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May 16, 2019

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

Regarding	Notice of Exempt Modification: Add (3) Antennas for newer models. Add (9) Remote Radio Units (RRUs), and add swap (3) DC/Fiber Squid Surge Suppressor.
Property Address:	104 PROSPECT HILL ROAD, EAST WINDSOR, 06088 (The "Property")
Applicant:	AT&T Mobility ("AT&T", Site # CT5192)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 110-foot water tank at the above-referenced address, latitude 41.92612778 °, and longitude - 72.6046417 °. Said water tank and underlying property owner is Connecticut Water Company.

AT&T desires to modify its existing telecommunications facility by Add (3) Antennas for newer models. Add (9) Remote Radio Units (RRUs), and add swap (3) DC/Fiber Squid Surge Suppressor the centerline height of the existing antennas and ancillary tower-mounted equipment is and will remain at 78' 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 Honorable Robert Maynard, First Selectman for the East Windsor; Ruben Flores Marzan, as Chief of Zoning Administration with the City of East Windsor; Rand Stanley the building official for the Town of East Windsor and the Connecticut Water Company, as property owner, and the water tank owner.

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

1. The planned modification will not result in an increase in the height of the existing structure. The added antennas and accessory equipment along with equipment to be swapped will be installed at the existing height of 78' feet on the 110'-foot monopole.

2. The proposed modifications will not involve any changes to AT&T's ground-space footprint, and therefore 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 decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T's modified facility is herein provided.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support AT&T's proposed modifications. Please see enclosed structural analysis completed by Centek Engineering, dated January 21, 2019, and stamped by Timothy J. Lynn.

Sincerely,

Scott Pike

Scott Pike
Site Acquisition Specialist
Empire Telecom USA, LLC
spike@empiretelecomm.com

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:

First Selectman
Robert Maynard
11 Rye Street
Broad Brook, CT 06016

Building Official
Rand Stanley
Building Department
11 Rye Street
Broad Brook, CT 06016

Tank and Property Owner:
CONN WATER CO
93 W MAIN ST
Clinton CT 06413

Planning & Zoning Commission
Ruben Flores-Marzan
11 Rye Street
Broad Brook, CT 06016

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.

Information on the Property Records for the Municipality of East Windsor was last updated on 5/3/2019.

Parcel Information

Location:	104 PROSPECT HILL RD	Property Use:	Vacant Land	Primary Use:	Commercial Vacant Land
Unique ID:	01232500	Map Block Lot:	102 17 038	Acres:	0.65
490 Acres:	0.00	Zone:	B-1	Volume / Page:	0073/0029
Developers Map / Lot:		Census:	4841000		

Value Information

	Appraised Value	Assessed Value
Land	1,700,000	1,190,000
Buildings	0	0
Detached Outbuildings	0	0
Total	1,700,000	1,190,000

Owner's Information

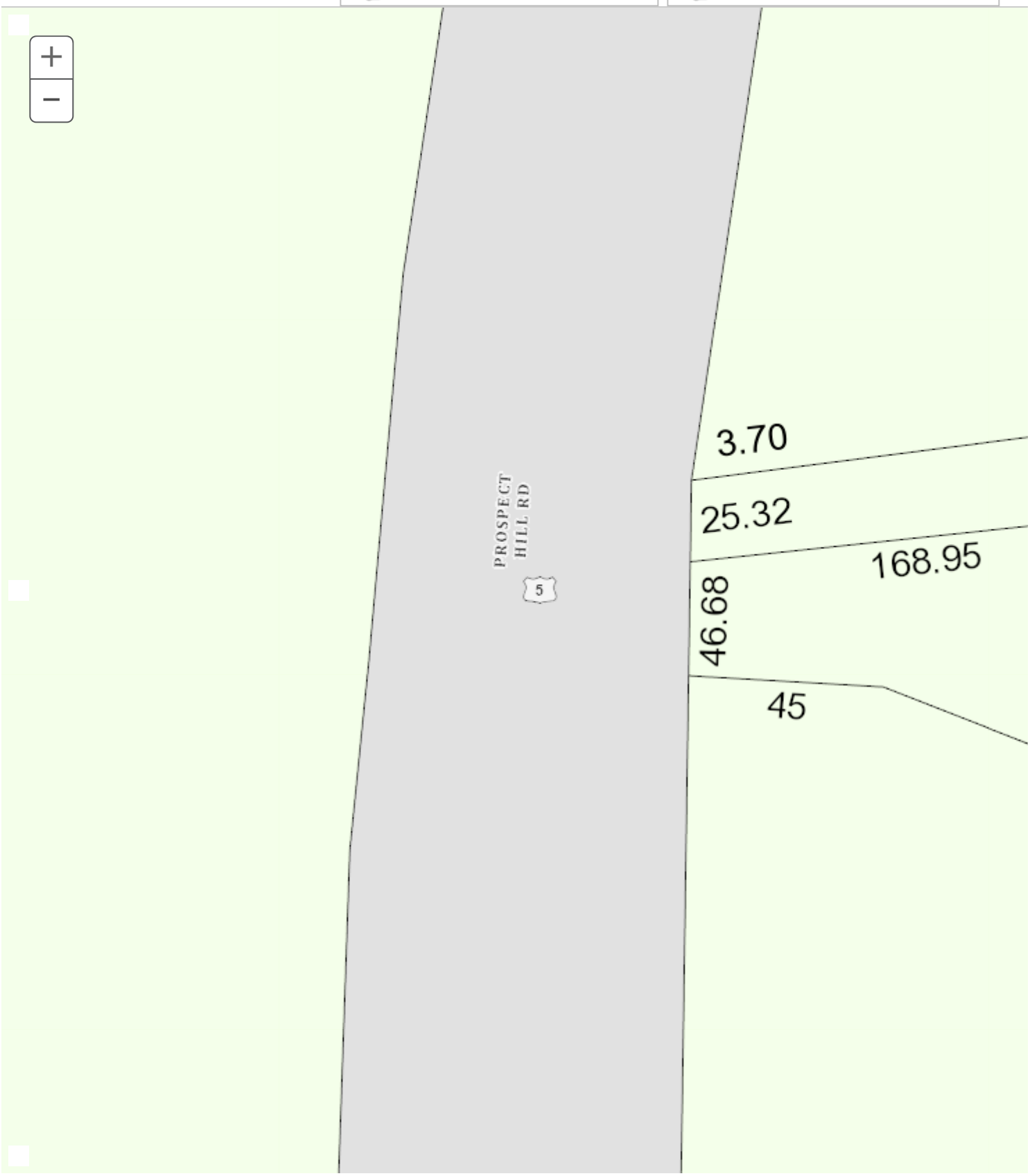
Owner's Data
CONN WATER CO 93 W MAIN ST CLINTON, CT 06413

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
CONN WATER CO	0073	0029	05/22/1958		No	$0

Information Published With Permission From The Assessor

Full Town View Reset Map Se DEEP Layers Map Layer



Full Extent Zoom In Zoom Out Prev Extent Next Extent Pan **Parcel Information** Simple M

MapXpress v1.2

WIRELESS COMMUNICATIONS FACILITY
CT5192 - 5C AWS
WINDSOR LOCKS NORTH
104 PROSPECT HILL ROAD
EAST WINDSOR, CT 06088

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS. BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE 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.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

   A. AT ANTENNA SECTORS:
   - REMOVE (3) EXISTING RRUS-12+A2, (1) PER SECTOR
   - INSTALL (3) NEW B2/B66A 8843, (1) PER SECTOR

   B. AT THE EQUIPMENT SHELTER
   - ADD (1) XMU

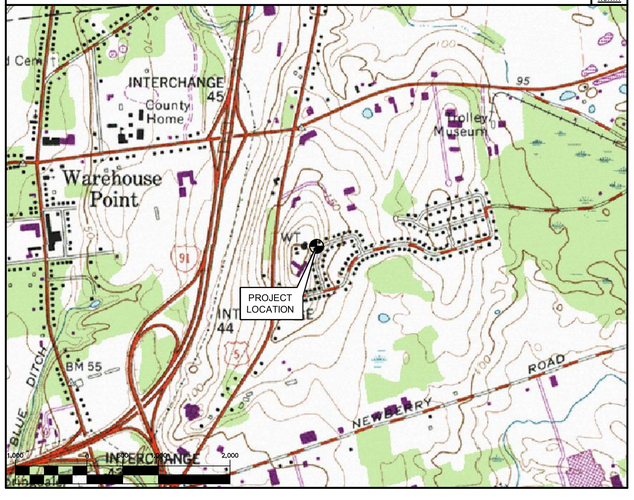
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 104 PROSPECT HILL ROAD, EAST WINDSOR, CONNECTICUT

1.	TURN LEFT ONTO CAPITAL BLVD.	0.36 MI
2.	TURN LEFT ONTO WEST ST.	0.27 MI
3.	MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD.	0.16 MI
4.	TAKE THE CT-140 EXIT, EXIT 45, TOWARD ELLINGTON/WAREHOUSE POINT.	21.92 MI
5.	TURN RIGHT ONTO BRIDGE ST/CT-140.	0.18 MI
6.	TAKE THE 1ST RIGHT ONTO PROSPECT HILL RD/US-5 S.	0.14 MI
7.	104 PROSPECT HILL RD, EAST WINDSOR, CT 06088-9668, 104 PROSPECT HILL RD IS ON THE LEFT.	0.30 MI

VICINITY MAP

SCALE: 1" = 1000'



PROJECT INFORMATION

AT&T SITE NUMBER:	CT5192
AT&T SITE NAME:	WINDSOR LOCKS NORTH
SITE ADDRESS:	104 PROSPECT HILL ROAD EAST WINDSOR, CT 06088
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T PACE ID NUMBER:	PACE JOB 1 - MRCTB034795 PACE JOB 2 - MRCTB034775
AT&T FA LOCATION CODE:	10071335
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-55'-34.14" N LONGITUDE: 72°-36'-16.70" W GROUND ELEVATION: ±204' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE	0
C-1	PLANS AND ELEVATION	0
C-2	ANTENNA CONFIGURATION DETAILS	0
C-3	DETAILS	0
E-1	SCHEMATIC DIAGRAM AND NOTES	0
E-2	WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	02/07/19	KAWJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
WINDSOR LOCKS NORTH
CT5192 - LTE 5C AWS
104 PROSPECT HILL ROAD
EAST WINDSOR, CT 06088

DATE: 01/15/19
SCALE: AS NOTED
JOB NO. 18000.59

TITLE SHEET

T-1

Sheet No. 1 of 8

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90–110 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 93 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON–GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   A. SHERWIN WILLIAMS POLANE–B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   A. ONE COAT OF DTM BONDING PRIMER (2–5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5–5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI–SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH–PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON–PETROLEUM–BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

ANTENNA AND APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	DOWNTILT	(E/P) TMA/DIPLEXER/TRIPLEXER (QTY)	(E/P) RRU (QTY)	FEEDER (QTY), LENGTH	(E/P) RAYCAP (QTY)
A1	EXISTING	UMTS 850/1900	KATHREIN (800–10121)	54.5 x 10.3 x 5.9	78'	343°	0°	(E) TMA POWERWAVE: LGP 21401 (2), (E) DIPLEX: POWERWAVE LGP 21901 (2)		1 5/8ø COAX (2), 165 FT±	(E) RAYCAP DC6–48–60–18–8F (1)
A2	EXISTING	LTE 850/WCS/5G 850/AWS	CCI (TPA–65R–LCUUUU–H8)	96 x 14.4 x 8.6	78'	353°	0°		(E) 4478 B5 (1), (E) RRUS–32 (1)	FIBER AND DC POWER	
A3	EXISTING	LTE 700BC/PCS	CCI (HPA–65R–BUU–H8)	92.4 x 14.8 x 7.4	78'	353°	0°		(E) RRUS–11 (1), (P) B2/B66A 8843 (1)	FIBER AND DC POWER	
B1	EXISTING	UMTS 850/1900	KATHREIN (800–10121)	54.5 x 10.3 x 5.9	78'	102°	0°	(E) TMA POWERWAVE: LGP 21401 (2), (E) DIPLEX: POWERWAVE LGP 21901 (2)		1 5/8ø COAX (2), 165 FT±	(E) RAYCAP DC6–48–60–18–8F (1)
B2	EXISTING	LTE 850/WCS/5G 850/AWS	CCI (TPA–65R–LCUUUU–H8)	96 x 14.4 x 8.6	78'	107°	0°		(E) 4478 B5 (1), (E) RRUS–32 (1)	FIBER AND DC POWER	
B3	EXISTING	LTE 700BC/PCS	CCI (HPA–65R–BUU–H8)	92.4 x 14.8 x 7.4	78'	107°	0°		(E) RRUS–11 (1), (P) B2/B66A 8843 (1)	FIBER AND DC POWER	
C1	EXISTING	UMTS 850/1900	KATHREIN (800–10121)	54.5 x 10.3 x 5.9	78'	223°	0°	(E) TMA POWERWAVE: LGP 21401 (2), (E) DIPLEX: POWERWAVE LGP 21901 (2)		1 5/8ø COAX (2), 165 FT±	(E) RAYCAP DC6–48–60–18–8F (1)
C2	EXISTING	LTE 850/WCS/5G 850/AWS	CCI (TPA–65R–LCUUUU–H8)	96 x 14.4 x 8.6	78'	235°	0°		(E) 4478 B5 (1), (E) RRUS–32 (1)	FIBER AND DC POWER	
C3	EXISTING	LTE 700BC/PCS	CCI (HPA–65R–BUU–H8)	92.4 x 14.8 x 7.4	78'	235°	0°		(E) RRUS–11 (1), (P) B2/B66A 8843 (1)	FIBER AND DC POWER	

RRU	SIZE (INCHES) (H x W x D)
RRUS–11	19.7 x 17 x 7.2
RRUS–32	27.2 x 12.1 x 7
4478 B5	16.5 x 13.4 x 7.7
B2/B66A 8843	14.9 x 13.2 x 10.9

