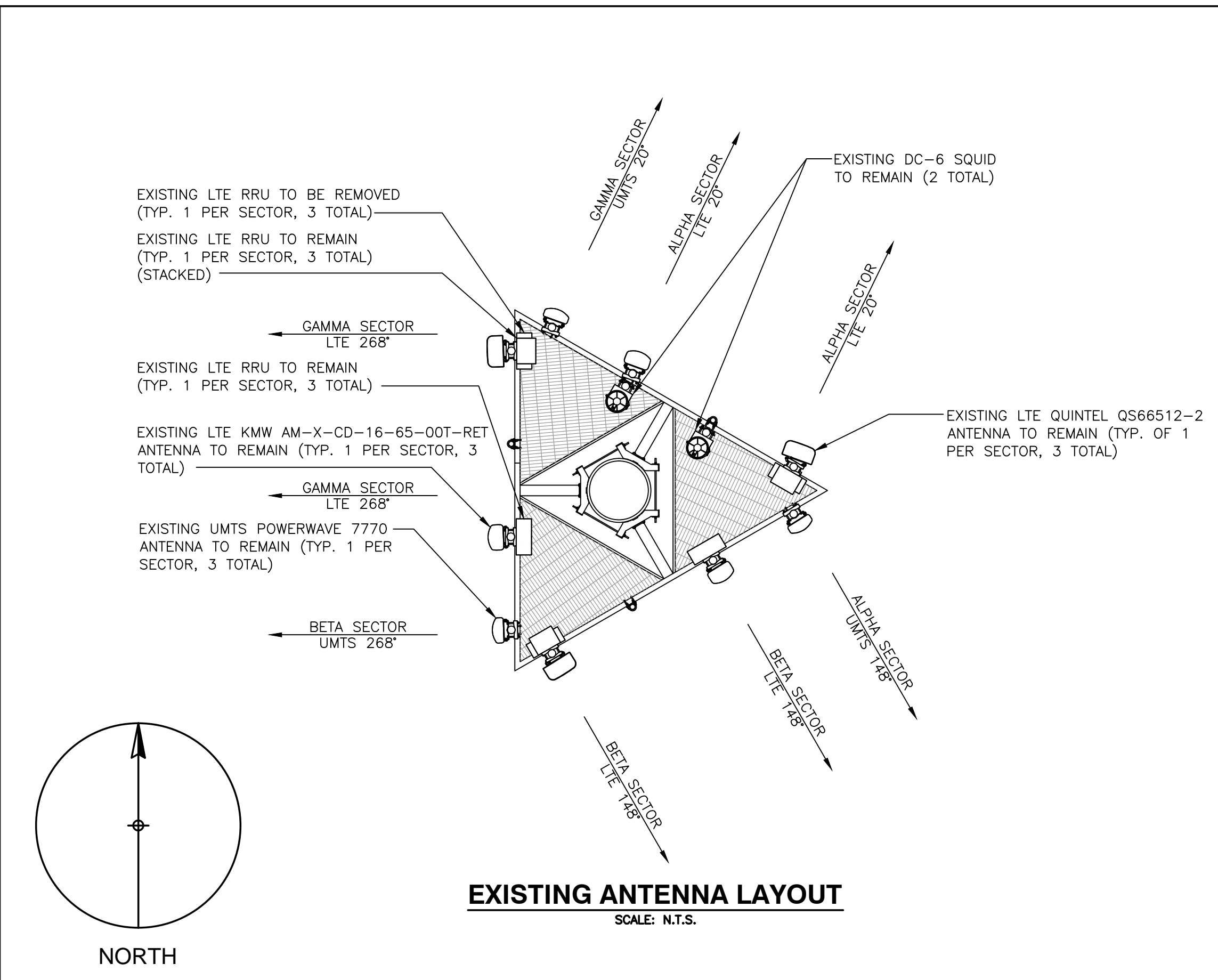
SITE NUMBER: CT1074
SITE NAME: WETHERSFIELD
75 WELLS ROAD
WETHERSFIELD, CT 06109
HARTFORD COUNTY

at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/17/16	ISSUED AS PRELIMINARY	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:
NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T		
DRAWING TITLE: EQUIPMENT LAYOUT		
JOB NUMBER 16062-EMP	DRAWING NUMBER A-2	REV A



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

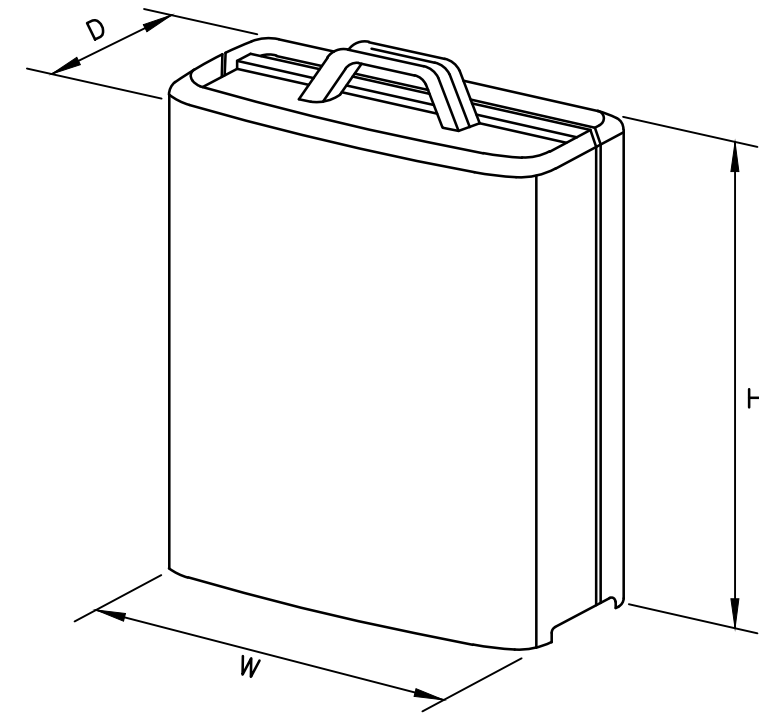
SITE NUMBER: CT1074
SITE NAME: WETHERSFIELD
75 WELLS ROAD
WETHERSFIELD, CT 06109
HARTFORD COUNTY

at&t
MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	11/17/16	ISSUED AS PRELIMINARY	NJM	NDB	NDB
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: NJM		

SEAL:
NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T		
DRAWING TITLE: ANTENNA LAYOUTS & ELEVATIONS		
JOB NUMBER 16062-EMP	DRAWING NUMBER A-3	REV A

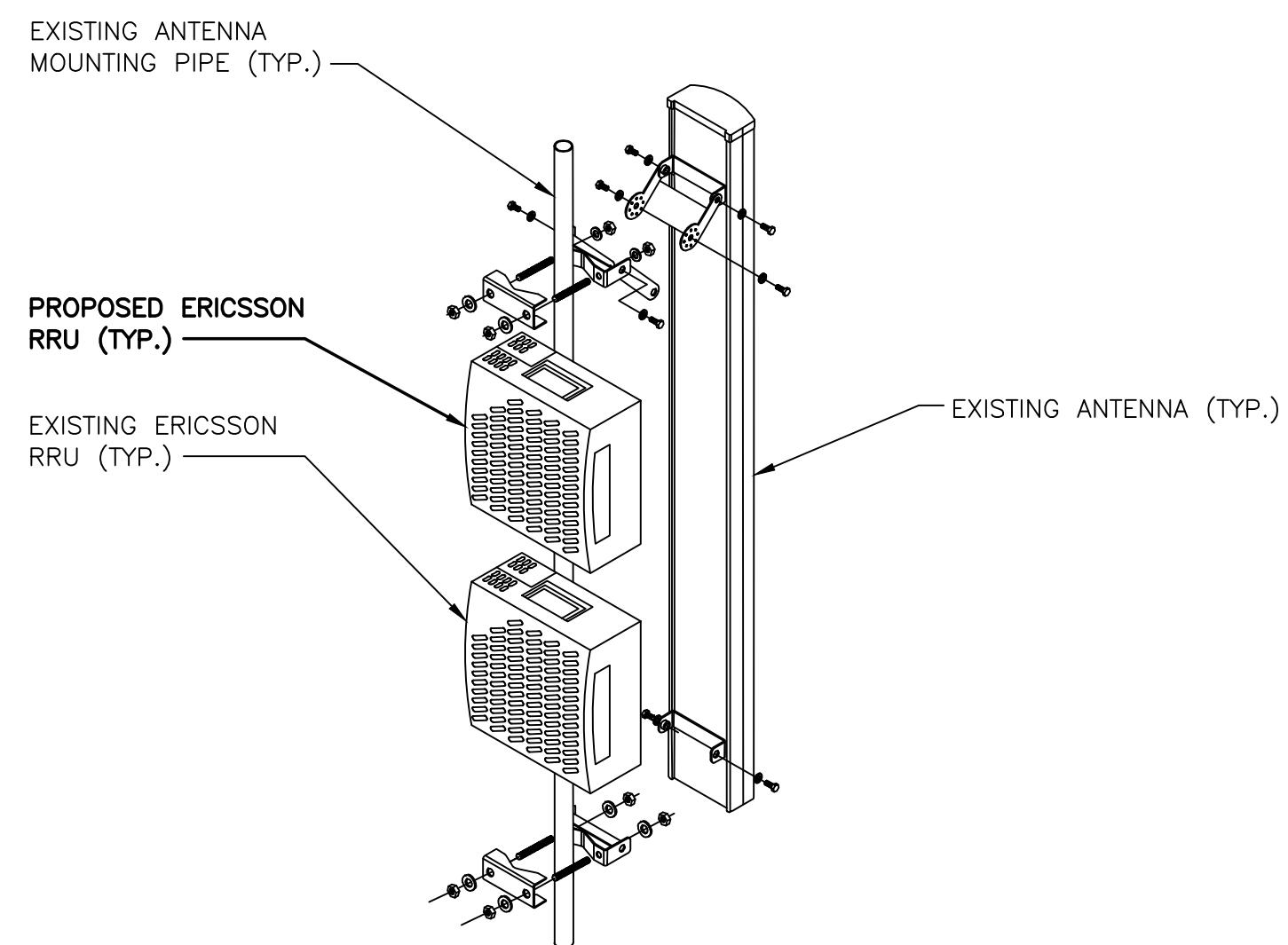


MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
*RRUS-32	29.9"x13.3"x9.5"	77 LBS
RRUS-32 B2	29.9"x13.3"x9.5"	77 LBS

*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.