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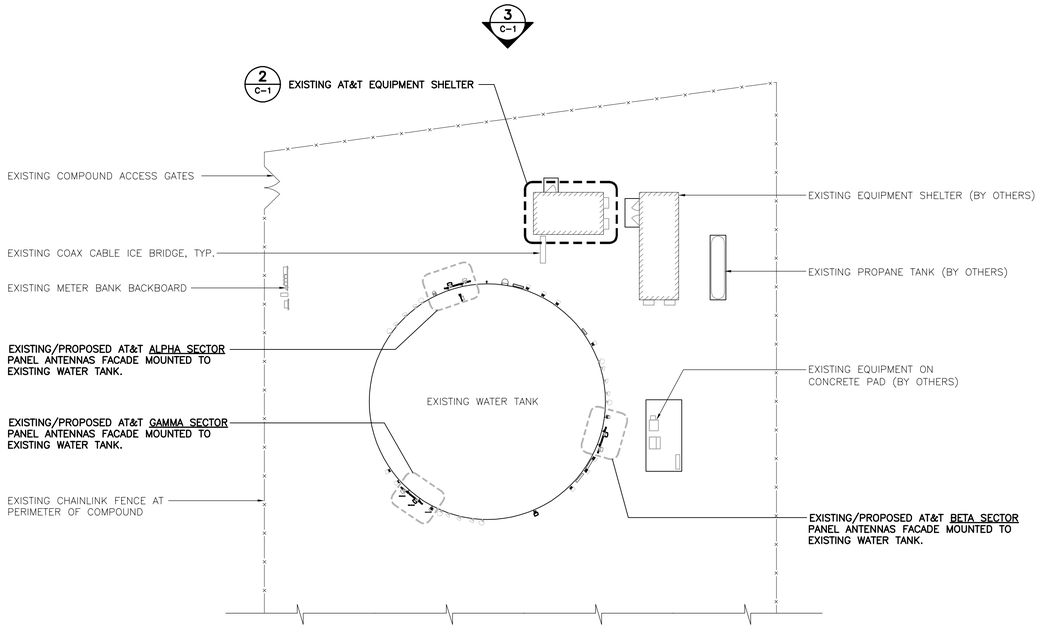
NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE

N-1

Sheet No. 2 of 8



1 C-1 PARTIAL SITE PLAN - PROPOSED

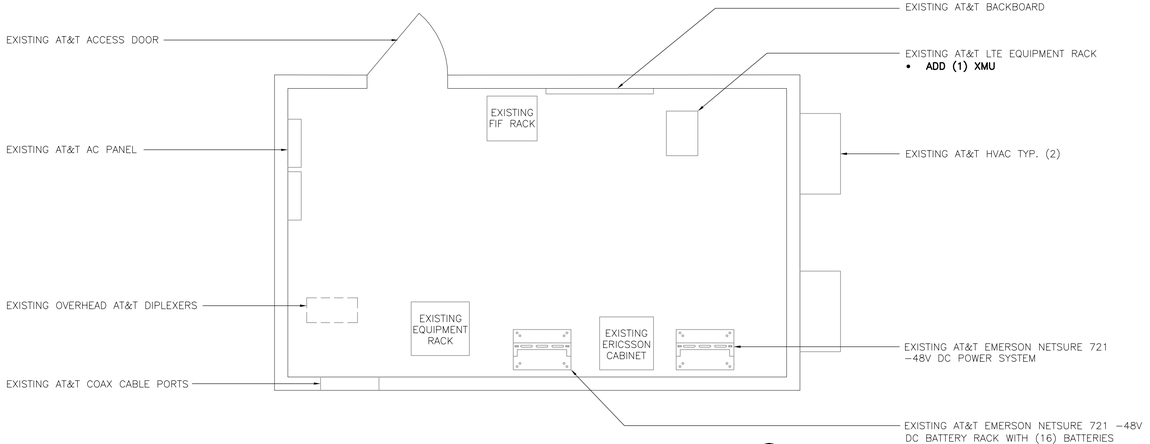
SCALE: 1" = 20'-0"

TRUE NORTH

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

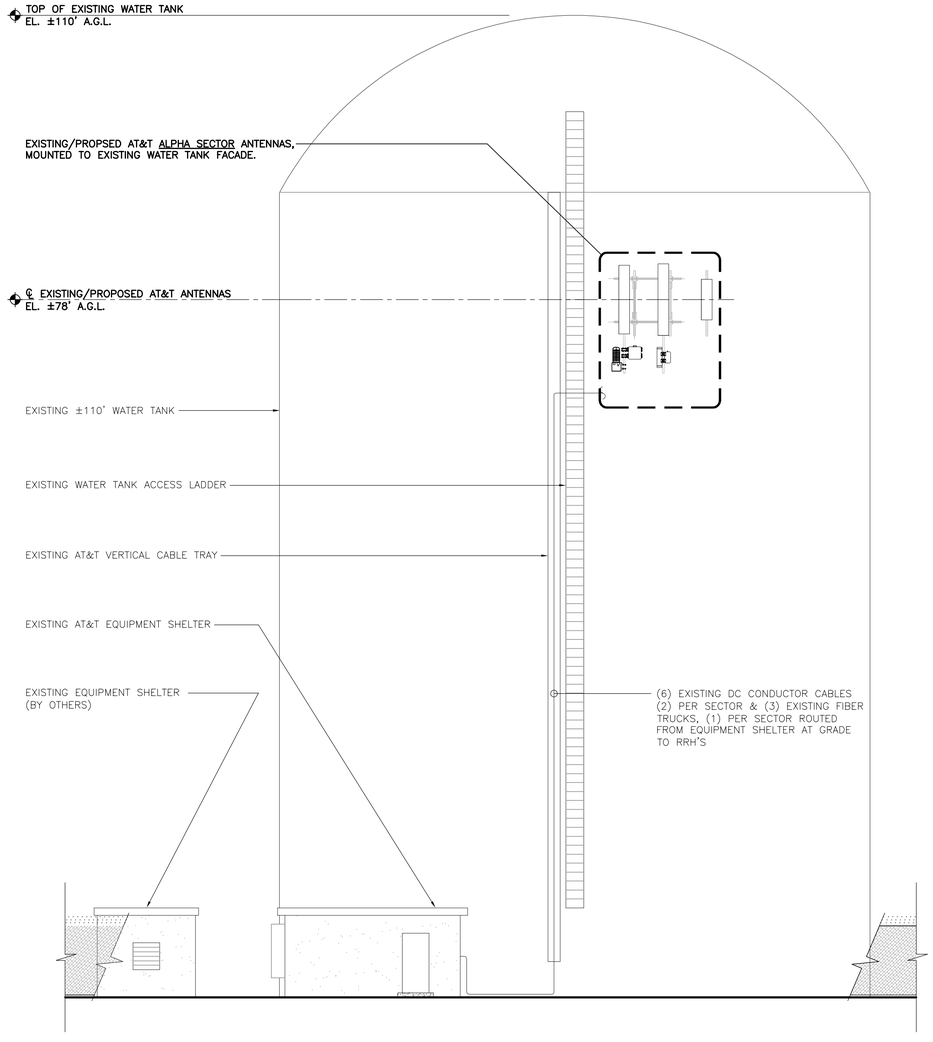


2 C-1 PROPOSED EQUIPMENT LAYOUT PLAN

SCALE: 3/8" = 1'-0"

TRUE NORTH

NOTE:
ANTENNA EQUIPMENT (BY OTHERS) NOT SHOWN FOR CLARITY.



3 C-1 PARTIAL NORTH ELEVATION - PROPOSED

SCALE: 1/8" = 1'-0"

GRAPHIC SCALE

8 0 4 8 16 32

(IN FEET)
1 inch = 8 ft.

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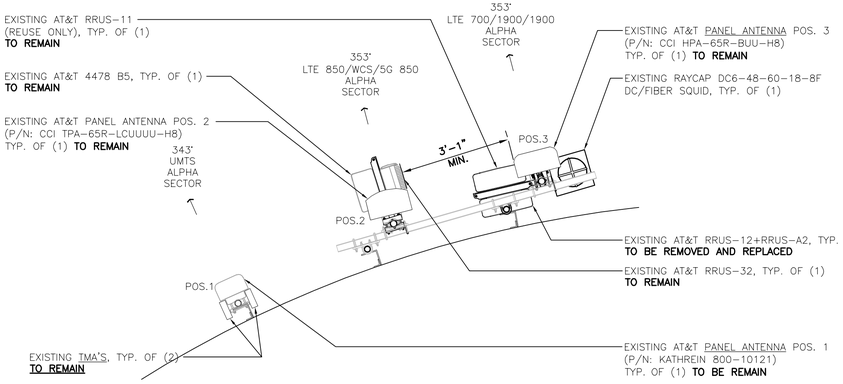
PLANS AND ELEVATION

C-1

Sheet No. 3 of 8

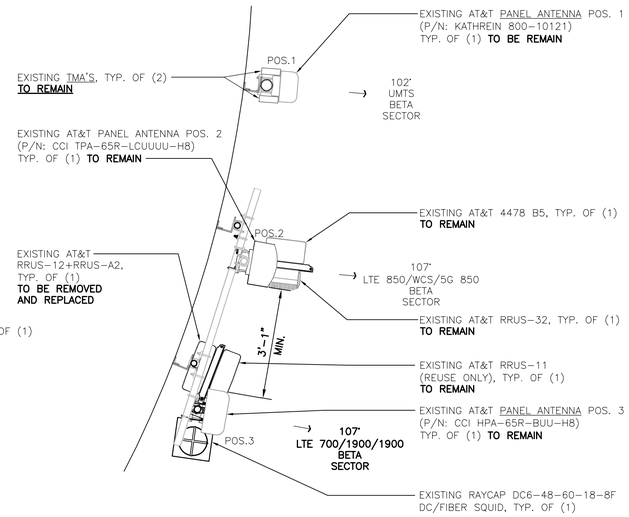
EXISTING ANTENNA CONFIGURATIONS



ALPHA SECTOR

1 C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

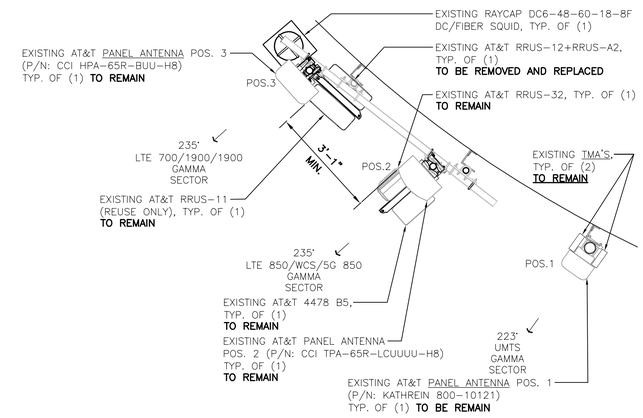
NORTH



BETA SECTOR

2 C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

NORTH



GAMMA SECTOR

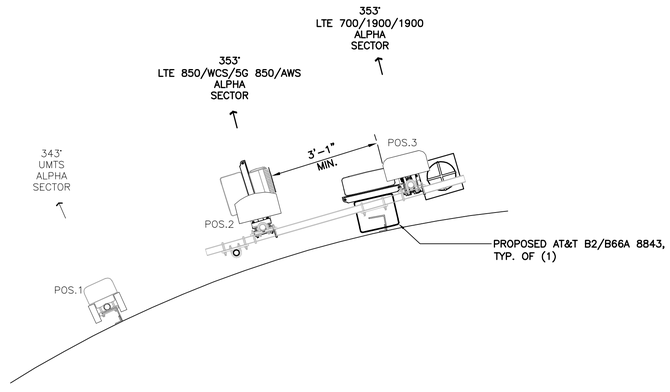
3 C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

NORTH

PROPOSED ANTENNA CONFIGURATIONS

PAINTING NOTE:

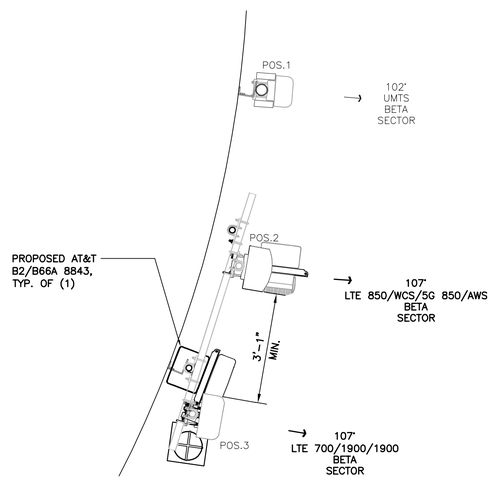
ALL APPURTENANCES AND ASSOCIATED MOUNTS SHALL BE PAINTED TO MATCH COLOR OF EXISTING WATER TANK.



ALPHA SECTOR

1A C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

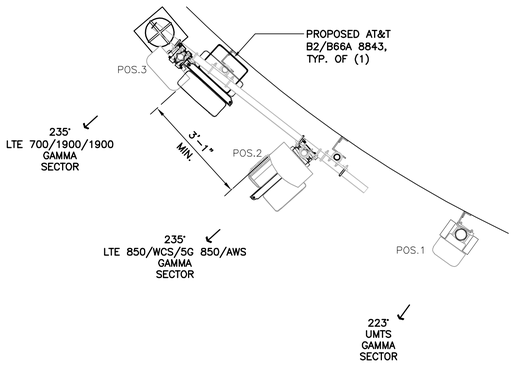
NORTH



BETA SECTOR

2A C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

NORTH



GAMMA SECTOR

3A C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"

NORTH

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ANTENNA CONFIGURATION DETAILS

C-2

Sheet No. 4 of 8

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: B2/B66A 8843	14.9"H x 13.2"W x 10.9"D	72 LBS.	ABOVE: 16" MIN. BELOW: 20" MIN. FRONT: 8" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

1 / C-3 **ERICSSON B2/B66A 8843 DETAIL**

NOT TO SCALE

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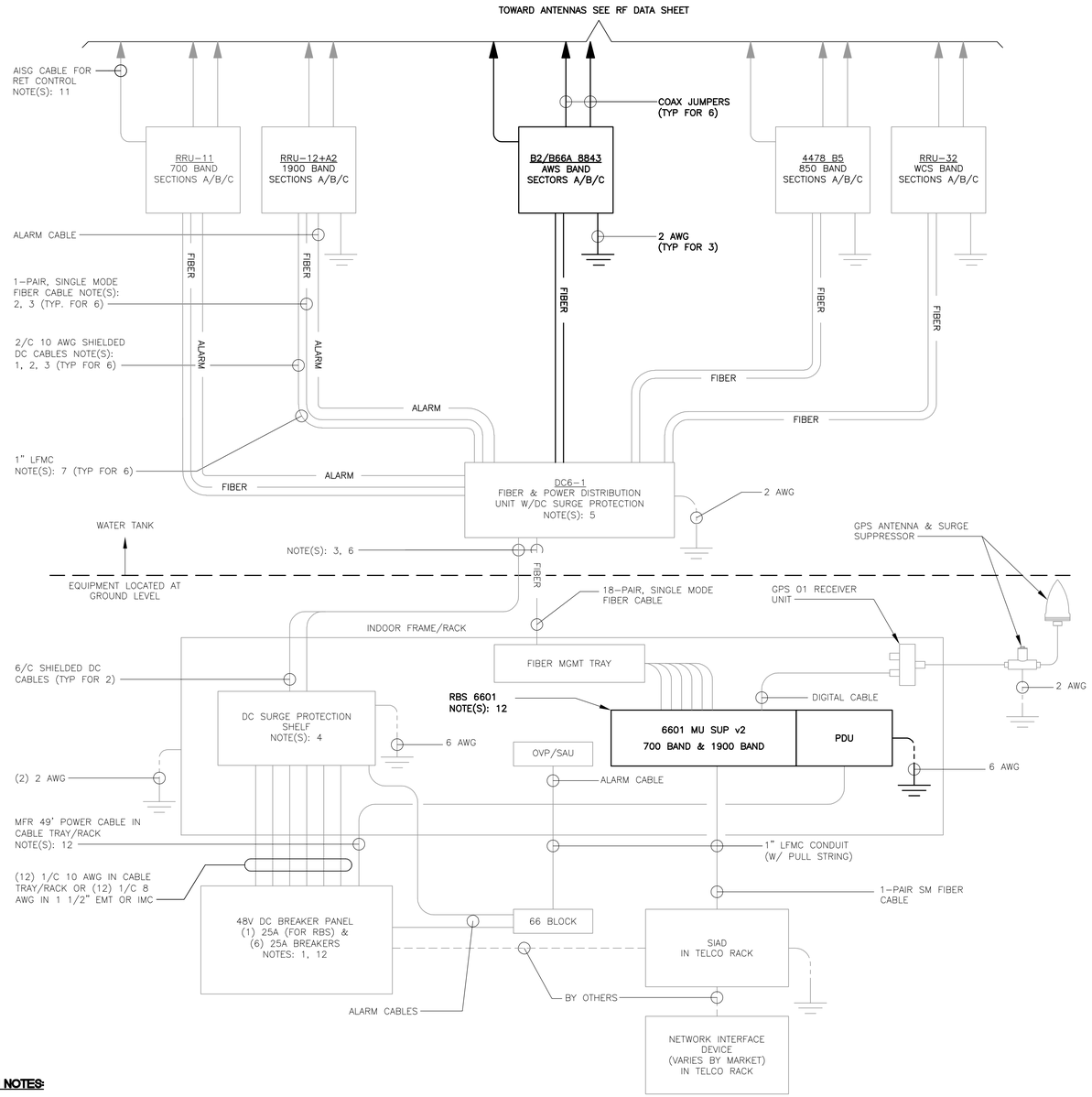
DETAILS

C-3

Sheet No. 5 of 8



LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

1 / E-1 **SCHEMATIC DIAGRAM**
NOT TO SCALE

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

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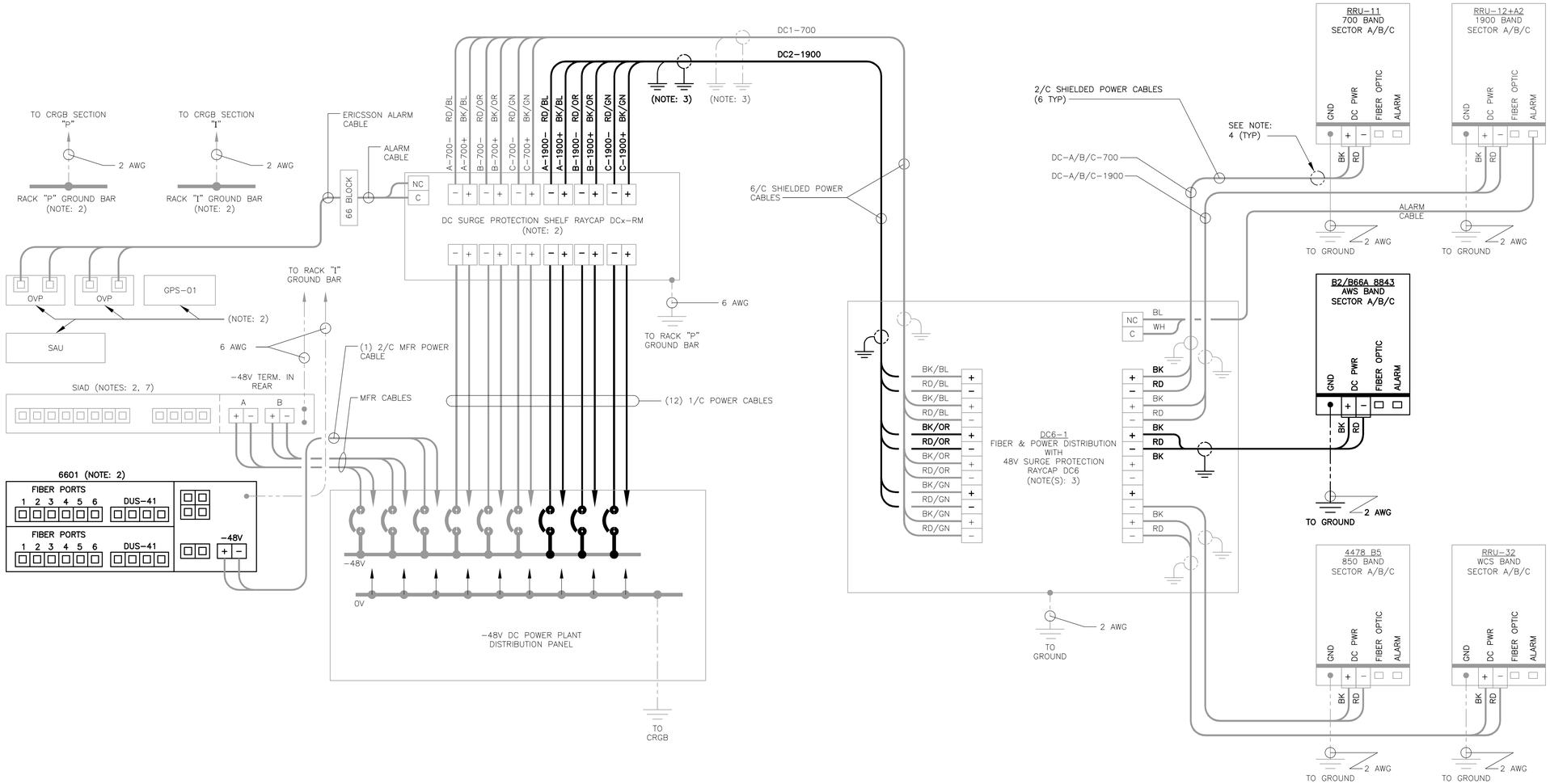
SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 6 of 8



LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

1 / E-2 **WIRING DIAGRAM**
NOT TO SCALE

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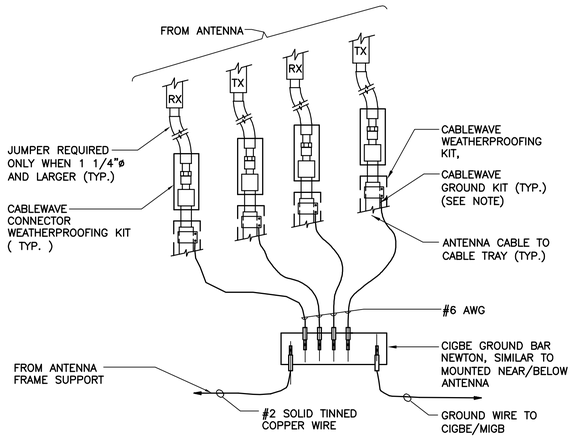
WIRING DIAGRAM

E-2
Sheet No. 7 of 8



NOTE:

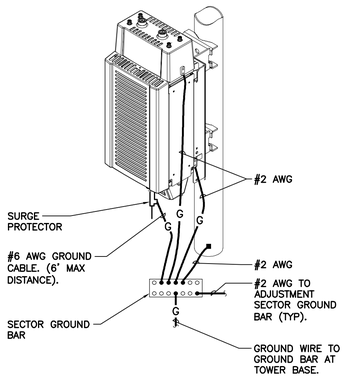
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

1 E-3 CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE

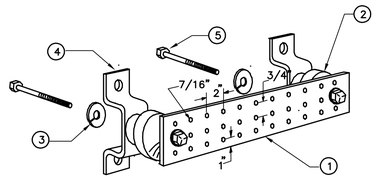
EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



2 E-3 RRU POLE MOUNT GROUNDING

NOT TO SCALE

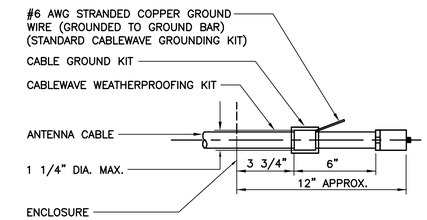


LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

3 E-3 GROUND BAR DETAIL

NOT TO SCALE

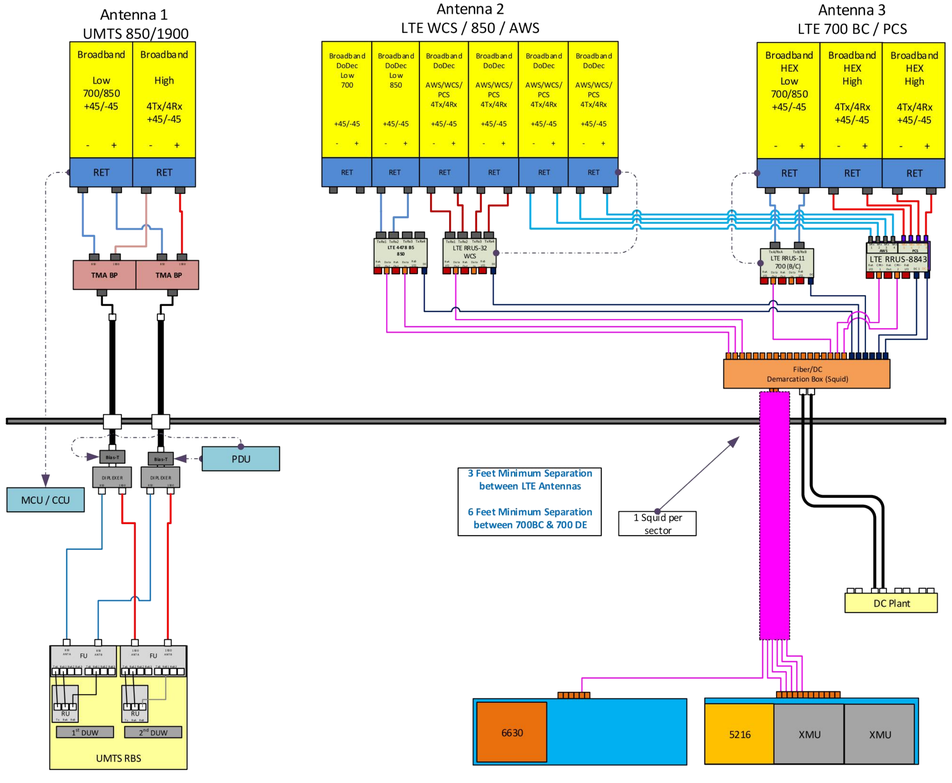


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

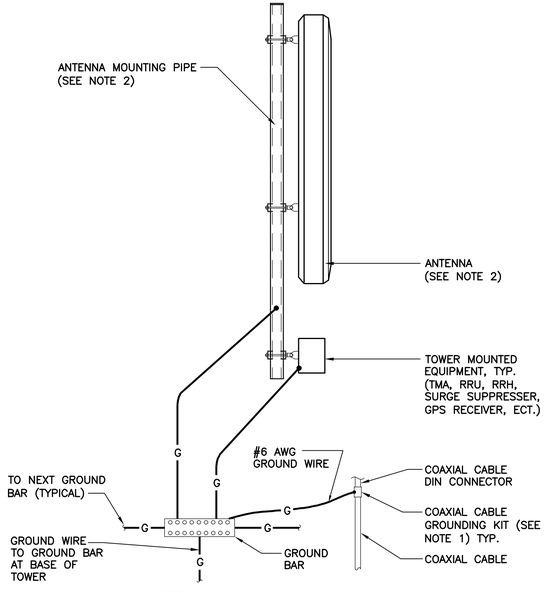
4 E-3 ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE



5 E-3 RF PLUMBING DIAGRAM

NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

6 E-3 TYPICAL ANTENNA GROUNDING DETAIL

NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	02/07/19	KAWJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

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(203) 488-8587 Fax
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Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

WINDSOR LOCKS NORTH

CT5192 - LTE 5C AWS

104 PROSPECT HILL ROAD
EAST WINDSOR, CT 06088

DATE: 01/15/19
SCALE: AS NOTED
JOB NO. 18000.59

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 8 of 8

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

110-ft Tall Existing Host Water Tank

AT&T Site #: CT5192

AT&T Site Name: Windsor Locks North

Project: LTE 5C

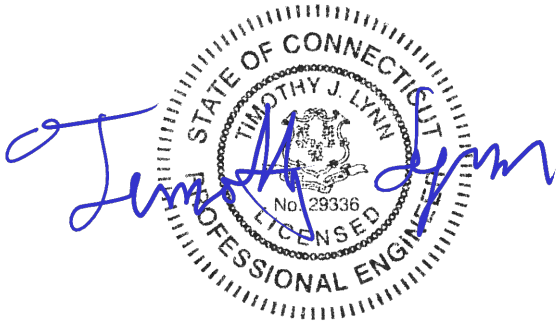
PACE #: MRCTB034795, MRCTB034775

PT #: 2051A0K9FB, 2051A0K9K8

FA #: 10071335

104 Prospect Hill Road
East Windsor, CT 06088

Centek Project No. 18000.59



Date: January 21, 2019

Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

Section 1

Report

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the equipment upgrade proposed by AT&T Mobility on the existing host water tank located in East Windsor, Connecticut.

The host structure is a ±110-ft tall water tank with AT&T's existing/proposed equipment mounted to the façade. The analysis of the proposed upgrade is limited to the local supports of the antennas/appurtenances.

Existing mount member sizes information were obtained from a site visit performed by CSB on October 8, 2018 Proposed/existing antenna and appurtenance information was taken from a RF data sheet dated 03/19/2018 provided by AT&T

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- AT&T MOBILITY (Existing to Remain):
  Antennas: Three (3) Kathrien 800-10121 panel antennas and three (3) CCI HPA-65R-BUU-H8 panel antennas pipe mounted to the water tank façade with a RAD center elevation of +/-78-feet above finished grade (AGL).

  Appurtenances: Six (6) Powerwave LGP21401 TMAs, three (3) Ericsson RRUS-11 remote radio units, three (3) Ericsson RRUS-32 remote radio units, three (3) Ericsson 4478 B5 and three (3) Raycap DC6 surge arrestors pipe mounted to the water tank façade with a RAD center elevation of +/-78-ft.
- **AT&T MOBILITY (EXISTING TO REMOVE):**
  Appurtenances: Three (3) Ericsson RRUS-12 remote radio units and three (3) Ericsson RRUS-A2 pipe mounted to the water tank façade with a RAD center elevation of +/-78-ft.
- **AT&T MOBILITY (PROPOSED):**
  Appurtenances: Three (3) Ericsson B2/B66A 8843 remote radio units pipe mounted to the water tank façade with a RAD center elevation of +/-78-ft.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The host structure carries the horizontal and vertical loads due to the weight of antennas, and wind.
- The host structure and existing appurtenance attachment was properly constructed and maintained.
- The antenna support mounts are in plumb condition.
- Loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original design documents or latter reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All appurtenance support structure members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

Analysis

The existing and proposed structures were analyzed using a comprehensive computer program entitled RISA 3D. The program analyzes the antenna support frames, considering the worst case loading condition. The structure is considered as loaded by concentric forces along the pipe mast, and the model assumes that the pipe members are subjected to bending, axial, and shear forces.