ANTENNA AND RRU MOUNTING DETAIL

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00.850.06	55"x11"x5"
	A2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A3	-	-	-
	A4	QUINTEL	QS66512-3	72"x12"x9.6"
BETA	B1	POWERWAVE	7770.00.850.06	55"x11"x5"
	B2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B3	-	-	-
	B4	QUINTEL	QS66512-3	72"x12"x9.6"
GAMMA	G1	POWERWAVE	7770.00.850.06	55"x11"x5"
	G2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G3	-	-	-
	G4	QUINTEL	QS66512-3	72"x12"x9.6"

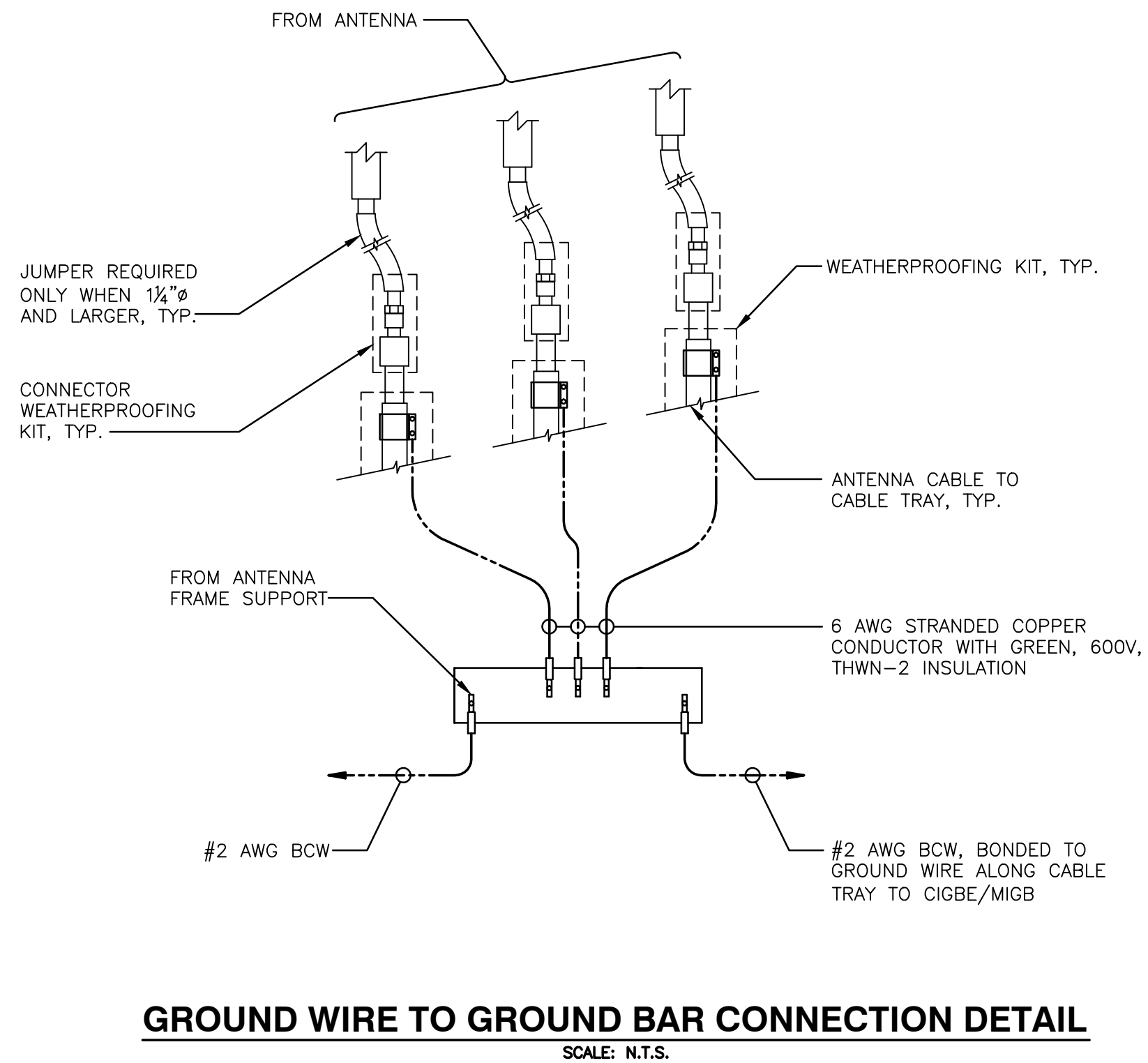
FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00.850.06	55"x11"x5"
	A2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A3	-	-	-
	A4	QUINTEL	QS66512-3	72"x12"x9.6"
BETA	B1	POWERWAVE	7770.00.850.06	55"x11"x5"
	B2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B3	-	-	-
	B4	QUINTEL	QS66512-3	72"x12"x9.6"
GAMMA	G1	POWERWAVE	7770.00.850.06	55"x11"x5"
	G2	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G3	-	-	-
	G4	QUINTEL	QS66512-3	72"x12"x9.6"

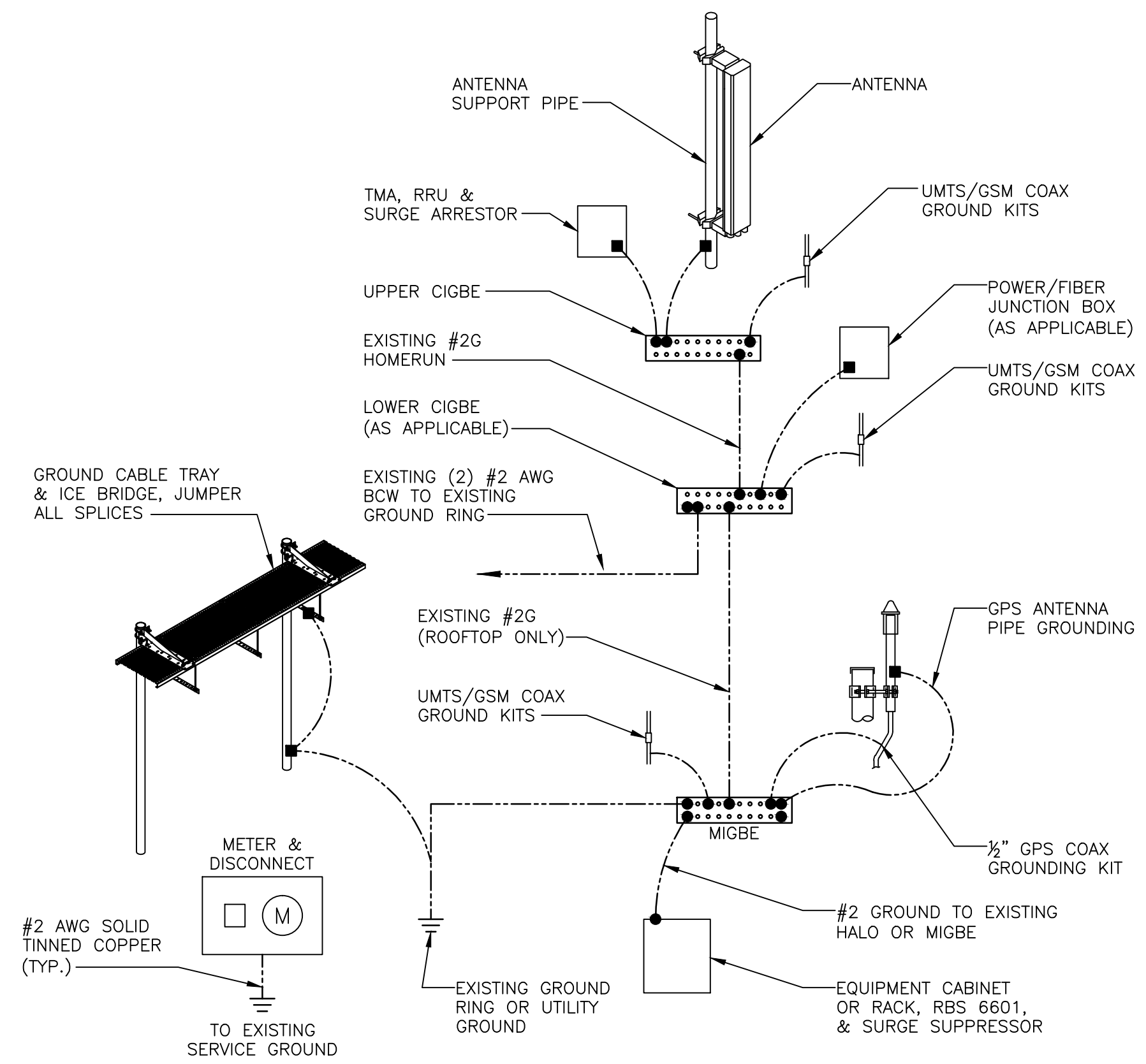
PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-32 B2	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
BETA	ERICSSON	RRUS-32 B2	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-
GAMMA	ERICSSON	RRUS-32 B2	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"	-	-
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	-	-

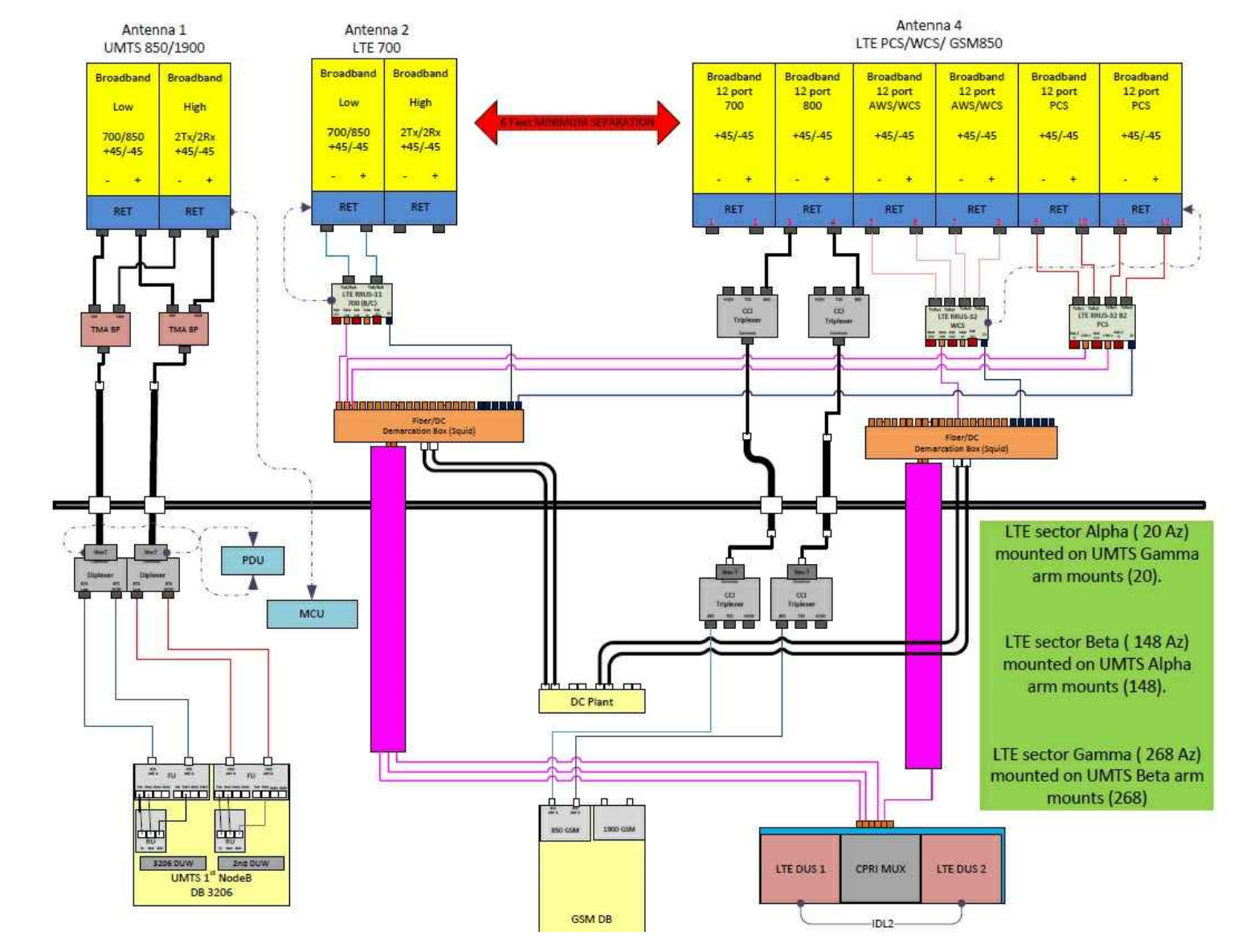
PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING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



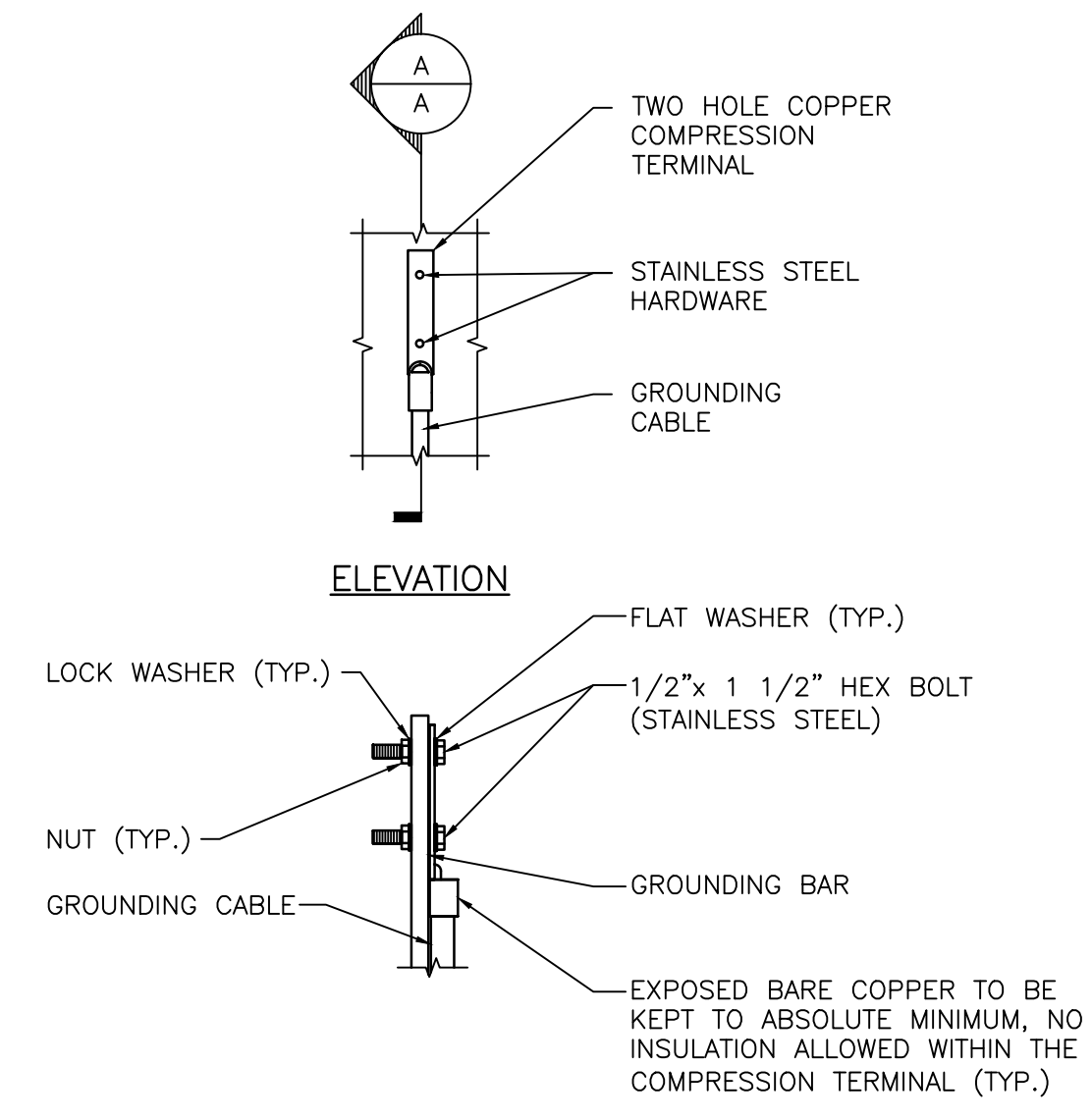
GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



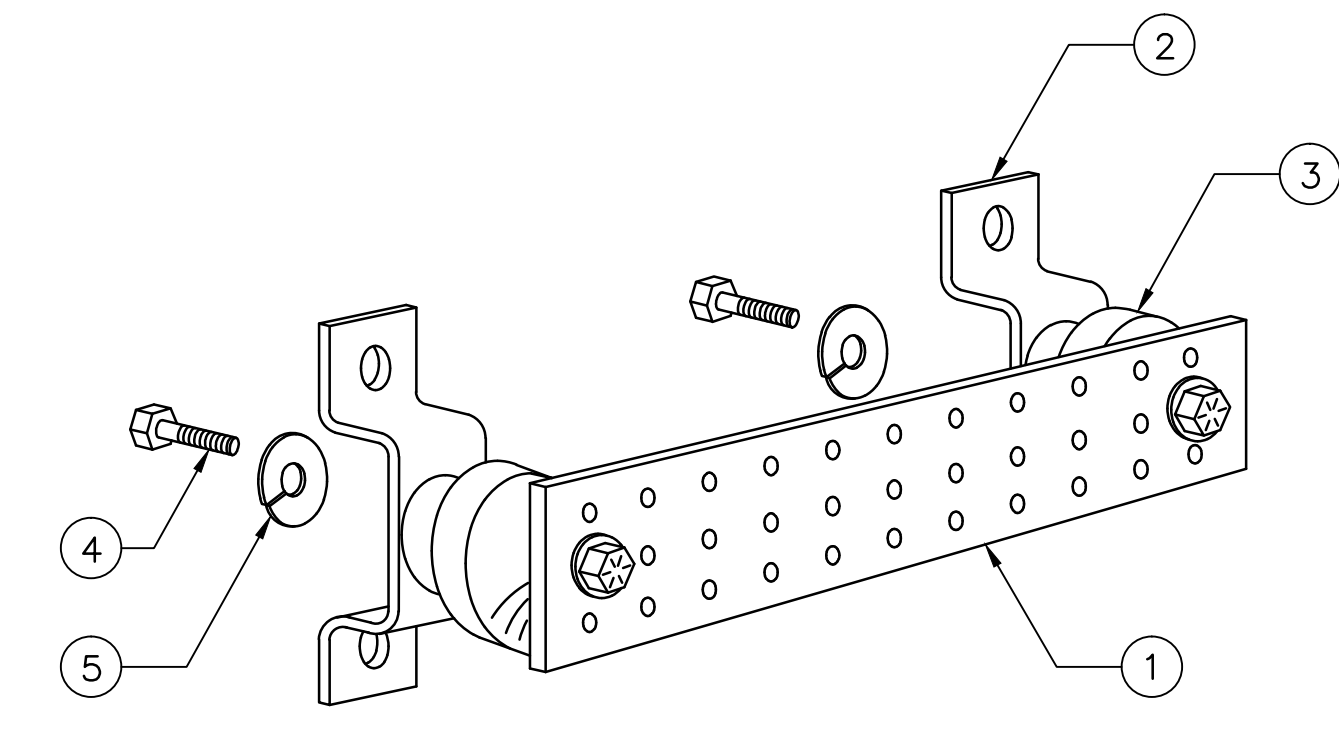
GROUNDING RISER DIAGRAM
SCALE: N.T.S.