The antenna supporting structures were analyzed for the controlling ultimate design wind speed, to determine stresses in members as per guidelines of ASCE 7-10 “Minimum Design Loads for Buildings and Other Structures”, the American Institute of Steel Construction (AISC) “Steel Construction Manual” and the 2015 International Building Code as amended by the 2018 Connecticut State Building Code, (CSBC).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC.

Structure Loading

Loading was determined per the requirements of the 2015 International Building Code amended by the 2018 CSBC and ASCE 7-10 “Minimum Design Loads for Buildings and Other Structures”.

Ultimate Design Wind Speed:	East Windsor; v = 125 mph (Risk Category II)	*[Appendix N of the 2018 CT State Building Code]*
Risk Category:	Antenna Supporting Structure = II	*[Table 1.5-1, ASCE 7-10]*
Exposure Category:	Surface Roughness C: *Open terrain with scattered obstructions having heights generally less than 30 feet.*	*[ASCE 7-10, Section 26.7.2]*

Results

Structure stresses were calculated utilizing the structural analysis software RISA 3D and MathCAD. Allowable stresses were determined based on the latest AISC standard.

- The proposed and existing antenna/appurtenances masts were found to be within allowable limits. Mast connections to the existing exterior chimney wall were calculated based on reactions obtained from the structural model.

Sector	Component	Utilization (percentage of capacity)	Result
Alpha Beta Gamma	2.0 Pipe STD (Proposed)	91.2%	**PASS**
Alpha Beta Gamma	Plate Outrigger (Existing)	77.0%	**PASS**

- Mount connections to the façade of the existing water tank were calculated utilizing MathCAD, based on reactions obtained from the RISA 3D structural model.
  - Calculated stresses were found to be within allowable limits.

Sector	Component	Utilization (percentage of capacity)	Result
Alpha Beta Gamma	5/16" Stainless Steel Stud Weld	33.9%	**PASS**
Alpha Beta Gamma	3/8" Stainless Steel Stud Weld	25.1%	**PASS**

*Refer to Section 3.0 for Additional information

C o n c l u s i o n

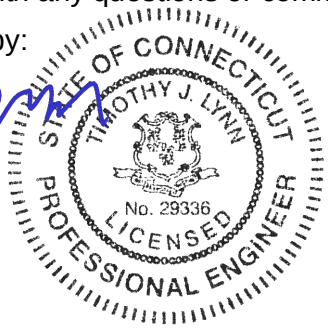
This analysis shows that the subject modified antenna mounts **are adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Empire Telecom USA, LLC. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J Lynn, PE
Structural Engineer



Prepared by:

Fernando Palacios E.
Engineer

Section 2
Conditions & Software

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

- RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features:

- Comprehensive CAD-like graphic drawing/editing capabilities that let you draw, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, etc.
- Versatile drawing grids (orthogonal, radial, skewed)
- Universal snaps and object snaps allow drawing without grids
- Versatile general truss generator
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet selection, with locking
- Saved selections to quickly recall desired selections
- Modification tools that modify single items or entire selections
- Real spreadsheets with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and views so you can edit or view any data in the plotted views or in the spreadsheets
- Simultaneous view of multiple spreadsheets
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection libraries
- Import DXF, RISA-2D, STAAD and ProSteel 3D files
- Export DXF, SDNF and ProSteel 3D files

Analysis Features:

- Static analysis and P-Delta effects
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS mode combinations
- Automatic inclusion of mass offset (5% or user defined) for dynamic analysis
- Physical member modeling that does not require members to be broken up at intermediate joints
- State of the art 3 or 4 node plate/shell elements
- High-end automatic mesh generation — draw a polygon with any number of sides to create a mesh of well-formed quadrilateral (NOT triangular) elements.
- Accurate analysis of tapered wide flanges - web, top and bottom flanges may all taper independently
- Automatic rigid diaphragm modeling
- Area loads with one-way or two-way distributions
- Multiple simultaneous moving loads with standard AASHTO loads and custom moving loads for bridges, cranes, etc.
- Torsional warping calculations for stiffness, stress and design
- Automatic Top of Member offset modeling
- Member end releases & rigid end offsets
- Joint master-slave assignments
- Joints detachable from diaphragms
- Enforced joint displacements

- 1-Way members, for tension only bracing, slipping, etc.
- 1-Way springs, for modeling soils and other effects
- Euler members that take compression up to their buckling load, then turn off.
- Stress calculations on any arbitrary shape
- Inactive members, plates, and diaphragms allows you to quickly remove parts of structures from consideration
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members and plates
- Automatic subgrade soil spring generator

Graphics Features:

- Unlimited simultaneous model view windows
- Extraordinary “true to scale” rendering, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamic scrolling stops right where you want
- Plot & print virtually everything with color coding & labeling
- Rotate, zoom, pan, scroll and snap views
- Saved views to quickly restore frequent or desired views
- Full render or wire-frame animations of deflected model and dynamic mode shapes with frame and speed control
- Animation of moving loads with speed control
- High quality customizable graphics printing

Design Features:

- Designs concrete, hot rolled steel, cold formed steel and wood
- ACI 1999/2002, BS 8110-97, CSA A23.3-94, IS456:2000,EC 2-1992 with consistent bar sizes through adjacent spans
- Exact integration of concrete stress distributions using parabolic or rectangular stress blocks
- Concrete beam detailing (Rectangular, T and L)
- Concrete column interaction diagrams
- Steel Design Codes: AISC ASD 9th, LRFD 2nd & 3rd, HSS Specification, CAN/CSA-S16.1-1994 & 2004, BS 5950-1-2000, IS 800-1984, Euro 3-1993 including local shape databases
- AISI 1999 cold formed steel design
- NDS 1991/1997/2001 wood design, including Structural Composite Lumber, multi-ply, full sawn
- Automatic spectra generation for UBC 1997, IBC 2000/2003
- Generation of load combinations: ASCE, UBC, IBC, BOCA, SBC, ACI
- Unbraced lengths for physical members that recognize connecting elements and full lengths of members
- Automatic approximation of K factors
- Tapered wide flange design with either ASD or LRFD codes
- Optimization of member sizes for all materials and all design codes, controlled by standard or user-defined lists of available sizes and criteria such as maximum depths
- Automatic calculation of custom shape properties
- Steel Shapes: AISC, HSS, CAN, ARBED, British, Euro, Indian, Chilean
- Light Gage Shapes: AISI, SSMA, Dale / Incor, Dietrich, Marino\WARE
- Wood Shapes: Complete NDS species/grade database
- Full seamless integration with RISAFoot (Ver 2 or better) for advanced footing design and detailing
- Plate force summation tool

Results Features:

- Graphic presentation of color-coded results and plotted designs
- Color contours of plate stresses and forces with quadratic smoothing, the contours may also be animated
- Spreadsheet results with sorting and filtering of: reactions, member & joint deflections, beam & plate forces/stresses, optimized sizes, code designs, concrete reinforcing, material takeoffs, frequencies and mode shapes
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams that display magnitudes at any dialed location
- Saved solutions quickly restore analysis and design results.

Section 3

Calculations

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Branford, CT 06405 F: (203) 488-8587

Subject: Wind Load on Equipment per ASCE 7-10

Location: East Windsor, CT

Rev. 0: 12/18/18

Prepared by: F.J.P; Checked by: CAG
Job No. 18000.59

Design Wind Load on Other Structures:

(Based on IBC 2015, CSBC 2018 and ASCE 7-10)

Wind Speed =	$V := 125$	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := C$		(User Input)	
Height Above Grade =	$Z := 78$	ft	(User Input)	
Structure Type =	$Structuretype := Square\_Chimney$			
Structure Height =	$Height := 8$	ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 1.2$	ft	(User Input)	

Terrain Exposure Constants:

Nominal Height of the Atmospheric Boundary Layer = (Table 26.9-1)

$$zg := \begin{cases} 1200 & \text{if } Exp = B \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases} = 900$$

3-Sec Gust Speed Power Law Exponent = (Table 26.9-1)

$$\alpha := \begin{cases} 7 & \text{if } Exp = B \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases} = 9.5$$

Integral Length Scale Factor = (Table 26.9-1)

$$l := \begin{cases} 320 & \text{if } Exp = B \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases} = 500$$

Integral Length Scale Power Law Exponent = (Table 26.9-1)

$$E := \begin{cases} \frac{1}{3} & \text{if } Exp = B \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases} = 0.2$$

Turbulence Intensity Factor = (Table 26.9-1)

$$c := \begin{cases} 0.3 & \text{if } Exp = B \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases} = 0.2$$

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Exposure Constant =	$Z_{min} := \begin{cases} 30 & \text{if } Exp = B \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases} = 15$	(Table 26.9-1)
Exposure Coefficient =	$K_z := \begin{cases} 2.01 \cdot \left(\frac{Z}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } 15 \le Z \le zg \\ 2.01 \cdot \left(\frac{15}{zg}\right)^{\left(\frac{2}{\alpha}\right)} & \text{if } Z < 15 \end{cases} = 1.2$	(Table 29.3-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 43.24$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} Z_{min} & \text{if } Z_{min} > 0.6 \cdot Height \\ 0.6 \cdot Height & \text{else} \end{cases} = 15$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left(\frac{33}{z}\right)^{\left(\frac{1}{6}\right)} = 0.228$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_Z := l \cdot \left(\frac{z}{33}\right)^{E} = 427.057$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left(\frac{Width + Height}{L_Z}\right)^{0.63}}} = 0.973$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left(\frac{\left(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q\right)}{1 + 1.7 \cdot g_v \cdot I_z}\right) = 0.911$	(Eq. 26.9-6)
Force Coefficient =	$C_f = 1.394$	(Section 29.5-1)
Wind Force =	$F := q_z \cdot G \cdot C_f = 54.9$	psf

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	Kathrein 800-10121		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 54.5$	in	(User Input)
Antenna Width =	$W_{ant} := 10.3$	in	(User Input)
Antenna Thickness =	$T_{ant} := 5.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 44.1$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 3.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.9$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 214$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 2.2$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 2.2$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 123$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 44$	lbs

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	CCI HPA-65R-BUU-H8		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 92.4$	in	(User Input)
Antenna Width =	$W_{ant} := 14.8$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.4$	in	(User Input)
Antenna Weight =	$WT_{ant} := 68$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.5$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 522$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 4.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 4.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 261$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 68$	lbs

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Development of Wind on Antennas

Antenna Data:

Antenna Model =	CCI TPA-65R-LCUUUU-H8		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 96$	in	(User Input)
Antenna Width =	$W_{ant} := 14.4$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.6$	in	(User Input)
Antenna Weight =	$WT_{ant} := 75$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Wind Load (Front)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 9.6$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 9.6$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 527$	lbs

Wind Load (Side)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.7$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.7$	sf
Total Antenna Wind Force =	$F_{ant} := F \cdot A_{ant} = 315$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 75$	lbs

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Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	Ericsson 4478 B5		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 16.5$	in	(User Input)
RRH Width =	$W_{RRH} := 13.4$	in	(User Input)
RRH Thickness =	$T_{RRH} := 7.7$	in	(User Input)
RRH Weight =	$WT_{RRH} := 60$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.5$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.5$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 84$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 0.9$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 0.9$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 48$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 60$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	RRUS 12		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 20.4$	in	(User Input)
RRH Width =	$W_{RRH} := 18.5$	in	(User Input)
RRH Thickness =	$T_{RRH} := 7.4$	in	(User Input)
RRH Weight =	$WT_{RRH} := 58$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 2.6$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 2.6$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 144$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 58$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 58$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	RRUS A2		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 16.4$	in	(User Input)
RRH Width =	$W_{RRH} := 15.2$	in	(User Input)
RRH Thickness =	$T_{RRH} := 3.2$	in	(User Input)
RRH Weight =	$WT_{RRH} := 22$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 1.7$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.7$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 95$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 0.4$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 0.4$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 20$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 22$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	RRUS 32		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 27.17$	in	(User Input)
RRH Width =	$W_{RRH} := 12.05$	in	(User Input)
RRH Thickness =	$T_{RRH} := 7.01$	in	(User Input)
RRH Weight =	$WT_{RRH} := 52.91$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 2.3$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 2.3$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 125$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1.3$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1.3$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 73$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 53$	lbs

Development of Wind & Ice Load on RRHs

RRH Data:

RRH Model =	RRUS 11		
RRH Shape =	Flat		(User Input)
RRH Height =	$L_{RRH} := 19.68$	in	(User Input)
RRH Width =	$W_{RRH} := 16.97$	in	(User Input)
RRH Thickness =	$T_{RRH} := 7.16$	in	(User Input)
RRH Weight =	$WT_{RRH} := 50.70$	lbs	(User Input)
Number of RRHs =	$N_{RRH} := 1$		(User Input)

Wind Load (Front)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot W_{RRH}}{144} = 2.3$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 2.3$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 127$	lbs

Wind Load (Side)

Surface Area for One RRH =	$SA_{RRH} := \frac{L_{RRH} \cdot T_{RRH}}{144} = 1$	sf
RRH Projected Surface Area =	$A_{RRH} := SA_{RRH} \cdot N_{RRH} = 1$	sf
Total RRH Wind Force =	$F_{RRH} := F \cdot A_{RRH} = 54$	lbs

Gravity Load (without ice)

Weight of All RRHs =	$WT_{RRH} \cdot N_{RRH} = 51$	lbs

Development of Wind & Ice Load on TMAs

TMA Data:

TMA Model =	Powerwave LGP214-01		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 14.4$	in	(User Input)
TMA Width =	$W_{TMA} := 9.2$	in	(User Input)
TMA Thickness =	$T_{TMA} := 2.6$	in	(User Input)
TMA Weight =	$WT_{TMA} := 14.1$	lbs	(User Input)
Number of TMAs =	$N_{TMA} := 2$		(User Input)

Wind Load (Front)

Surface Area for One TMA=	$SA_{TMA} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.9$	sf
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 1.8$	sf
Total TMA Wind Force =	$F_{TMA} := F \cdot A_{TMA} = 101$	lbs

Wind Load (Side)

Surface Area for One TMA =	$SA_{TMA} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.3$	sf
TMA Projected Surface Area =	$A_{TMA} := SA_{TMA} \cdot N_{TMA} = 0.5$	sf
Total TMA Wind Force =	$F_{TMA} := F \cdot A_{TMA} = 29$	lbs

Gravity Load (without ice)