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



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



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

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" - SURGE PRODUCERS

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL
SCALE: N.T.S.

Rigorous Structural Analysis Report



AT&T - Wethersfield Site #CT1074 / FA #10035051
Owner: Frontier Communications - Wethersfield CO Site
Wethersfield, Connecticut

June 28, 2017

MEI PROJECT ID: CT04861M-17V0



17950 PRESTON ROAD, SUITE 720 ■ DALLAS, TEXAS 75252 ■ TEL. 972-783-2578 FAX 972-783-2583
www.maloufengineering.com





June 28, 2017

Ms. Nicole Caplan
Empire Telecom
 Billerica, MA 01862

RIGOROUS STRUCTURAL ANALYSIS

Structure/Make/Model:	101 ft Monopole	Not Known / 18-Sided	
Client/Site Name/#:	Empire Telecom / AT&T	Wethersfield #CT1074 / FA #10035051	
Owner/Site Name/#:	Frontier Communications	Wethersfield CO	
MEI Project ID:	CT04861M-17V0		
Location:	75 Wells Rd Wethersfield, CT 06109	Hartford County FCC # 1200438	
	LAT 41-42-21.2 N	LON 72-39-48.0 W	

EXECUTIVE SUMMARY:

Malouf Engineering Int'l (MEI), as requested, has performed a rigorous structural analysis of the above mentioned structure to assess the impact of the changed condition as noted in Table 1.

Based on the stress analysis performed, the existing structure **is in conformance** with the Int'l Building Code (IBC) / ANSI/TIA-222-G Standard for the loading considered under the criteria listed and referenced in the report sections – tower rated at 90.9% - Foundation.

The installation of the proposed changed condition as noted in Table 1 is structurally acceptable. Please refer to Appendix 1 for Schematic Lines Layout.

MEI **appreciates** the opportunity of providing our continuing professional services to you. If you have **any** questions or need further assistance on this or other projects please contact us.

Respectfully submitted,

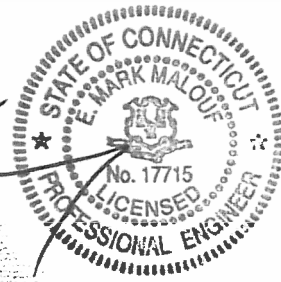
MALOUF ENGINEERING INT'L, INC.

Analysis performed by:

Luan Nguyen, PE
 Sr. Project Engineer

Reviewed & Approved by:

E. Mark Malouf, PE
 Connecticut #17715
 972-783-2578 ext. 106
 mmalouf@maloufengineering.com



6/28/2017

TABLE OF CONTENTS

1.	INTRODUCTION & SCOPE _____	4
2.	SOURCE OF DATA _____	4
	Background Information: -----	4
3.	ANALYSIS CRITERIA _____	5
	Appurtenances Configuration -----	5
4.	ANALYSIS PROCEDURE _____	6
	Analysis Program -----	6
	Assumptions -----	6
5.	ANALYSIS RESULTS _____	7
6.	FINDINGS & RECOMMENDATIONS _____	8
7.	REPORT DISCLAIMER _____	9
	APPENDIX 1 - ANALYSIS PRINTOUT & GRAPHICS _____	10
	APPENDIX 2 – SOURCE / CHANGED CONDITION _____	11

1. INTRODUCTION & SCOPE

A rigorous structural analysis was performed by Malouf Engineering Int'l (MEI), as requested and authorized by Ms. Nicole Caplan, Empire Telecom, on behalf of AT&T, to determine the acceptance of the proposed changed conditions in conformance with the IBC / ANSI/TIA-222-G Standard, "Structural Standard for Antenna Supporting Structures and Antennas".

The scope of this independent analysis is to determine the overall stability and the adequacy of structural members, foundations, and member connections, as available and stated. This analysis considers the structure to have been properly installed and maintained with no structural defects. Installation procedures and related loading are not within the scope of this analysis and should be performed and evaluated by a competent person of the erection contractor.

The different report sections detail the applicable information used in this evaluation, relating to the tower data, the appurtenances configuration and the wind and ice loading considered.

2. SOURCE OF DATA

The following information has been used in this evaluation as source data that accurately represent the existing structure and the related appurtenances:

	Source	Information	Reference
STRUCTURE			
Tower	MEI Records	Previous Structural Analysis	ID CT04861M-16V3 Dated 06/17/2016
Foundation	MEI Records	Previous Structural Analysis	ID CT04861M-16V3 Dated 06/17/2016
Material Grade	Not available from supplied documents-Assumed based on typical towers of this type-refer to Appendix		
CURRENT APPURTENANCES			
	MEI Records	Previous Structural Analysis	ID CT04861M-16V3 Dated 06/17/2016
CHANGED CONDITION			
	Frontier Communications / Ms. Elissa McOmber	Frontier PDQ	Dated 06/20/2017

Background Information:

Based on available information, the following is known regarding this structure:

DESIGNER / FABRICATOR	Not Known / 18-Sided
ORIGINAL DESIGN CRITERIA	TIA/EIA 222-Unknown
PRIOR STRUCTURAL MODIFICATIONS	As per GPD Group base plate and anchor rod modifications Job #2009264.50 dated 06/12/2009; pole shaft modifications by others as per B+T mapping report dated 07/17/2014 – considered properly installed.

3. ANALYSIS CRITERIA

The structural analysis performed used the following criteria:

CODE / STANDARD	2012 Int'l Building Code / ANSI/TIA-222-G-2 Standard	
LOADING CASES	Full Wind:	129 Mph ultimate gust [equiv. 100 Mph (3-sec gust)] w/No Radial Ice**
	Iced Case:	40 Mph + 1.25" Radial Ice
	Service:	60 Mph
	Seismic:	S _s = 0.181 / S ₁ = 0.064 / Site Class: D – Stiff Soil
STRUCTURE CRITERIA	Risk Category (Structural Class): 2	
	Exposure Category: 'C' – Topographic Category: 1	

Appurtenances Configuration

The following appurtenances configuration is denoted by the summation of Tables 1 & 2:

Table 1: Tenant with Changed Condition Appurtenances Configuration

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
103.5	AT&T	3	RRUS-32 B2 Boxes	[Existing Mounts]		
Current Appurtenances To Remain						
103.5	AT&T	3	AM-X-CD-16-65-00T-RET Panel Antennas	Top Platform w/ Rails (& Ladder)	12	1-5/8" 5/8" Fiber 3/4" DC Power ATCB-B01-xxx Homerun Cable-(I/E)
		3	QS66512-3 Panel Antennas		2	
		3	7770.00 Panels Panel Antennas		4	
		3	RRUS-11 Boxes		1	
		3	RRUS-32 Boxes			
		2	Raycap DC6 (Squid) Suppressors			
		6	LGP21401 TMA'S			
		6	TPX-070821 Triplexers			
Current Appurtenances To Be Removed						
103.5	AT&T	3	RRUS-12 w/ A2 Backpack Boxes			

Table 2: Remaining Tenants Current and Reserved/Future Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
101		1	5' Lightning Rod		1	1/2" – (I)
		1	Beacon/Strobe			
95	T-Mobile	3	AIR21 Panel Antennas	(3) 12.5 ft. L.P. T-Arm Mounts (SitePro1 RMV12-3XX)	6	7/8" 1-5/8" Hybrid Fiber-(I)
		3	Ericsson KRC 118 057/1 Panel Antennas			
		3	RRUS-11 B12 Boxes			
46.5		1	GPS Antenna	18" Approx. Standoff Arm Mount	1	3/8"-(E)
37		1	GPS Antenna	18" Approx. Standoff Arm Mount	1	3/8"-(E)

Notes:

- **As per 2012 IBC for ultimate 3-sec gust wind speed converted to nominal 3-sec gust wind speed as per Sect. 1609.3.1 as required to be used in ANSI/TIA-222-G Standard per exception 5 of Sect. 1609.1.1.
- All elevations are measured from tower base.
- Please note appurtenances not listed above are to be removed/not present as per data supplied.
- (I) = Internal; (E) = External; (FZ) = Within Face Zone; (OFZ) = Outside Face Zone - as per TIA-222-G.
- The above appurtenances represent MEI's understanding of the appurtenances configuration. If different than above, the analysis is invalid. Please contact MEI if any discrepancies are found.



4. ANALYSIS PROCEDURE

The subject structure is analyzed for feasibility of the installation of the proposed changed condition previously noted. The data records furnished were reviewed and a computer stress analysis was performed in accordance with the TIA-222 Standard provisions and with the agreed scope of work terms and the results of this analysis are reported.

Analysis Program

The computer program used to model the structure is a rigorous Finite Element Analysis program, tnxTower (ver. 7.07), a commercially available program by Tower Numerics Inc. The latticed structures members are modeled using beam/truss and cable members and the pole members using tubular beam elements. The structural parameters and geometry of the members are included in the model. The dead and temperature loads and the wind loads are internally calculated by the program for the different wind directions and then applied as external loads on the structure. Any applicable exemptions, as per Section 15.6 of the TIA-222-G Standard for existing structures originally designed in accordance with a previous revision of the TIA-222 Standard, have been taken.