Weight of All TMA=	$WT_{TMA} \cdot N_{TMA} = 28$	lbs

Development of Wind & Ice Load on Surge Arrestors

Surge Arrestor Data:

Surge Arrestor Model =	Raycap DC6-48-60-18-8F		
Surge Arrestor Shape =	Flat		(User Input)
Surge Arrestor Height =	$L_{SA} := 17.91$	in	(User Input)
Surge Arrestor Width =	$W_{SA} := 10.24$	in	(User Input)
Surge Arrestor Thickness =	$T_{SA} := 10.4$	in	(User Input)
Surge Arrestor Weight =	$WT_{SA} := 26.2$	lbs	(User Input)
Number of Surge Arrestors =	$N_{SA} := 1$		(User Input)

Wind Load (Front)

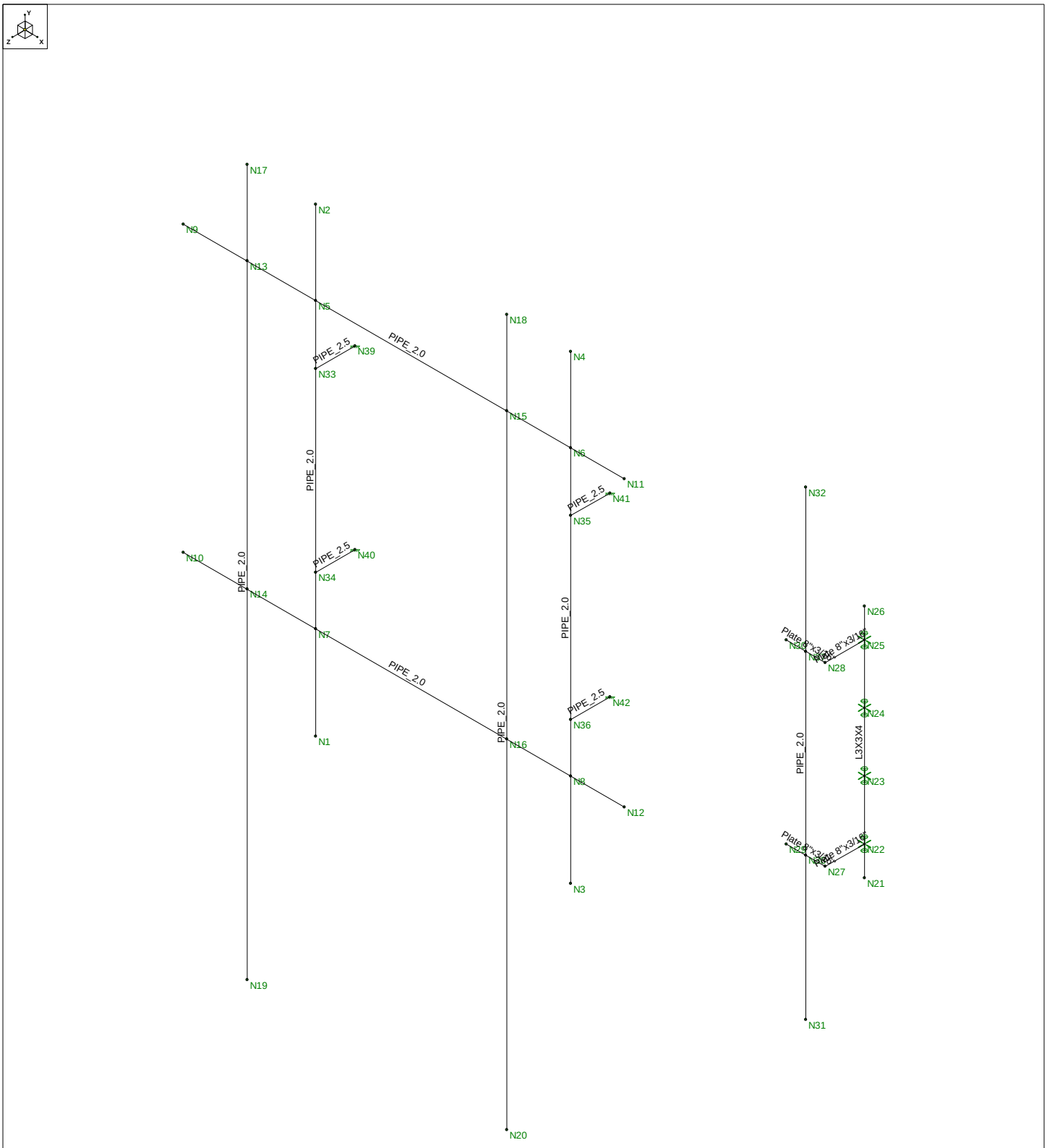
Surface Area for One Surge Arrestor=	$SA_{SA} := \frac{L_{SA} \cdot W_{SA}}{144} = 1.3$	sf
Surge Arrestor Projected Surface Area =	$A_{SA} := SA_{SA} \cdot N_{SA} = 1.3$	sf
Total Surge Arrestor Wind Force =	$F_{SA} := F \cdot A_{SA} = 70$	lbs

Wind Load (Side)

Surface Area for One Surge Arrestor =	$SA_{SA} := \frac{L_{SA} \cdot T_{SA}}{144} = 1.3$	sf
Surge Arrestor Projected Surface Area =	$A_{SA} := SA_{SA} \cdot N_{SA} = 1.3$	sf
Total Surge Arrestor Wind Force =	$F_{SA} := F \cdot A_{SA} = 71$	lbs

Gravity Load (without ice)

Weight of All Surge Arrestor=	$WT_{SA} \cdot N_{SA} = 26$	lbs



Envelope Only Solution

Centek Engineering		
FJP	Antenna Mount - CT5192	Jan 18, 2019 at 1:45 PM
18000.59	Member Framing	2018-1218_18000.59_CT5192.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Desig..A [in2]	Iyy [i...	Izz [i...	J [in4]
1	(E) Mast	PIPE_2.0	Colu...	Wide Fla...	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	(E)Outrigger	Plate 8"x3/16"	Beam	None	A36 Gr.36	Typical	1.5	.004	8	.017
3	L3x3x1/4	L3X3X4	Beam	Tube	A36 Gr.36	Typical	1.44	1.23	1.23	.031
4	(P) Vertical Pipes	PIPE_2.0	Colu...	Wide Fla...	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	(P) Horizontal Pipes	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	(P) Outrigger	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	(E) Mast	7.833	Segment	3	Lbyy						Lateral
2	M2	(E) Mast	7.833	Segment	3	Lbyy						Lateral
3	M3	(P) Horizo...	7.5	Segment		Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[..	Lcomp bot[..	L-torq...	Kyy	Kzz	Cb	Functi...
4	M4	(P) Horizo...	7.5	Segment		Lbyy						Lateral
5	M5	(P) Vertical...	12	Segment		Lbyy						Lateral
6	M6	(P) Vertical...	12	Segment		Lbyy						Lateral
7	M7	L3x3x1/4	4	Segment	3	Lbyy						Lateral
8	M8	(E)Outrigger	.667	Segment		Lbyy						Lateral
9	M9	(E)Outrigger	.667	Segment		Lbyy						Lateral
10	M10	(E)Outrigger	.667	Segment		Lbyy						Lateral
11	M11	(E)Outrigger	.667	Segment		Lbyy						Lateral
12	M12	(E) Mast	7.833	Segment	3	Lbyy						Lateral
13	M13	(P) Outrigg...	.667			Lbyy						Lateral
14	M14	(P) Outrigg...	.667			Lbyy						Lateral
15	M15	(P) Outrigg...	.667			Lbyy						Lateral
16	M16	(P) Outrigg...	.667			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			(E) Mast	Column	Wide Flange	A53 Gr.B	Typical
2	M2	N3	N4			(E) Mast	Column	Wide Flange	A53 Gr.B	Typical
3	M3	N9	N11			(P) Horizontal Pipes	Beam	Pipe	A53 Gr.B	Typical
4	M4	N10	N12			(P) Horizontal Pipes	Beam	Pipe	A53 Gr.B	Typical
5	M5	N17	N19			(P) Vertical Pipes	Column	Wide Flange	A53 Gr.B	Typical
6	M6	N18	N20			(P) Vertical Pipes	Column	Wide Flange	A53 Gr.B	Typical
7	M7	N21	N26			L3x3x1/4	Beam	Tube	A36 Gr.36	Typical
8	M8	N25	N28			(E)Outrigger	Beam	None	A36 Gr.36	Typical
9	M9	N28	N30			(E)Outrigger	Beam	None	A36 Gr.36	Typical
10	M10	N22	N27			(E)Outrigger	Beam	None	A36 Gr.36	Typical
11	M11	N27	N29			(E)Outrigger	Beam	None	A36 Gr.36	Typical
12	M12	N32	N31			(E) Mast	Column	Wide Flange	A53 Gr.B	Typical
13	M13	N34	N40			(P) Outrigger	Beam	Pipe	A53 Gr.B	Typical
14	M14	N33	N39			(P) Outrigger	Beam	Pipe	A53 Gr.B	Typical
15	M15	N35	N41			(P) Outrigger	Beam	Pipe	A53 Gr.B	Typical
16	M16	N36	N42			(P) Outrigger	Beam	Pipe	A53 Gr.B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
1	N1	-0.166667	-1.916667	0.666667	0	
2	N2	-0.166667	5.916667	0.666667	0	
3	N3	4.166667	-1.916667	0.666667	0	
4	N4	4.166667	5.916667	0.666667	0	
5	N5	-0.166667	4.5	0.666667	0	
6	N6	4.166667	4.5	0.666667	0	
7	N7	-0.166667	-0.333333	0.666667	0	
8	N8	4.166667	-0.333333	0.666667	0	
9	N9	-2.416667	4.5	0.666667	0	
10	N10	-2.416667	-0.333333	0.666667	0	
11	N11	5.083333	4.5	0.666667	0	
12	N12	5.083333	-0.333333	0.666667	0	
13	N13	-1.333333	4.5	0.666667	0	
14	N14	-1.333333	-0.333333	0.666667	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diaphragm
15	N15	3.083333	4.5	0.666667	0	
16	N16	3.083333	-0.333333	0.666667	0	
17	N17	-1.333333	5.916667	0.666667	0	
18	N18	3.083333	5.916667	0.666667	0	
19	N19	-1.333333	-6.083333	0.666667	0	
20	N20	3.083333	-6.083333	0.666667	0	
21	N21	8.5	0	0	0	
22	N22	8.5	.5	0	0	
23	N23	8.5	1.5	0	0	
24	N24	8.5	2.5	0	0	
25	N25	8.5	3.5	0	0	
26	N26	8.5	4	0	0	
27	N27	8.5	.5	0.666667	0	
28	N28	8.5	3.5	0.666667	0	
29	N29	7.833333	.5	0.666667	0	
30	N30	7.833333	3.5	0.666667	0	
31	N31	8.166667	-1.916667	0.666667	0	
32	N32	8.166667	5.916667	0.666667	0	
33	N33	-0.166667	3.5	0.666667	0	
34	N34	-0.166667	.5	0.666667	0	
35	N35	4.166667	3.5	0.666667	0	
36	N36	4.166667	.5	0.666667	0	
37	N37	8.166667	3.5	0.666667	0	
38	N38	8.166667	.5	0.666667	0	
39	N39	-0.166667	3.5	0	0	
40	N40	-0.166667	.5	0	0	
41	N41	4.166667	3.5	0	0	
42	N42	4.166667	.5	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N22	Reaction	Reaction	Reaction		Reaction	
2	N23	Reaction	Reaction	Reaction		Reaction	
3	N24	Reaction	Reaction	Reaction		Reaction	
4	N25	Reaction	Reaction	Reaction		Reaction	
5	N39	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N40	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N41	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N42	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Weight of Equipment)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M12	Y	-.022	1
2	M12	Y	-.022	5.5
3	M12	Y	-.028	1.667
4	M6	Y	-.037	1
5	M6	Y	-.037	7.75
6	M6	Y	-.053	10.25
7	M6	Y	-.06	10

Member Point Loads (BLC 2 : Weight of Equipment) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
8	M5	Y	-.034	1
9	M5	Y	-.034	7.75
10	M5	Y	-.051	9.75
11	M5	Y	-.026	10.417
12	M5	Y	-.08	10

Member Point Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M12	X	-.061	1
2	M12	X	-.061	5.5
3	M12	X	-.101	1.667
4	M6	X	-.159	1
5	M6	X	-.159	7.75
6	M6	X	-.125	10.25
7	M6	X	-.084	10
8	M5	X	-.131	1
9	M5	X	-.131	7.75
10	M5	X	-.054	9.75
11	M5	X	-.071	10.417
12	M5	X	-.078	10

Member Point Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M12	Z	-.107	1
2	M12	Z	-.107	5.5
3	M12	Z	-.029	5.5
4	M6	Z	-.264	1
5	M6	Z	-.264	7.75
6	M6	Z	-.073	10.25
7	M6	Z	-.048	10
8	M5	Z	-.261	1
9	M5	Z	-.261	7.75
10	M5	Z	-.127	9.75
11	M5	Z	-.071	10.417
12	M5	Z	-.144	10

Member Distributed Loads (BLC 3 : Wind X-Direction)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,...	Start Location...	End Location[...
1	M5	X	-.011	-.011	0	0
2	M6	X	-.011	-.011	0	0
3	M12	X	-.011	-.011	0	0
4	M8	X	-.037	-.037	0	0
5	M10	X	-.037	-.037	0	0
6	M1	X	-.011	-.011	0	0
7	M2	X	-.011	-.011	0	0
8	M7	X	-.014	-.014	0	0
9	M13	X	-.013	-.013	0	0
10	M14	X	-.013	-.013	0	0
11	M15	X	-.013	-.013	0	0

Member Distributed Loads (BLC 3 : Wind X-Direction) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,...	Start Location...	End Location[...
12	M16	X	-.013	-.013	0	0

Member Distributed Loads (BLC 4 : Wind Z-Direction)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,...	Start Location...	End Location[...
1	M5	Z	-.011	-.011	0	0
2	M6	Z	-.011	-.011	0	0
3	M12	Z	-.011	-.011	0	0
4	M9	Z	-.037	-.037	0	0
5	M11	Z	-.037	-.037	0	0
6	M3	Z	-.011	-.011	0	0
7	M4	Z	-.011	-.011	0	0
8	M1	Z	-.011	-.011	0	0
9	M2	Z	-.011	-.011	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gr...	Joint	Point	Distri...	Area(...	Surface(Plate/Wall)
1	Self Weight	DL		-1						
2	Weight of Equipment	DL					12			
3	Wind X-Direction	WLX					12	12		
4	Wind Z-Direction	WLZ					12	9		