Assumptions

This engineering study is based on the theoretical capacity of the members and is not a condition assessment of the structure. This analysis is based on information supplied, and therefore, its results are based on and as accurate as that supplied data. MEI has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural stress analysis:

- This existing tower is assumed, for the purpose of this analysis, to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its member capacities ('as-new' condition).
- The tower member sizes and configuration are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated.
- The appurtenances configuration is as supplied and/or as stated in the report. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
- Some assumptions are made regarding antennas and mounts sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type & industry practice.
- Mounts/Platforms are considered adequate to support the loading. No actual analysis of the platform/mount itself is performed, with the analysis being limited to analyzing the structure.
- The soil parameters are as per data supplied or as assumed and stated in the calculations. Refer to the Appendix. If no data is available, the foundation system is assumed to support the structure with its new reactions.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per data supplied/available, and to have been properly installed and to be fully effective.

If any of the above assumptions are not valid or have been made in error, this analysis results may be invalidated, MEI should be contacted to review any contradictory information to determine its effect.

5. ANALYSIS RESULTS

The results of the structural stress analysis based on data available and with the previous listed criteria, indicated the following:

Note: The Wind loading controls over the Seismic loading as per TIA Section 2.7.

Table 3: Stress Analysis Results

Component Type	Maximum Stress Ratio	Controlling Elev. (ft) / Component	Pass/Fail	Comment
POLE	74.3%	88 - 61.25	Pass	
BASE PLATE	81.3%	Bending	Pass	
ANCHOR RODS	49.5%	Tension	Pass	
FOUNDATION	90.9%	Moment	Pass	

Table 4: Serviceability Requirements

	Maximum Value	TIA Requirement (10dB)	Pass/Fail	Comment
TWIST/SWAY	1.6595 Deg.	4 Deg. from Vert. or Horiz. Axis	Pass	
HORIZONTAL DISPLACEMENT	17.754 In./ 1.42% of Ht.	3.0% of Height	Pass	

Notes:

1. The Maximum Stress Ratio is the percentage that the maximum load in the member is relative to the allowable load as determined by Code requirements.
2. Refer to the Appendix 1 for more details on the member loads.
3. A maximum stress ratio between 100% and 105% may be considered as *Acceptable* according to industry standard practice.

6. FINDINGS & RECOMMENDATIONS

- Based on the rigorous stress analysis results, the subject structure is **rated at 90.9%** of its support capacity (controlling component: Foundation) with the proposed changed condition considered. Please refer to Table 3 and to Appendix 1 for more details of the analysis results.
- Based on the stress analysis performed, the existing structure **is in conformance** with the IBC / ANSI/TIA **222-G** Standard for the loading considered under the criteria listed and referenced in the report sections.
- **The installation of the proposed changed condition as noted in Table 1 is structurally acceptable.** Please refer to Appendix 1 for Schematic Lines Layout.
- This structure is near its support capacity for the appurtenances and loading criteria considered. Therefore, no changes to the configuration considered should be made without performing a new proper evaluation.

Rigging and temporary supports required for the erection/modification shall be determined, documented, furnished and installed by the erector/contractor accounting for the loads imposed on the structure due to the proposed construction method.



7. REPORT DISCLAIMER

The engineering services rendered by Malouf Engineering International, Inc. ('MEI') in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. MEI does not analyze the fabrication, including welding and connection capacities, except as included in this Report.

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct guy tensions, as applicable.
3. Correct bolt tightness or slip jacking of sleeved connections.
4. No significant deterioration or damage to any structural component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-art" engineering and analysis procedures and formulae. MALOUF ENGINEERING INTERNATIONAL, INC. assumes no obligation to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will MALOUF ENGINEERING INTERNATIONAL, INC. have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of MALOUF ENGINEERING INTERNATIONAL, INC., if any, pursuant to this Report shall be limited to the total funds actually received by MALOUF ENGINEERING INTERNATIONAL, INC. for preparation of this Report.

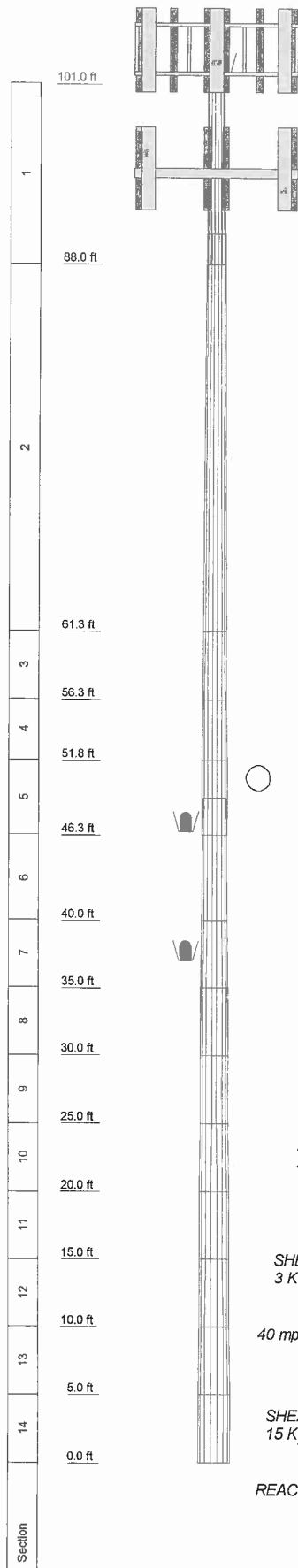
Customer has requested MALOUF ENGINEERING INTERNATIONAL, INC. to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested MALOUF ENGINEERING INTERNATIONAL, INC. to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of MALOUF ENGINEERING INTERNATIONAL, INC., Customer has informed MALOUF ENGINEERING INTERNATIONAL, INC. that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by MALOUF ENGINEERING INTERNATIONAL, INC. and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice. MALOUF ENGINEERING INTERNATIONAL, INC. shall have the right to rely upon the accuracy of the information supplied by the customer and shall not be held responsible for the Customer's misrepresentation or omission of relevant fact whether intentional or otherwise.

Customer hereby agrees and acknowledges that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than MALOUF ENGINEERING INTERNATIONAL, INC. in connection with the implementation of services including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor and that Customer and rigger, erector, or subcontractor will provide MALOUF ENGINEERING INTERNATIONAL, INC. with a Certificate of Insurance naming MALOUF ENGINEERING INTERNATIONAL, INC. as additional insured.



APPENDIX 1 - ANALYSIS PRINTOUT & GRAPHICS





DESIGNED APPURTENANCE LOADING

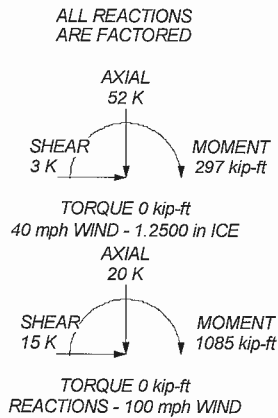
TYPE	ELEVATION	TYPE	ELEVATION
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATI / E)	103.5	(2) TPX-070821 Triplexer (ATI / E)	103.5
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATI / E)	103.5	(2) TPX-070821 Triplexer (ATI / E)	103.5
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (ATI / E)	103.5	Top Platform w/ Rails (Ladder) (ATI / E)	103.5
QS66512-3 w/ Pipe Mount (ATI / E)	103.5	Beacon/Strobe (E)	101
QS66512-3 w/ Pipe Mount (ATI / E)	103.5	5' Lightning Rod (E)	101
QS66512-3 w/ Pipe Mount (ATI / E)	103.5	AIR21 w/ pipe Mount (T-Mobile / E (Relocated))	95
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	AIR21 w/ pipe Mount (T-Mobile / E (Relocated))	95
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	AIR21 w/ pipe Mount (T-Mobile / E (Relocated))	95
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95
RRUS-11 (ATT) (ATI / E)	103.5	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95
RRUS-11 (ATT) (ATI / E)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-11 (ATT) (ATI / E)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 B2 (ATI / P)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 B2 (ATI / P)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 (ATI / E)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 (ATI / E)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
RRUS-32 (ATI / E)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
RRUS-32 (ATI / E)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
Raycap DC6 (Squid) Suppressor (ATI / E)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
Raycap DC6 (Squid) Suppressor (ATI / E)	103.5	GPS (E)	46.5
(2) LGP21401 TMA'S (ATI / E)	103.5	18" Approx. Standoff Arm (E)	46.5
(2) LGP21401 TMA'S (ATI / E)	103.5	GPS (E)	37
(2) LGP21401 TMA'S (ATI / E)	103.5	18" Approx. Standoff Arm (E)	37
(2) TPX-070821 Triplexer (ATI / E)	103.5		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	A572-60	60 ksi	75 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 81.3%








<p>maloufengineering.com</p>	<p>Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583</p>	<p>Job: 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051</p>
	<p>Project: CT04861M-17V0</p>	<p>Client: Empire Telecom / AT&T</p>
	<p>Code: TIA-222-G</p>	<p>Drawn by: L.Nguyen</p>
	<p>Path: D:\MEI\Projects\17 DATA\MNP\CT04861M-17V0\CT04861M-17V0.dwg</p>	<p>Date: 06/28/17</p>
		<p>App'd: _____ Scale: NTS Dwg No. E-1</p>

ALL RIGHTS RESERVED. THIS DRAWING SHALL REMAIN THE PROPERTY OF MALOUF ENGINEERING INTERNATIONAL, INC. NO PART THEREOF SHALL BE REPRODUCED, COPIED, ADAPTED, DISCLOSED, OR DISTRIBUTED TO OTHERS WITHOUT WRITTEN PERMISSION OF MEI, INC.