Load Combinations

	Description	Solve	PD...	SR...	B...	F...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	IBC 16-8	Yes	Y		DL	1																				
2	IBC 16-9	Yes	Y		DL	1	LL	1	L...	1																
3	IBC 16-10 (a)	Yes	Y		DL	1	RLL	1																		
4	IBC 16-11 (a)	Yes	Y		DL	1	LL	.75	L...	.75	R...	.75														
5	IBC 16-12 (a) (a)	Yes	Y		DL	1	WLX	.6																		
6	IBC 16-12 (a) (b)	Yes	Y		DL	1	WLZ	.6																		
7	IBC 16-12 (a) (c)	Yes	Y		DL	1	WLX	-.6																		
8	IBC 16-12 (a) (d)	Yes	Y		DL	1	WLZ	-.6																		
9	IBC 16-13 (a) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	L...	.75	R...	.75												
10	IBC 16-13 (a) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	L...	.75	R...	.75												
11	IBC 16-13 (a) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	L...	.75	R...	.75												
12	IBC 16-13 (a) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	L...	.75	R...	.75												
13	IBC 16-13 (b) (a)	Yes	Y		DL	1	WLX	.45	LL	.75	L...	.75														
14	IBC 16-13 (b) (b)	Yes	Y		DL	1	WLZ	.45	LL	.75	L...	.75														
15	IBC 16-13 (b) (c)	Yes	Y		DL	1	WLX	-.45	LL	.75	L...	.75														
16	IBC 16-13 (b) (d)	Yes	Y		DL	1	WLZ	-.45	LL	.75	L...	.75														
17	IBC 16-15 (a)	Yes	Y		DL	.6	WLX	.6																		
18	IBC 16-15 (b)	Yes	Y		DL	.6	WLZ	.6																		
19	IBC 16-15 (c)	Yes	Y		DL	.6	WLX	-.6																		
20	IBC 16-15 (d)	Yes	Y		DL	.6	WLZ	-.6																		

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N22	max	.042	17	.167	5	.14	6	0	20	.037	17	0	20
2		min	-.066	7	-.069	19	-.069	20	0	1	-.048	7	0	1
3	N23	max	.025	5	.005	16	.041	19	0	20	0	20	0	20
4		min	-.014	19	.003	17	-.139	5	0	1	0	1	0	1
5	N24	max	-.003	19	.005	16	.147	7	0	20	0	20	0	20
6		min	-.008	5	.003	17	-.048	17	0	1	0	1	0	1
7	N25	max	.196	5	.168	7	.109	18	0	20	.096	5	0	20
8		min	-.173	19	-.069	17	-.181	8	0	1	-.092	19	0	1
9	N39	max	.101	5	1.187	6	.026	18	.265	20	.071	6	-.007	17
10		min	-.065	19	-.864	20	-.054	8	-.437	6	-.051	20	-.031	7
11	N40	max	.391	17	1.192	8	.876	6	.099	20	.234	17	.099	17
12		min	-.427	7	-.869	18	-.853	20	-.273	6	-.253	7	-.141	7
13	N41	max	.075	5	.602	6	.06	18	.103	20	.05	5	-.004	17
14		min	-.036	19	-.438	20	-.076	8	-.192	6	-.027	19	-.033	7
15	N42	max	.329	17	.599	8	.313	6	.041	19	.195	17	.093	17
16		min	-.367	7	-.433	18	-.299	20	-.131	5	-.217	7	-.135	7
17	Totals:	max	1.126	17	.75	16	1.495	18						
18		min	-1.126	7	.45	17	-1.495	8						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	.025	7	.003	20	.185	20	7.3e-03	18	2.943e-03	20	7.742e-04	7
2		min	-.01	17	-.005	6	-.188	18	-7.192e-03	20	-2.946e-03	18	-1.941e-04	17
3	N2	max	.007	17	.002	20	.046	8	1.916e-03	8	6.046e-04	8	9.367e-04	7
4		min	-.021	7	-.003	6	-.042	18	-1.78e-03	18	-5.98e-04	6	-3.51e-04	17
5	N3	max	.028	7	.001	20	.091	20	3.684e-03	6	9.281e-04	20	9.087e-04	7
6		min	-.013	17	-.002	6	-.093	6	-3.611e-03	20	-9.268e-04	18	-3.449e-04	17
7	N4	max	.005	17	0	20	.035	8	1.437e-03	8	2.9e-04	8	8.257e-04	7
8		min	-.019	7	-.001	6	-.032	18	-1.347e-03	18	-2.883e-04	6	-2.564e-04	17
9	N5	max	0	17	.002	20	.013	8	1.885e-03	8	6.046e-04	8	9.677e-04	7
10		min	-.005	7	-.003	6	-.011	18	-1.749e-03	18	-5.98e-04	6	-3.819e-04	17
11	N6	max	0	17	0	20	.01	8	1.406e-03	8	2.9e-04	8	8.566e-04	7
12		min	-.005	7	-.001	6	-.009	18	-1.316e-03	18	-2.883e-04	6	-2.873e-04	17
13	N7	max	.011	7	.003	20	.048	20	7.257e-03	18	2.943e-03	20	7.31e-04	7
14		min	-.007	17	-.005	6	-.05	6	-7.149e-03	20	-2.946e-03	18	-1.509e-04	17
15	N8	max	.011	7	.001	20	.023	20	3.641e-03	6	9.281e-04	20	8.656e-04	7
16		min	-.007	17	-.002	6	-.024	6	-3.568e-03	20	-9.268e-04	18	-3.017e-04	17
17	N9	max	0	17	.015	17	.056	8	3.121e-03	8	1.891e-03	8	1.331e-03	7
18		min	-.005	7	-.044	7	-.054	18	-3.042e-03	18	-1.878e-03	6	-3.853e-04	17
19	N10	max	.011	7	.044	17	.198	20	1.211e-02	18	5.938e-03	20	3.538e-03	7
20		min	-.007	17	-.073	7	-.199	18	-1.203e-02	20	-5.944e-03	18	-2.575e-03	17
21	N11	max	0	17	.009	7	.007	8	1.406e-03	8	2.816e-04	8	8.522e-04	7
22		min	-.005	7	-.004	17	-.006	18	-1.316e-03	18	-2.799e-04	6	-2.9e-04	17
23	N12	max	.011	7	.01	7	.013	20	3.641e-03	6	9.198e-04	20	8.612e-04	7
24		min	-.007	17	-.004	17	-.014	6	-3.568e-03	20	-9.185e-04	18	-3.043e-04	17
25	N13	max	0	17	.01	17	.032	8	3.121e-03	8	1.877e-03	8	1.324e-03	7
26		min	-.005	7	-.026	7	-.029	18	-3.042e-03	18	-1.864e-03	6	-3.897e-04	17
27	N14	max	.011	7	.011	17	.121	20	1.211e-02	18	5.924e-03	20	3.531e-03	7
28		min	-.007	17	-.027	7	-.122	18	-1.203e-02	20	-5.93e-03	18	-2.579e-03	17

Envelope Joint Displacements (Continued)

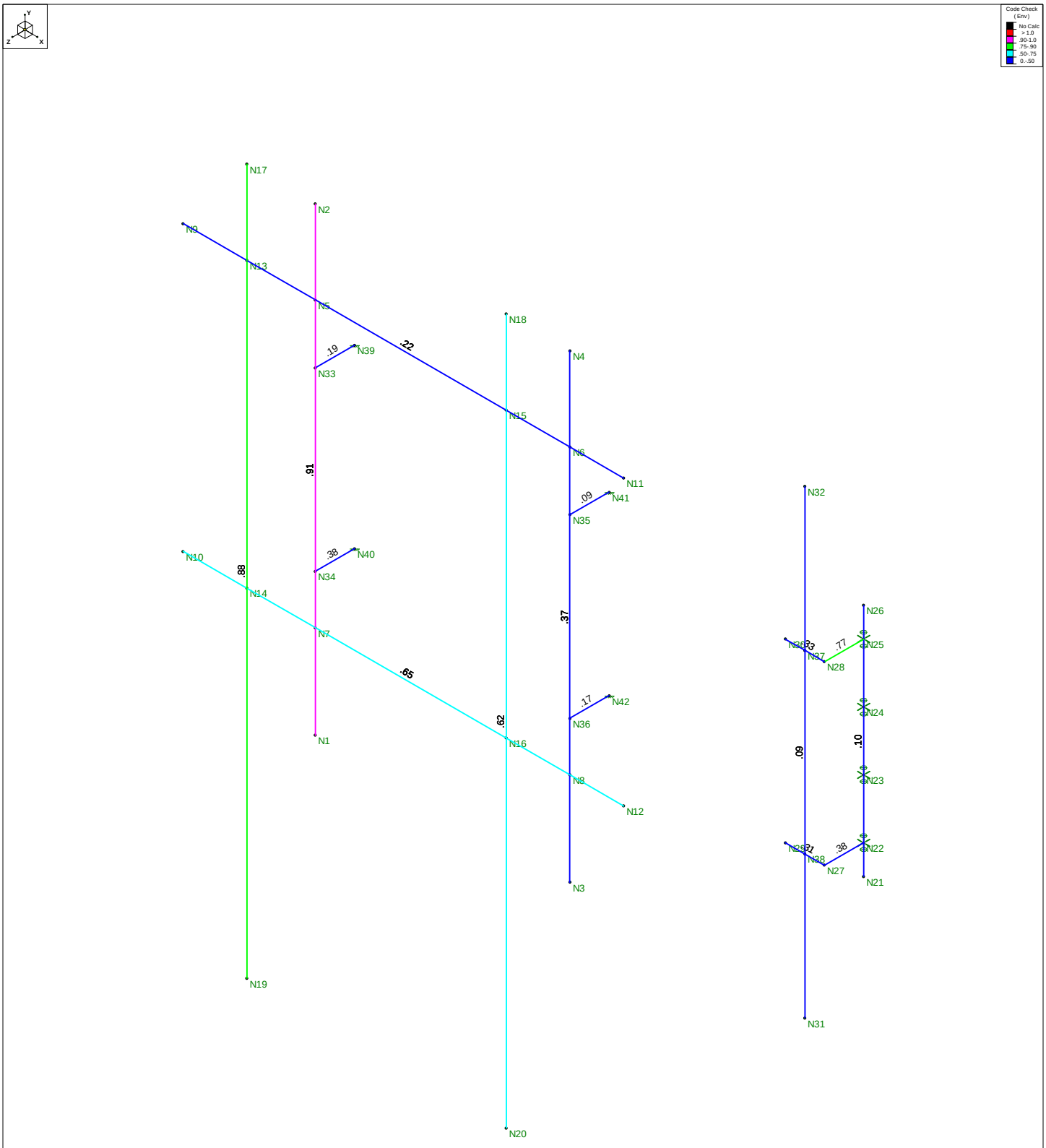
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotation [...	LC	Z Rotation [...	LC
29	N15	max	0	17	.004	17	.014	8	2.259e-03	8	1.556e-04	8	2.109e-04	7
30		min	-.005	7	-.012	7	-.013	18	-2.194e-03	18	-1.4e-04	18	1.794e-05	17
31	N16	max	.011	7	.004	17	.035	20	6.385e-03	18	4.429e-04	20	1.849e-03	7
32		min	-.007	17	-.013	7	-.036	6	-6.33e-03	20	-4.538e-04	6	-1.611e-03	17
33	N17	max	.006	17	.01	17	.087	8	3.288e-03	8	1.877e-03	8	1.226e-03	7
34		min	-.026	7	-.026	7	-.084	18	-3.208e-03	18	-1.864e-03	6	-2.915e-04	17
35	N18	max	-.001	17	.004	17	.055	8	2.427e-03	8	1.556e-04	8	1.877e-04	5
36		min	-.007	7	-.012	7	-.053	18	-2.361e-03	18	-1.4e-04	18	4.103e-05	19
37	N19	max	.878	7	.011	17	1.921	20	2.978e-02	18	5.924e-03	20	1.501e-02	7
38		min	-.815	17	-.028	7	-1.927	18	-2.971e-02	20	-5.93e-03	18	-1.421e-02	17
39	N20	max	.806	19	.004	17	.975	20	1.551e-02	18	4.429e-04	20	1.422e-02	19
40		min	-.791	17	-.013	7	-.979	18	-1.545e-02	20	-4.538e-04	6	-1.404e-02	17
41	N21	max	0	5	0	20	0	19	2.656e-04	5	0	20	1.546e-04	5
42		min	0	19	0	1	-.002	5	-1.246e-04	19	0	1	-7.536e-05	19
43	N22	max	0	20	0	20	0	20	2.664e-04	5	0	20	1.56e-04	5
44		min	0	1	0	1	0	1	-1.254e-04	19	0	1	-7.674e-05	19
45	N23	max	0	20	0	20	0	20	3.87e-05	19	0	20	2.77e-05	19
46		min	0	1	0	1	0	1	-6.311e-05	5	0	1	-4.361e-05	5
47	N24	max	0	20	0	20	0	20	3.756e-05	17	0	20	2.4e-05	17
48		min	0	1	0	1	0	1	-6.265e-05	7	0	1	-4.038e-05	7
49	N25	max	0	20	0	20	0	20	2.657e-04	7	0	20	1.354e-04	7
50		min	0	1	0	1	0	1	-1.221e-04	17	0	1	-5.472e-05	17
51	N26	max	0	17	0	20	.002	7	2.648e-04	7	0	20	1.34e-04	7
52		min	0	7	0	1	0	17	-1.213e-04	17	0	1	-5.334e-05	17
53	N27	max	.143	8	.001	19	0	20	2.918e-04	5	3.491e-02	8	3.072e-03	5
54		min	-.138	18	-.002	5	0	6	-1.365e-04	19	-3.498e-02	18	-2.162e-03	19
55	N28	max	.215	19	.001	17	0	8	2.94e-04	7	3.79e-02	19	3.914e-03	5
56		min	-.217	5	-.002	7	0	18	-1.36e-04	17	-3.888e-02	6	-2.999e-03	19
57	N29	max	.143	8	.018	19	.338	8	6.174e-04	19	4.393e-02	8	3.067e-03	5
58		min	-.138	18	-.027	5	-.35	18	-7.661e-04	5	-4.59e-02	18	-2.16e-03	19
59	N30	max	.215	19	.022	19	.34	20	1.18e-03	20	4.401e-02	20	3.918e-03	5
60		min	-.217	5	-.031	5	-.361	6	-1.394e-03	6	-4.611e-02	6	-3.007e-03	19
61	N31	max	.155	8	.01	19	.184	8	6.171e-04	19	4.373e-02	8	2.91e-03	5
62		min	-.121	18	-.015	5	-.182	18	-8.01e-04	8	-4.571e-02	18	-2.004e-03	19
63	N32	max	.319	19	.01	19	.217	20	1.973e-03	20	4.382e-02	20	4.613e-03	5
64		min	-.347	5	-.015	5	-.235	6	-2.188e-03	6	-4.592e-02	6	-3.699e-03	19
65	N33	max	0	20	.002	20	0	8	2.003e-04	7	1.572e-04	20	9.182e-05	7
66		min	0	6	-.003	6	0	18	-1.288e-05	17	-1.81e-04	6	1.978e-05	17
67	N34	max	.003	8	.003	20	0	20	1.523e-03	6	6.798e-04	8	4.189e-04	7
68		min	-.003	18	-.004	6	0	6	-1.343e-03	20	-6.599e-04	18	-2.937e-04	17
69	N35	max	0	20	0	20	0	8	1.48e-04	8	7.141e-05	20	9.884e-05	7
70		min	0	6	-.001	6	0	18	-4.802e-05	18	-9.679e-05	6	1.28e-05	17
71	N36	max	.002	7	.001	20	0	20	6.872e-04	6	2.708e-04	7	4.025e-04	7
72		min	-.002	17	-.002	6	0	6	-5.905e-04	20	-2.465e-04	17	-2.781e-04	17
73	N37	max	.215	19	.01	19	.164	20	1.18e-03	20	4.382e-02	20	3.918e-03	5
74		min	-.217	5	-.015	5	-.176	6	-1.394e-03	6	-4.592e-02	6	-3.007e-03	19
75	N38	max	.143	8	.01	19	.162	8	6.174e-04	19	4.373e-02	8	3.067e-03	5
76		min	-.138	18	-.015	5	-.166	18	-7.661e-04	5	-4.571e-02	18	-2.16e-03	19
77	N39	max	0	20	0	20	0	20	0	20	0	20	0	20
78		min	0	1	0	1	0	1	0	1	0	1	0	1
79	N40	max	0	20	0	20	0	20	0	20	0	20	0	20
80		min	0	1	0	1	0	1	0	1	0	1	0	1

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotatio...	LC	Y Rotation [...	LC	Z Rotation [...	LC
81	N41	max	0	20	0	20	0	20	0	20	0	20	0	20
82		min	0	1	0	1	0	1	0	1	0	1	0	1
83	N42	max	0	20	0	20	0	20	0	20	0	20	0	20
84		min	0	1	0	1	0	1	0	1	0	1	0	1

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Me...	Shape	Code C...	Loc...	LC	Shear C...	Loc[ft]	Dir	LC	Pnc/o...	Pnt/o...	Mnyy/...	Mnzz...	Cb	Eqn
1	M1	PIPE_2.0	.912	2.3...	20	.359	2.366		18	19.191	21.377	1.245	1.245	2.079	H3-6
2	M2	PIPE_2.0	.368	2.3...	8	.114	2.366		6	19.191	21.377	1.245	1.245	2.06	H1-1b
3	M3	PIPE_2.0	.224	2.1...	7	.122	2.188		6	10.891	21.377	1.245	1.245	1.962	H1-1b
4	M4	PIPE_2.0	.650	2.1...	8	.458	2.188		20	10.891	21.377	1.245	1.245	2.045	H3-6
5	M5	PIPE_2.0	.884	6.25	18	.136	6.25		18	4.545	21.377	1.245	1.245	1.798	H1-1b
6	M6	PIPE_2.0	.617	6.25	17	.047	6.25		18	4.545	21.377	1.245	1.245	4.181	H1-1b
7	M7	L3X3X4	.097	3.5	7	.013	2.5	z	7	29.53	31.042	1.123	2.499	2.815	H2-1
8	M8	Plate 8"x3/16"	.769	0	5	.084	.667	y	5	6.949	32.335	.126	4.753	1.573	H1-1b
9	M9	Plate 8"x3/16"	.329	0	8	.064	0	y	6	9.043	32.335	.126	4.743	1.57	H1-1b
10	M10	Plate 8"x3/16"	.383	0	7	.071	0	y	5	6.949	32.335	.126	5.276	1.747	H1-1b
11	M11	Plate 8"x3/16"	.313	0	6	.055	0	y	5	9.043	32.335	.126	4.796	1.588	H1-1b
12	M12	PIPE_2.0	.091	2.3...	5	.020	2.448		5	19.191	21.377	1.245	1.245	3.176	H1-1b
13	M13	PIPE_2.5	.381	0	8	.127	.667		8	33.62	33.743	2.393	2.393	1.598	H1-1b
14	M14	PIPE_2.5	.185	.667	6	.126	.667		6	33.62	33.743	2.393	2.393	2.235	H1-1b
15	M15	PIPE_2.5	.088	0	6	.073	.667		6	33.62	33.743	2.393	2.393	2.254	H1-1b
16	M16	PIPE_2.5	.172	0	8	.101	.667		7	33.62	33.743	2.393	2.393	1.671	H1-1b



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek Engineering		
FJP	Antenna Mount - CT5192	Jan 21, 2019 at 9:11 AM
18000.59	Member Unity Check	2018-1218_18000.59_CT5192.r3d

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Existing Connection to Water Tank

Location: East Windsor, CT

Rev. 0: 12/20/18

Prepared by: F.J.P; Checked by: C.A.G.
Job No. 18000.59

Connection to Tank:

Reactions at Tank Wall Connection : Wind X-Direction

Horizontal X = $Horizontal_x := .167 \cdot kip$

Vertical = $Vertical := .168\ kip$

Horizontal Z = $Horizontal_z := .128\ kip$

Moment X = $Mx := 0 \cdot ft \cdot kip$

Moment Y = $My := .09 \cdot ft \cdot kip$

Moment Z = $Mz := 0 \cdot ft \cdot kip$

Stud Data: 5/16" Stainless Steel Stud Weld

Allowable Load in Tension = $T_{all} := 0.6 \cdot 1572\ lbf = 943.2\ lbf$

Allowable Load in Shear = $V_{all} := 0.6 \cdot 2740\ lbf = 1644\ lbf$

Check Studs:

Tension Force Each Stud = $T_{Act} := Horizontal_z = 128\ lbf$

Condition 1 = $Condition1 := \mathbf{if}\left(T_{Act} \le T_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition1 = “OK”

Shear Force Each Stud $V_{Act} := Horizontal_x + Vertical = 335\ lbf$

Condition 2 = $Condition2 := \mathbf{if}\left(V_{Act} \le V_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition2 = “OK”

Combined = $Condition3 := \mathbf{if}\left(\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} \le 1.0, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition3 = “OK”

$$\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} = 33.9\%$$

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
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Location: East Windsor, CT

Rev. 0: 12/20/18

Prepared by: F.J.P; Checked by: C.A.G.
Job No. 18000.59

Connection to Tank:

Reactions at Tank Wall Connection : Wind Z-Direction

Horizontal X = $Horizontal_x := .014 \cdot kip$

Vertical = $Vertical := .059\ kip$

Horizontal Z = $Horizontal_z := .181\ kip$

Moment X = $Mx := 0 \cdot ft \cdot kip$

Moment Y = $My := .032 \cdot ft \cdot kip$

Moment Z = $Mz := 0 \cdot ft \cdot kip$

Stud Data: 5/16" Stainless Steel Stud Weld

Allowable Load in Tension = $T_{all} := 0.6 \cdot 1572\ lbf = 943.2\ lbf$

Allowable Load in Shear = $V_{all} := 0.6 \cdot 2740\ lbf = 1644\ lbf$

Check Studs:

Tension Force Each Stud = $T_{Act} := Horizontal_z = 181\ lbf$

Condition 1 = $Condition1 := \mathbf{if}\left(T_{Act} \le T_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition1 = “OK”

Shear Force Each Stud $V_{Act} := Horizontal_x + Vertical = 73\ lbf$

Condition 2 = $Condition2 := \mathbf{if}\left(V_{Act} \le V_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition2 = “OK”

Combined = $Condition3 := \mathbf{if}\left(\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} \le 1.0, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition3 = “OK”

$$\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} = 23.6\%$$

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Proposed Connection to Water Tank

Location: East Windsor, CT

Rev. 0: 12/20/18

Prepared by: F.J.P; Checked by: C.A.G.
Job No. 18000.59

Connection to Tank:

Reactions at Tank Wall Connection : Wind X-Direction

Horizontal X = $Horizontal_x := .430 \cdot kip$

Vertical = $Vertical := .268\ kip$

Horizontal Z = $Horizontal_z := .014\ kip$

Moment X = $Mx := .136 \cdot ft \cdot kip$

Moment Y = $My := .253 \cdot ft \cdot kip$

Moment Z = $Mz := .141 \cdot ft \cdot kip$

Stud Data: 3/8" Stainless Steel Stud Weld

Number of Studs= $n_b := 12$

Allowable Load in Tension = $T_{all} := 0.6 \cdot 2325\ lbf = 1395\ lbf$

Allowable Load in Shear = $V_{all} := 0.6 \cdot 4058\ lbf = 2434.8\ lbf$

Distance to Studs 1= $D_1 := 1\ in$

Distance to Studs 2= $D_2 := 3\ in$

Number of Studs 1= $N_1 := 4$

Number of Studs 2= $N_2 := 8$

Polar Moment of Inertia= $I_p := \left(D_1^{\ 2} \cdot N_1\right) + \left(D_2^{\ 2} \cdot N_2\right) = 76\ in^2$

Check Studs:

Tension Force Each Stud = $T_{Act} := \frac{Horizontal_z}{n_b} + \frac{Mx \cdot D_2}{I_p} + \frac{My \cdot D_2}{I_p} = 185.43\ lbf$

Condition 1 = $Condition1 := if\left(T_{Act} \le T_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition1 = “OK”

Shear Force Each Stud $V_{Act} := \frac{Horizontal_x}{n_b} + \frac{Vertical}{n_b} + \frac{Mz \cdot D_2}{I_p} = 124.96\ lbf$

Condition 2 = $Condition2 := if\left(V_{Act} \le V_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition2 = “OK”

Combined = $Condition3 := if\left(\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} \le 1.0, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition3 = “OK”

$\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} = 18.4\%$

CENTEK engineering
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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: Proposed Connection to Water Tank

Location: East Windsor, CT

Rev. 0: 12/20/18

Prepared by: F.J.P; Checked by: C.A.G.
Job No. 18000.59

Connection to Tank:

Reactions at Tank Wall Connection : Wind Z-Direction

Horizontal X = $Horizontal_x := .065 \cdot kip$

Vertical = $Vertical := .782\ kip$

Horizontal Z = $Horizontal_z := .876\ kip$

Moment X = $Mx := .273 \cdot ft \cdot kip$

Moment Y = $My := .207 \cdot ft \cdot kip$

Moment Z = $Mz := .033 \cdot ft \cdot kip$

Stud Data: 3/8" Stainless Steel Stud Weld

Number of Studs= $n_b := 12$

Allowable Load in Tension = $T_{all} := 0.6 \cdot 2325\ lbf = 1395\ lbf$

Allowable Load in Shear = $V_{all} := 0.6 \cdot 4058\ lbf = 2434.8\ lbf$

Distance to Studs 1= $D_1 := 1\ in$

Distance to Studs 2= $D_2 := 3\ in$

Number of Studs 1= $N_1 := 4$

Number of Studs 2= $N_2 := 8$

Polar Moment of Inertia= $I_p := \left(D_1^{\,2} \cdot N_1\right) + \left(D_2^{\,2} \cdot N_2\right) = 76\ in^2$

Check Studs:

Tension Force Each Stud = $T_{Act} := \frac{Horizontal_z}{n_b} + \frac{Mx \cdot D_2}{I_p} + \frac{My \cdot D_2}{I_p} = 300.37\ lbf$

Condition 1 = $Condition1 := \mathbf{if}\left(T_{Act} \le T_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition1 = “OK”

Shear Force Each Stud $V_{Act} := \frac{Horizontal_x}{n_b} + \frac{Vertical}{n_b} + \frac{Mz \cdot D_2}{I_p} = 86.21\ lbf$

Condition 2 = $Condition2 := \mathbf{if}\left(V_{Act} \le V_{all}, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition2 = “OK”

Combined = $Condition3 := \mathbf{if}\left(\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} \le 1.0, \text{“OK”}, \text{“NG”}\right) = \text{“OK”}$

Condition3 = “OK”

$\frac{T_{Act}}{T_{all}} + \frac{V_{Act}}{V_{all}} = 25.1\%$

Section 4

Reference Materials

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTL05192	DATE:	03/19/2018	RF DESIGN ENG:	Rahimuddin Mohammed
ISSUE:	BRONZE STANDARD	Approved? (Y/N):	Yes	RF DESIGN PHONE:	202 999 2776
REVISION:	Final	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	rx855w@att.com
INITIATIVE /PROJECT:	LTE 3C[WCS], LTE 4C[850 B(U)]				

RF PERF ENG:		RFDS PROGRAM TYPE:	2018 LTE Next Carrier		
RF PERF PHONE:		RFDS TECHNOLOGY:	LTE		
RF PERF EMAIL:		STATE/STATUS:	Final/Approved		
RFDS VERSION:	4.00	RFDS ID:	2287555		
GSM FREQUENCY:		Created By:	rx855w	Updated By:	rx855w
UMTS FREQUENCY:	850, 1900	Date Created:	3/19/2018 10:32:50 AM	Date Updated:	1/2/2019 2:39:35 PM
LTE FREQUENCY:	700, 850, 1900, WCS				
5G FREQUENCY:	850				
I-PLAN JOB # 1:	NER-RCTB-17-07932	IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 3C		
I-PLAN JOB # 2:	NER-RCTB-18-02565	IPLAN PRD GRP || SUB GRP #2:	LTE Next Carrier || LTE 4C		
I-PLAN JOB # 3:		IPLAN PRD GRP || SUB GRP #3:			
I-PLAN JOB # 4:		IPLAN PRD GRP || SUB GRP #4:			
I-PLAN JOB # 5:		IPLAN PRD GRP || SUB GRP #5:			
I-PLAN JOB # 6:		IPLAN PRD GRP || SUB GRP #6:			
I-PLAN JOB # 7:		IPLAN PRD GRP || SUB GRP #7:			
I-PLAN JOB # 8:		IPLAN PRD GRP || SUB GRP #8:			

Section 2 - LOCATION INFORMATION

USID:	4566	FA LOCATION CODE:	10071335	LOCATION NAME:	WINDSOR LOCKS NORTH
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT
ADDRESS:	104 PROSPECT HILL ROAD	CITY:	EAST WINDSOR	STATE:	CT
ZIP CODE:	06088	COUNTY:	HARTFORD	LONG (DEC. DEG.):	-72.6046989
LATITUDE (D-M-S):	41d 55m 36.09084s	LONGITUDE (D-M-S):	-72d -36m -16.91604s	LAT (DEC. DEG.):	41.9266919
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	I-91 NORTH TO EXIT 44,BEAR NORTH AT THE END OF THE EXIT,WHICH IS PROSPECT HILL ROAD.GO ABOUT 6/10TNTHS OF MILE,THE ACCESS ROAD IS ON THE RIGHT.THE ACCESS ROAD IS RIGHT AFTER YOU PASS THE KETTLE BROOK CARE CENTER. DEMARC IS IN THE TELCO BOX INSIDE OF GATE AREA.. GATE COMBO:9110,1452,2500SHELTER;GROUND LEVELCIPHER LOCK;3534 AND MASTER CODEON LTE ALARMS:7/6/14LTE RADIOS;ON WATER TANKADDRESS: 104 PROSPECT HILL ROAD,EAST WINDSOR,CT.ACCESS : WATER COMPANY ASKING FOR 48 HOUR NOTICE FOR ROUTINE WORK,AT NIGHT YOU CAN GO IN JUST CALL AND LEAVE A MESSAGE ON AL'S VOICEMAIL THAT YOU WERE AT THE SITECONTACT: 860-669-8630 X 3057;AL-DAYTIME ONLYSECURITY: NO ISSUESPOWER COMPANY: NORTHEAST UTILITIES (800) 286-2000METER:089-085-359FIRE: (860) 745-1878 POLICE: (860) 763-6400T-1:GSM:HCGS-737362-ET-107T-1:GSM:HCGS:727136-ET-52UMTS:ON FIBER				