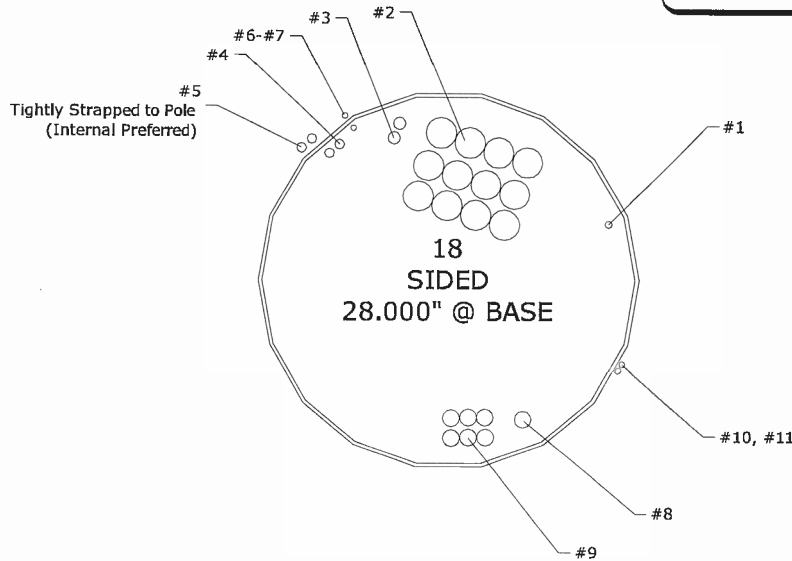
No.	QTY.	DESCRIPTION	ELEV.	TENANT
1	1	1/2	101'	E (Lighting)
2	12	1 5/8	101'	AT&T / E
3	2	5/8" Fiber Cable	101'	AT&T / E
4	2	3/4" DC Power Cable	101'	AT&T / E
5	2	3/4" DC Power Cable	101'	AT&T / E
6	1	ATCB-B01-xxx Homerun Cable (Ext.)	62'-101'	AT&T / E
7	1	ATCB-B01-xxx Homerun Cable (Int.)	62'	AT&T / E
8	1	1 5/8 (Hybrid-Fiber)	95'	T-Mobile / E
9	6	7/8	95'	T-Mobile / E
10	1	3/8 (Shielded)	46'	E
11	1	3/8 (Shielded)	37'	E

LEGEND:

- E = EXISTING  #X
- P = PROPOSED  #Y
- F = FUTURE  #X
- R = REMOVE  #X
- TO RELOCATE  #X

CONTACT MEI IF LINE LAYOUT IS DIFFERENT FROM WHAT IS SHOWN BELOW.

NOTE: NO NEW LINES ADDED FOR THIS ANALYSIS



101 PLAN: SCHEMATIC Tx-LINE LAYOUT
SCALE: NOT TO SCALE

- NOTES:**
1. Tx LINE LAYOUT IS SCHEMATIC ONLY, BASED UPON MEI RECORDS. NO RECENT SITE PHOTOS PROVIDED.
 2. NEW BRACKET SUPPORT SPECIFICATION BY OTHERS.

JUN 28, 2017

MALOUF ENGINEERING INTERNATIONAL, INC.

STRUCTURAL CONSULTANTS

17950 PRESTON ROAD SUITE 720
 DALLAS, TEXAS 75252-5635
 972-783-2578 (fax: 2583)
 www.maloufengineering.com

© MEI, INC. 2017

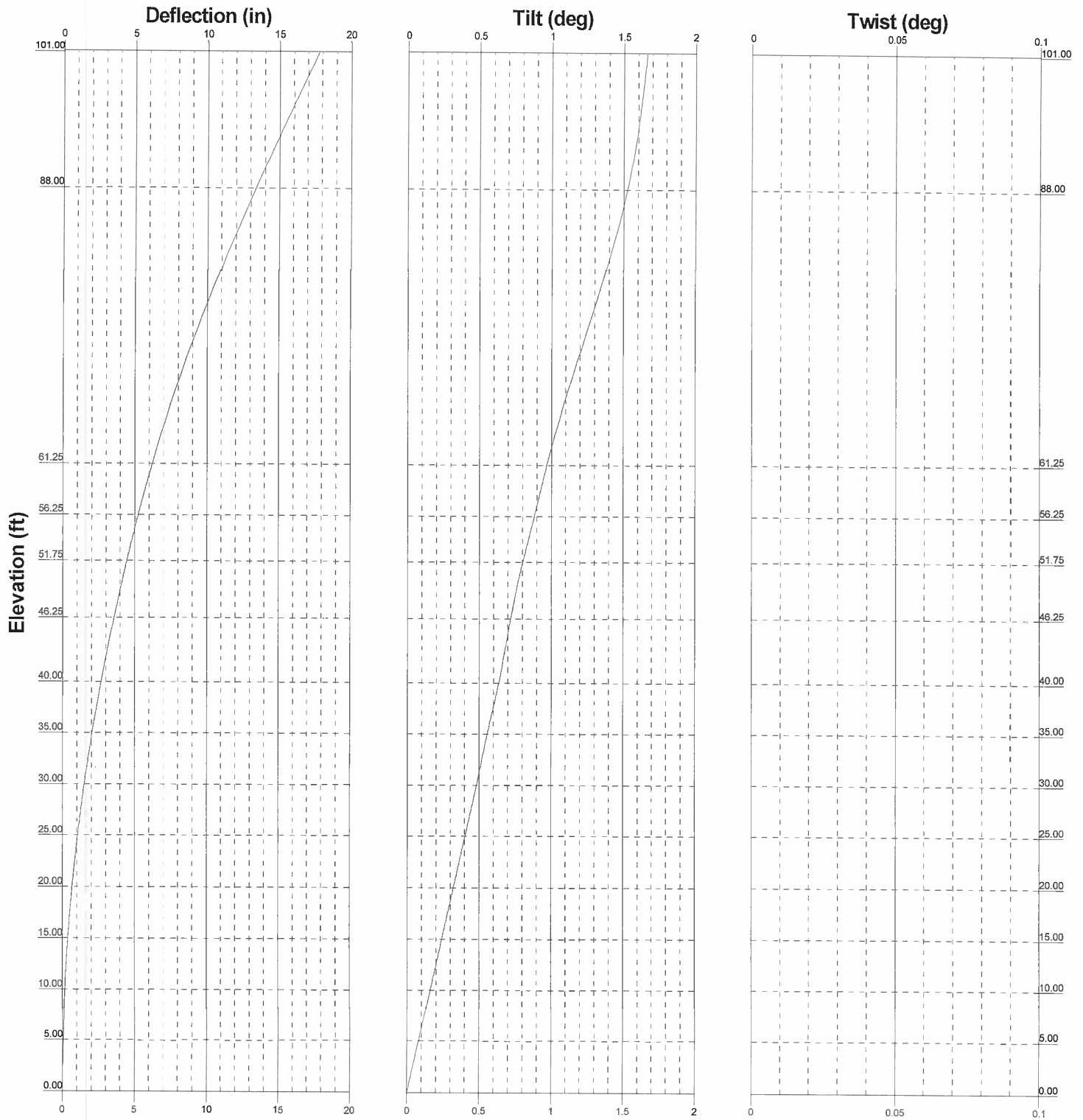


at&t

101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051

MONOPOLE TxLINE LAYOUT

MEI PROJECT ID	SHEET NUMBER	REV.
CT04861M-17V0	L01	0



 MALOUF ENGINEERING INT'L, INC. STRUCTURAL CONSULTANTS maloufengineering.com	Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job: 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051 Project: CT04861M-17V0 Client: Empire Telecom / AT&T Drawn by: L.Nguyen App'd: Code: TIA-222-G Date: 06/28/17 Scale: NTS Path: D:\MEI\Projects\17 DATA\MNP\CT04861M-17V0\CT04861M-17V0.dwg Dwg No. E-5
--	---	--

tnxTower Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 1 of 5
	Project CT04861M-17V0	Date 10:20:47 06/28/17
	Client Empire Telecom / AT&T	Designed by LNguyen

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 100 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.2500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Placement <i>ft</i>	Total Number	Description	Placement <i>ft</i>	Total Number
3/4" DC Power Cable (AT&T / E)	101.00 - 0.00	2	(E)		
ATCB-B01-xxx Homerun Cable (AT&T / E)	101.00 - 62.00	1	3/8 (Shielded)	37.00 - 0.00	1
3/8 (Shielded)	46.50 - 0.00	1	(E)		

Feed Line/Linear Appurtenances - Entered As Area

Description	Placement <i>ft</i>	Total Number	Description	Placement <i>ft</i>	Total Number
Safety Line 3/8 (E)	101.00 - 0.00	1	1 5/8 (Hybrid-Fiber) (T-Mobile / E)	95.00 - 0.00	1
Step Bolts (E)	101.00 - 0.00	1	7/8 (T-Mobile / E)	95.00 - 0.00	6
1/2 (E (Lighting))	101.00 - 0.00	1	MP303 (Mods)	62.00 - 47.00	1
1 5/8 (AT&T / E)	101.00 - 0.00	12	MP303 (Mods)	62.00 - 47.00	1
5/8" Fiber Cable (AT&T / E)	101.00 - 0.00	2	MP304 (Mods)	45.50 - 0.00	1
3/4" DC Power Cable (AT&T / E)	101.00 - 0.00	2	MP304 (Mods)	45.50 - 0.00	1
ATCB-B01-xxx Homerun Cable (AT&T / E)	62.00 - 0.00	1			

tnxTower Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 2 of 5
	Project CT04861M-17V0	Date 10:20:47 06/28/17
	Client Empire Telecom / AT&T	Designed by LNguyen

Discrete Tower Loads

Description	Placement	Weight	Description	Placement	Weight
	<i>ft</i>	<i>K</i>		<i>ft</i>	<i>K</i>
5' Lightning Rod (E)	101.00	0.00 0.01 0.01 0.03	RRUS-32 B2 (AT&T / P)	103.50	0.05 0.07 0.10 0.16
Beacon/Strobe (E)	101.00	0.06 0.09 0.12 0.20	RRUS-32 B2 (AT&T / P)	103.50	0.05 0.07 0.10 0.16
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (AT&T / E)	103.50	0.07 0.14 0.21 0.38	RRUS-32 B2 (AT&T / P)	103.50	0.05 0.07 0.10 0.16
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (AT&T / E)	103.50	0.07 0.14 0.21 0.38	RRUS-32 (AT&T / E)	103.50	0.08 0.10 0.14 0.21
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT (AT&T / E)	103.50	0.07 0.14 0.21 0.38	RRUS-32 (AT&T / E)	103.50	0.08 0.10 0.14 0.21
QS66512-3 w/ Pipe Mount (AT&T / E)	103.50	0.16 0.23 0.32 0.52	RRUS-32 (AT&T / E)	103.50	0.08 0.10 0.14 0.21
QS66512-3 w/ Pipe Mount (AT&T / E)	103.50	0.16 0.23 0.32 0.52	Raycap DC6 (Squid) Suppressor (AT&T / E)	103.50	0.02 0.04 0.05 0.10
QS66512-3 w/ Pipe Mount (AT&T / E)	103.50	0.16 0.23 0.32 0.52	Raycap DC6 (Squid) Suppressor (AT&T / E)	103.50	0.02 0.04 0.05 0.10
7770.00 Panels w/ Pipe Mount (AT&T / E)	103.50	0.04 0.09 0.15 0.29	(2) LGP21401 TMA'S (AT&T / E)	103.50	0.02 0.03 0.04 0.06
7770.00 Panels w/ Pipe Mount (AT&T / E)	103.50	0.04 0.09 0.15 0.29	(2) LGP21401 TMA'S (AT&T / E)	103.50	0.02 0.03 0.04 0.06
7770.00 Panels w/ Pipe Mount (AT&T / E)	103.50	0.04 0.09 0.15 0.29	(2) LGP21401 TMA'S (AT&T / E)	103.50	0.02 0.03 0.04 0.06
RRUS-11 (AT&T) (AT&T / E)	103.50	0.06 0.08 0.11 0.18	(2) TPX-070821 Triplexer (AT&T / E)	103.50	0.01 0.01 0.02 0.03
RRUS-11 (AT&T) (AT&T / E)	103.50	0.06 0.08 0.11 0.18	(2) TPX-070821 Triplexer (AT&T / E)	103.50	0.01 0.01 0.02 0.03
RRUS-11 (AT&T) (AT&T / E)	103.50	0.06 0.08 0.11 0.18	(2) TPX-070821 Triplexer (AT&T / E)	103.50	0.01 0.01 0.02 0.03

tnxTower Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 3 of 5
	Project CT04861M-17V0	Date 10:20:47 06/28/17
	Client Empire Telecom / AT&T	Designed by LNguyen

Description	Placement	Weight	Description	Placement	Weight
	<i>ft</i>	<i>K</i>		<i>ft</i>	<i>K</i>
Top Platform w/ Rails (& Ladder) (AT&T / E)	103.50	2.00 3.15 4.30 6.60	(T-Mobile / E)		0.07 0.10 0.15 0.20
AIR21 w/ pipe Mount (T-Mobile / E (Relocated))	95.00	0.13 0.18 0.25 0.40	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95.00	0.35 0.50 0.80
AIR21 w/ pipe Mount (T-Mobile / E (Relocated))	95.00	0.13 0.18 0.25 0.40	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95.00	0.20 0.35 0.50 0.80
AIR21 w/ pipe Mount (T-Mobile / E (Relocated))	95.00	0.13 0.18 0.25 0.40	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95.00	0.20 0.35 0.50 0.80
Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95.00	0.15 0.22 0.30 0.49	GPS (E)	46.50	0.00 0.01 0.01 0.01
Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95.00	0.15 0.22 0.30 0.49	18" Approx. Standoff Arm (E)	46.50	0.03 0.04 0.06 0.09
Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95.00	0.15 0.22 0.30 0.49	GPS (E)	37.00	0.00 0.00 0.01 0.01
RRUS-11 B12 (T-Mobile / E)	95.00	0.05 0.07 0.10 0.15	18" Approx. Standoff Arm (E)	37.00	0.03 0.05 0.07 0.11
RRUS-11 B12 (T-Mobile / E)	95.00	0.05 0.07 0.10 0.15			
RRUS-11 B12	95.00	0.05			

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	51.96	-0.00	-0.00
	Max. H _x	21	15.12	14.44	-0.02
	Max. H _z	2	20.16	-0.02	14.59
	Max. M _x	2	1072.89	-0.02	14.59
	Max. M _z	8	1067.64	-14.44	0.02
	Max. Torsion	6	0.25	-12.62	7.31
	Min. Vert	3	15.12	-0.02	14.58
	Min. H _x	9	15.12	-14.44	0.02
	Min. H _z	15	15.12	0.02	-14.59
	Min. M _x	14	-1072.54	0.02	-14.59
	Min. M _z	20	-1067.79	14.44	-0.02
	Min. Torsion	18	-0.25	12.62	-7.31

tnxTower Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 4 of 5
	Project CT04861M-17V0	Date 10:20:47 06/28/17
	Client Empire Telecom / AT&T	Designed by LNguyen

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101 - 88	17.754	40	1.6595	0.0010
L2	90.25 - 61.25	14.104	40	1.5606	0.0007
L3	61.25 - 56.25	6.209	40	0.9667	0.0003
L4	56.25 - 51.75	5.241	40	0.8821	0.0003
L5	51.75 - 46.25	4.447	40	0.8036	0.0003
L6	49 - 40	3.998	40	0.7544	0.0003
L7	40 - 35	2.676	40	0.6349	0.0003
L8	35 - 30	2.052	40	0.5575	0.0002
L9	30 - 25	1.509	40	0.4791	0.0002
L10	25 - 20	1.049	40	0.4001	0.0001
L11	20 - 15	0.671	40	0.3205	0.0001
L12	15 - 10	0.378	40	0.2405	0.0001
L13	10 - 5	0.168	40	0.1604	0.0001
L14	5 - 0	0.042	40	0.0802	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
103.50	AM-X-CD-16-65-00T-RET w/ PIPE MOUNT	40	17.754	1.6595	0.0010	8313
101.00	5' Lightning Rod	40	17.754	1.6595	0.0010	8313
95.00	AIR21 w/ pipe Mount	40	15.694	1.6128	0.0009	6928
46.50	GPS	40	3.608	0.7172	0.0003	4391
37.00	GPS	40	2.292	0.5896	0.0002	3654

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
3.7000	8	1.7500	107.23	2.505	36.596		Plate	0.81
			216.48	4.080	45.000			✓
			0.50	0.61	0.81			

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	101 - 88	Pole	TP16.36x14.64x0.1875	1	-5.88	701.90	37.1	Pass
L2	88 - 61.25	Pole	TP19.7689x15.6873x0.25	2	-8.66	1150.70	74.3	Pass
L3	61.25 - 56.25	Pole	TP20.4726x19.7689x0.250*	3	-9.34	1717.72	55.6	Pass
L4	56.25 - 51.75	Pole	TP21.1059x20.4726x0.250*	4	-9.97	1754.20	58.9	Pass
L5	51.75 - 46.25	Pole	TP21.88x21.1059x0.250*	5	-10.36	1764.42	61.2	Pass
L6	46.25 - 40	Pole	TP22.28x20.725x0.3125*	6	-12.23	2370.46	53.9	Pass
L7	40 - 35	Pole	TP22.995x22.28x0.3125*	7	-13.17	2419.54	56.4	Pass
L8	35 - 30	Pole	TP23.71x22.995x0.3125*	8	-14.11	2466.74	58.9	Pass

tnxTower Malouf Engineering Int'l, Inc. 17950 Preston Road, Suite #720 Dallas, TX 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 5 of 5
	Project CT04861M-17V0	Date 10:20:47 06/28/17
	Client Empire Telecom / AT&T	Designed by LNguyen

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L9	30 - 25	Pole	TP24.425x23.71x0.3125*	9	-15.06	2517.17	61.1	Pass
L10	25 - 20	Pole	TP25.14x24.425x0.3125*	10	-16.04	2566.02	63.2	Pass
L11	20 - 15	Pole	TP25.855x25.14x0.3125*	11	-17.03	2613.31	65.3	Pass
L12	15 - 10	Pole	TP26.57x25.855x0.3125*	12	-18.05	2664.61	67.2	Pass
L13	10 - 5	Pole	TP27.285x26.57x0.3125*	13	-19.09	2714.66	68.9	Pass
L14	5 - 0	Pole	TP28x27.285x0.3125*	14	-20.15	2763.46	70.7	Pass
						Summary		
						Pole (L2)	74.3	Pass
						Base Plate	81.3	Pass
						RATING =	81.3	Pass

*Modified w/ MP304 & MP303 Channels

APPENDIX 2 – SOURCE / CHANGED CONDITION



Preliminary Data Questionnaire (PDQ)



Application Date: 6/20/2017

Name and Mailing Address of Applicant:

(Street, City, State, Zip Code)

SNET Mobility, LLC

New Cingular Wireless PCS LLC

575 Morosgo Drive, 13-F West Tower, Atlanta, GA 30324

Telephone Number: _____

Requested Site:

Frontier Site Name: Wethersfield CO

75 Wells Road, Wethersfield, CT

Applicant Site Name: CT1074

Contact Information: (if different from applicant)

Name: David Cooper

Phone #: 617-639-4908

Email: dcooper@empiretelecomm.com

Project Description:

Swapping out (3) RRUS-12s+A2s with (3) RRUS-32 B2s

Are copies of all necessary permits attached?

USFS, BLM, Municipality Permits:

Yes _____

No N/A

FCC License:

Yes _____

No N/A

If no, have they been applied for?

Yes _____ ⇄ ⇄ Application Date: _____

No _____

Additional Notes on Permits:

Tower / Radio Information - Call Sign information needs to be tied to a specific antenna(s). Adjust letters as needed.

B Call Sign		KULG442	
Radio Service	5400G37M	Radio Service	5400G37M
Emission Designator	3B2-850-8B1 5-8B4	Emission Designator	3B2-850-8B1 5-8B4
Transmit Frequency	310 per sector	Transmit Frequency	310 per sector
Output Power (watts)	55	Output Power (watts)	55
Transmitter ERP (dBm)	55	Transmitter ERP (dBm)	55
Receive Frequency	1850-1855	Receive Frequency	1855-1860
B Call Sign		WPTF556	
Radio Service	5400G37M	Radio Service	5400G37M
Emission Designator	3B2-850-8B1 5-8B4	Emission Designator	3B2-850-8B1 5-8B4
Transmit Frequency	310 per sector	Transmit Frequency	310 per sector
Output Power (watts)	55	Output Power (watts)	55
Transmitter ERP (dBm)	55	Transmitter ERP (dBm)	55
Receive Frequency	1850-1855	Receive Frequency	1902.5-1910
B Call Sign		WPKV286	
Radio Service	5400G37M	Radio Service	5400G37M
Emission Designator	3B2-850-8B1 5-8B4	Emission Designator	3B2-850-8B1 5-8B4
Transmit Frequency	310 per sector	Transmit Frequency	310 per sector
Output Power (watts)	55	Output Power (watts)	50.1 per sector
Transmitter ERP (dBm)	55	Transmitter ERP (dBm)	57
Receive Frequency	1885-1870	Receive Frequency	710-716
A Call Sign		WQJH451	
Radio Service	5400M7D	Radio Service	5400M7D
Emission Designator	3A2-740	Emission Designator	3A2-740
Transmit Frequency	501 per sector	Transmit Frequency	501 per sector
Output Power (watts)	57	Output Power (watts)	57
Transmitter ERP (dBm)	57	Transmitter ERP (dBm)	57
Receive Frequency	704-710	Receive Frequency	

Coax / Waveguide / Cable Feedline Information	
Type	Fiber
Size	9B
Length	170'
# of runs	12(E)
Type	Fiber
Size	9B
Length	170'
# of runs	2(E)
Type	DC Trunks
Size	30'
Length	170'
# of runs	4(E)
Type	ACT-801-XXX
Size	30'
Length	170'
# of runs	1(E)

Antenna & Ancillary Equipment Information		Check one		Heights - Above Ground Level (feet)		Notes: (including removals, ice shields, etc.)		
Make	Model	Existing	Proposed	Size / Dimensions	Weight	Asimuth	RAD Center Attachment	Tip
A	KMW			72" x 12" x 6"	49 lbs.	20	106'	106'
A	KMW			72" x 12" x 6"	49 lbs.	148	106'	106'
A	KMW			72" x 12" x 6"	49 lbs.	268	106'	106'
B	Powerwave			55" x 11" x 5"	35 lbs.	148	106'	106'
B	Powerwave			55" x 11" x 5"	35 lbs.	268	106'	106'
B	Quintel			72" x 12" x 10"	105 lbs.	20	106'	106'
B	Quintel			72" x 12" x 10"	105 lbs.	148	106'	106'
B	Powerwave			6" x 8" x 2"	7.7 lbs ea	20, 148, 268	101'	109'
B	Powerwave			17" x 17" x 6"	50 lbs ea	20, 148, 268	101'	109'
B	Raycap			8.3" x 26"	25 lbs.		101'	101'
B	Raycap			8.3" x 26"	25 lbs.		101'	101'
B	Ersson			20" x 15" x 8"	50 lbs ea	20, 148, 268	101'	101'
B	Ersson			16" x 15" x 3"	22 lbs ea	20, 148, 268	101'	101'
B	Ersson			23" x 11" x 6"	51 lbs ea	20, 148, 268	101'	101'
B	CCI			6" x 10" x 2"	7.5 lbs ea	20, 148, 268	101'	101'
B	Ersson			27.2" x 12.1" x 7.0"	53 lbs ea	20, 148, 268	101'	101'

Disregard previous amendment.



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1074

Wethersfield
75 Wells Road
Wethersfield, CT 6109

June 26, 2017

Centerline Communications Project Number: 950006-060

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	10.35 %



June 26, 2017

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

Emissions Analysis for Site: **CT1074 – Wethersfield**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **75 Wells Road, Wethersfield, 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 population 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 population 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.

Population 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 performed for the proposed AT&T Wireless antenna facility located at **75 Wells Road, Wethersfield, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
GSM	850 MHz	2	30
LTE	1900 MHz (PCS)	2	60
LTE	2300 MHz (WCS)	2	60

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	103.5
A	2	KMW AM-X-CD-16-65-00T-RET	103.5
A	3	Quintel QS66512-3	103.5
B	1	Powerwave 7770	103.5
B	2	KMW AM-X-CD-16-65-00T-RET	103.5
B	3	Quintel QS66512-3	103.5
C	1	Powerwave 7770	103.5
C	2	KMW AM-X-CD-16-65-00T-RET	103.5
C	3	Quintel QS66512-3	103.5

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.05
Antenna A2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	120	2,595.26	2.10
Antenna A3	Quintel QS66512-3	850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	11.4 / 12.78 / 15.15	6	300	7,032.37	2.90
Sector A Composite MPE%							6.05
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.05
Antenna B2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	120	2,595.26	2.10
Antenna B3	Quintel QS66512-3	850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	11.4 / 12.78 / 15.15	6	300	7,032.37	2.90
Sector B Composite MPE%							6.05
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.05
Antenna C2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	120	2,595.26	2.10
Antenna C3	Quintel QS66512-3	850 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	11.4 / 12.78 / 15.15	6	300	7,032.37	2.90
Sector C Composite MPE%							6.05

Table 3: AT&T Emissions Levels



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	6.05 %
T-Mobile	4.30 %
Site Total MPE %:	10.35 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	6.05 %
AT&T Sector B Total:	6.05 %
AT&T Sector C Total:	6.05 %
Site Total:	10.35 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	103.5	3.13	850 MHz	567	0.55%
AT&T 1900 MHz (PCS) UMTS	2	656.33	103.5	4.96	1900 MHz (PCS)	1000	0.50%
AT&T 700 MHz LTE	2	1,297.63	103.5	9.81	700 MHz	467	2.10%
AT&T 850 MHz GSM	2	414.12	103.5	3.13	850 MHz	567	0.55%
AT&T 1900 MHz (PCS) LTE	2	1,138.02	103.5	8.61	1900 MHz (PCS)	1000	0.86%
AT&T 2300 MHz (WCS) LTE	2	1,964.04	103.5	14.86	2300 MHz (WCS)	1000	1.49%
						Total:	6.05%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	6.05 %
Sector B:	6.05 %
Sector C:	6.05 %
AT&T Maximum Total (per sector):	6.05 %
Site Total:	10.35 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **10.35 %** of the allowable FCC established general population 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.

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the printed name.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Steve Lattarulo
 Chief Building Inspector
 505 Silas Deane Highway
 Waterfield, CT 06109



9590 9402 1223 5246 6327 98

2. Article Number (Transfer from service label)

7016 1370 0000 4740 7292

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *[Signature]* Agent Addressee

B. Received by (Printed Name) *SASSANO* C. Date of Delivery *7/5/17*

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- Adult Signature
 - Adult Signature Restricted Delivery
 - Certified Mail®
 - Certified Mail Restricted Delivery
 - Collect on Delivery
 - Collect on Delivery Restricted Delivery
 - Insured Mail
 - Insured Mail Restricted Delivery (over \$500)
 - Priority Mail Express®
 - Registered Mail™
 - Registered Mail Restricted Delivery
 - Return Receipt for Merchandise
 - Signature Confirmation™
 - Signature Confirmation Restricted Delivery

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 The Honorable Paul Montinieri
 505 Silas Deane Highway
 Waterfield, CT 06109



9590 9402 1223 5246 6327 81

2. Article Number (Transfer from service label)

7016 1370 0000 4740 7308

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *[Signature]* Agent Addressee

B. Received by (Printed Name) *SASSANO* C. Date of Delivery *7/5/17*

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

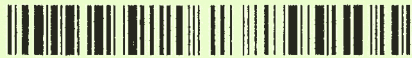
3. Service Type
- Adult Signature
 - Adult Signature Restricted Delivery
 - Certified Mail®
 - Certified Mail Restricted Delivery
 - Collect on Delivery
 - Collect on Delivery Restricted Delivery
 - Insured Mail
 - Insured Mail Restricted Delivery (over \$500)
 - Priority Mail Express®
 - Registered Mail™
 - Registered Mail Restricted Delivery
 - Return Receipt for Merchandise
 - Signature Confirmation™
 - Signature Confirmation Restricted Delivery

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Peter Gillespie
 Director of Planning and Development
 505 Silas Deane Highway
 Waterfield, CT 06109



9590 9402 1864 6104 9482 43

2. Article Number (Transfer from service label)

7016 1370 0000 4740 7285

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *[Signature]* Agent Addressee

B. Received by (Printed Name) *SASSANO* C. Date of Delivery *7/5/17*

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Kelley Stewart, Director
 Facilities and Real Estate Services
 Frontier Communications
 805 Central Expressway South
 Allen, TX 75013



9590 9402 1223 5246 6115 71

2. Article Number (Transfer from service label)

7016 1370 0000 4740 7360

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *[Signature]* Agent Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

Domestic Return Receipt