ORACLE PTN # 1:	2051A0GJ88	PACE JOB # 1:	MRCTB031263		
ORACLE PTN # 2:	2051A0GH6G	PACE JOB # 2:	MRCTB031582		
ORACLE PTN # 3:		PACE JOB # 3:			
ORACLE PTN # 4:		PACE JOB # 4:			
ORACLE PTN # 5:		PACE JOB # 5:			
ORACLE PTN # 6:		PACE JOB # 6:			
ORACLE PTN # 7:		PACE JOB # 7:			
ORACLE PTN # 8:		PACE JOB # 8:			
BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:			
AM STUDY REQ'D (Y/N):	No	SEARCH_RING_ID:			
FREQ COORD:		BTA:		MSA / RSA:	
OPS DISTRICT:	CT-North	LAC(GSM):			
OPS ZONE:	NE_CT_N_TLDN_N_CS	LAC(UMTS):	05993		
RF DISTRICT:	NPO Triage	BSC(GSM):			
RF ZONE:	Hotseat	RNC(UMTS):	MDTWCTNICR0R04		
PARENT NAME(GSM):		MME POOL ID(LTE):	FF01		
PARENT NAME(UMTS):	MIDDLETOWN RNC04				

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:	
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:			

CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):		STRUCTURE TYPE:	WATER TANK
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	140.00	FCC ASR NUMBER:	NR
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	140.00		
LIGHTING TYPE:	NOT REQUIRED				

MARKET LOCATION 700 MHz Band:	
MARKET LOCATION 850 MHz Band:	
MARKET LOCATION 1900 MHz Band:	
MARKET LOCATION AWS Band:	
MARKET LOCATION WCS Band:	
MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911						0				
SECTOR B						0				
SECTOR C						0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911						0				
SECTOR B						0				
SECTOR C						0				
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 6 - RBS GENERAL INFORMATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	5G 1ST RBS								
RBS ID:	208908	300987	367050									
CTS COMMON ID:	CTV5192	CTU5192	CTL05192									
CELL ID / BCF:	CTV5192	CTV5192	CTL05192									
BTA/TID:	184U	184W	184L									
4-9 DIGIT SITE ID:	5192	5192	5192									
COW OR TOY?:	No	No	No									
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED									
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL									
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL									
BASE STATION TYPE:	BASE	OVERLAY	BASE									
EQUIPMENT NAME:	WINDSOR LOCKS NORTH	WINDSOR LOCKS NORTH	WINDSOR LOCKS NORTH									
DISASTER PRIORITY:	1	0	3									

Section 6 - RBS GENERAL INFORMATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	5G 1ST RBS								
RBS ID:	208908	300987	367050	RFDS_36159979								
CTS COMMON ID:	CTV5192	CTU5192	CTL05192	CTCN005192								
CELL ID / BCF:	CTV5192	CTV5192	CTL05192	CTCN005192								
BTA/TID:	184U	184W	184L	184L								
4-9 DIGIT SITE ID:	5192	5192	5192	5192								
COW OR TOY?:	No	No	No	No								
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED								
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL								
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL	INTERNAL								
BASE STATION TYPE:	BASE	OVERLAY	BASE	BASE								
EQUIPMENT NAME:	WINDSOR LOCKS NORTH	WINDSOR LOCKS NORTH	WINDSOR LOCKS NORTH	WINDSOR LOCKS NORTH								
DISASTER PRIORITY:	1	0	3	3								

Section 7 - RBS SPECIFIC INFORMATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	5G 1ST RBS								
RAC:												
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON									
EQUIPMENT TYPE:	3206 INDOOR	3206 INDOOR	6601 INDOOR MU									
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:			CT									
AGPS:	Yes	Yes	Yes									
NODE B NUMBER:	0	0	5192									

Section 7 - RBS SPECIFIC INFORMATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	5G 1ST RBS								
RAC:												
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON	ERICSSON								
EQUIPMENT TYPE:	3206 INDOOR	3206 INDOOR	6601 INDOOR MU	6601 INDOOR MU								
BASEBAND CONFIGURATION:			1x6601 / 1x5216 / 1xXMU03	xxxxx / 1x6630 / xxxxx								
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:			CT	CT								
AGPS:	Yes	Yes	Yes	Yes								
NODE B NUMBER:	0	0	5192	5192								

Section 8 - RBS/SECTOR ASSOCIATION - existing

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	5G 1ST RBS																
CTS Common ID	CTV5192	CTU5192	CTL05192																	
Soft Sector IDs	CTV51921	CTU51927	CTL05192_7A_1																	
	CTV51922	CTU51928	CTL05192_7B_1																	
	CTV51923	CTU51929	CTL05192_7C_1																	
			CTL05192_9A_1																	
			CTL05192_9A_2																	
			CTL05192_9B_1																	
			CTL05192_9B_2																	
			CTL05192_9C_1																	
			CTL05192_9C_2																	

Section 8 - RBS/SECTOR ASSOCIATION - final

	UMTS 1ST RBS	UMTS 2ND RBS	LTE 1ST RBS	5G 1ST RBS																
CTS Common ID	CTV5192	CTU5192	CTL05192	CTCN005192																
Soft Sector IDs	CTV51921	CTU51927	CTL05192_3A_1	CTCN005192_N005A_1																
	CTV51922	CTU51928	CTL05192_3B_1	CTCN005192_N005B_1																
	CTV51923	CTU51929	CTL05192_3C_1	CTCN005192_N005C_1																
			CTL05192_7A_1																	
			CTL05192_7B_1																	
			CTL05192_7C_1																	
			CTL05192_8A_1																	
			CTL05192_8B_1																	
			CTL05192_8C_1																	
			CTL05192_9A_1																	
			CTL05192_9A_2																	
			CTL05192_9B_1																	
			CTL05192_9B_2																	
			CTL05192_9C_1																	
			CTL05192_9C_2																	

Section 9 - SOFT SECTOR ID - existing

	UMTS 1ST 850	UMTS 1ST 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 1900	5G 1ST 850																
USEID (excluding Hard Sector)	4566.850.3G.1	4566.1900.3G.2																							
SECTOR A **SOFT SECTOR ID**	CTV51921	CTU51927	CTL05192_7A_1		CTL05192_9A_1		CTL05192_9A_2																		
SECTOR B	CTV51922	CTU51928	CTL05192_7B_1		CTL05192_9B_1		CTL05192_9B_2																		
SECTOR C	CTV51923	CTU51929	CTL05192_7C_1		CTL05192_9C_1		CTL05192_9C_2																		
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - SOFT SECTOR ID - final

	UMTS 1ST 850	UMTS 1ST 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 1900	5G 1ST 850																
USEID (excluding Hard Sector)	4566.850.3G.1	4566.1900.3G.2																							
SECTOR A **SOFT SECTOR ID**	CTV51921	CTU51927	CTL05192_7A_1	CTL05192_8A_1	CTL05192_9A_1	CTL05192_3A_1		CTL05192_9A_2	CTCN005192_N005A_1																
SECTOR B	CTV51922	CTU51928	CTL05192_7B_1	CTL05192_8B_1	CTL05192_9B_1	CTL05192_3B_1		CTL05192_9B_2	CTCN005192_N005B_1																
SECTOR C	CTV51923	CTU51929	CTL05192_7C_1	CTL05192_8C_1	CTL05192_9C_1	CTL05192_3C_1		CTL05192_9C_2	CTCN005192_N005C_1																
SECTOR D																									
SECTOR E																									
SECTOR F																									
OMNI																									

Section 9 - Cell Number - existing

	UMTS 1ST 850	UMTS 1ST 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 1900	5G 1ST 850																	
USEID (excluding Hard Sector)	4566.850.3G.1	4566.1900.3G.2																								
SECTOR A **CELL NUMBER**			15		8		178																			
SECTOR B			16		9		179																			
SECTOR C			17		10		180																			
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - final

	UMTS 1ST 850	UMTS 1ST 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 1900	5G 1ST 850																	
USEID (excluding Hard Sector)	4566.850.3G.1	4566.1900.3G.2																								
SECTOR A **CELL NUMBER**			15	1	8	149		178	1																	
SECTOR B			16	2	9	150		179	2																	
SECTOR C			17	3	10	151		180	3																	
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 10 - CID/SAC - existing

		UMTS 1ST 850	UMTS 1ST 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 1900	5G 1ST 850																		
SECTOR A	CID/SAC	51921	51927																									
SECTOR B		51922	51928																									
SECTOR C		51923	51929																									
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 10 - CID/SAC - final

		UMTS 1ST 850	UMTS 1ST 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST WCS	LTE 2ND 1900	LTE 4TH 1900	5G 1ST 850																		
SECTOR A	CID/SAC	51921	51927																									
SECTOR B		51922	51928																									
SECTOR C		51923	51929																									
SECTOR D																												
SECTOR E																												
SECTOR F																												
OMNI																												

Section 12 - CURRENT T1 COUNTS existing

	LTE 1ST Cabinet															
# T1s																
LINK PROFILE																
RF COMBINING																
FIBER or ETHERNET?																
Tx Board Model																
Tx Board QTY																
RAX/ECU Board Model																
RAX/ECU Board QTY																
BBU Board Model	DUS41															
BBU Board QTY	1															
RRU - location																
FIBER JUMPER																
DC CABLE																
DC/Fiber Dem. Box																
Bundled Fiber Cable																
Bundled DC Cable																

Section 14 - NEW/PROPOSED T1 COUNTS

	LTE 1ST Cabinet															
# T1s																
LINK PROFILE																
RF COMBINING																
FIBER or ETHERNET?																
Tx Board Model																
Tx Board QTY																
RAX/ECU Board Model																
RAX/ECU Board QTY																
BBU Board Model	DUS41															
BBU Board QTY	1															
RRU - location																
FIBER JUMPER																
DC CABLE																
DC/Fiber Dem. Box																
Bundled Fiber Cable																
Bundled DC Cable																

Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121		HPA-65R-BUU-H8				
ANTENNA VENDOR	Kathrein		CCI Antennas				
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9		92.4X14.8X7.4				
ANTENNA WEIGHT	44.1		68				
AZIMUTH	343		353				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	78		78				
ANTENNA TIP HEIGHT	80		82				
MECHANICAL DOWNTILT	0		0				
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025					
SURGE ARRESTOR (QTY/MODEL)			1	DC Fiber Squid			
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1	Kathrein / 860-10006					
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860					
PDU FOR TMAS (QTY/MODEL)	1	LGP 12104 (1900 AND 850 Bypass TMA)					
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1	RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)			1	RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		4566.A.850.3G.1	CTV51921	CTV51921		UMTS 850	800 10121 @850MHz_04DT	16.2	343	4	None	Andrew 1-5/8 (850)	165.042252	NO					533.33		1	
	PORT 3		4566.A.1900.3G.2	CTU51927	CTU51927		UMTS 1900	800 10121 @1950_Xpol_2dt	18	343	2	None	Andrew 1-5/8 (850)	165.042252	RXAIT 1900					729.46		2	
	PORT 5		4566.A.1900.25G.1	184P51921	184P51921	decom	GSM 1900	800 10121 @1950_Xpol_2dt	17.03	343	1	None	Andrew 1-5/8 (850)	165.042252	RXAIT 1900				11.22	285.1		2	
ANTENNA POSITION 3	PORT 1		4566.A.700.4G.1	CTL05192_7A_1	CTL05192_7A_1		LTE 700	HPA-65R-BUU-H8_725MHz_04DT	15.6	353	4	TOP	FIBER	0	NO					1044.7202		5	

	PORT 3		4566.A.1900.4G.1	CTL05192_9A_1	CTL05192_9A_1		LTE 1900	HPA-65R-BUU-H8_1948MHz_05DT	17.29	353	5	TOP	FIBER	0	NO					2233.5722		5	
	PORT 4		4566.A.1900.4G.tmp2	CTL05192_9A_2	CTL05192_9A_2		LTE 1900	HPA-65R-BUU-H8_1948MHz_05DT	17.29	353	5	TOP	FIBER	0	NO					2233.5722		5	

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121		HPA-65R-BUU-H8				
ANTENNA VENDOR	Kathrein		CCI Antennas				
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9		92.4X14.8X7.4				
ANTENNA WEIGHT	44.1		68				
AZIMUTH	102		107				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	78		78				
ANTENNA TIP HEIGHT	80		82				
MECHANICAL DOWNTILT	0		0				
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025					
SURGE ARRESTOR (QTY/MODEL)			1	DC Fiber Squid			
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860					
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1	RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)			1	RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		4566.B.850.3G.1	CTV51922	CTV51922		UMTS 850	800 10121 @1950_840MHz_04DT	17.2	102	4	None	Andrew 1-5/8 (850)	165.042252	NO					770.9		9	
	PORT 3		4566.B.1900.3G.2	CTU51928	CTU51928		UMTS 1900	800 10121 @1950_Xpol_2dt	17.5	102	2	None	Andrew 1-5/8 (850)	165.042252	RXAIT 1900					650.13		10	
	PORT 5		4566.B.1900.25G.1	184P51922	184P51922	decom	GSM 1900	800 10121 @1950_Xpol_7dt	16.45	102	7	None	Andrew 1-5/8 (850)	165.042252	RXAIT 1900				28.18	626.61		10	
ANTENNA POSITION 3	PORT 1		4566.B.700.4G.1	CTL05192_7B_1	CTL05192_7B_1		LTE 700	HPA-65R-BUU-H8_719MHz_04DT	16.39	107	4	TOP	FIBER	0	NO					1044.7202		13	

	PORT 3		4566.B.1900.4G.1	CTL05192_9B_1	CTL05192_9B_1		LTE 1900	HPA-65R-BUU-H8_1948MHz_02DT	16.89	107	2	TOP	FIBER	0	NO					2233.5722		13	
	PORT 4		4566.B.1900.4G.tmp2	CTL05192_9B_2	CTL05192_9B_2		LTE 1900	HPA-65R-BUU-H8_1948MHz_02DT	16.89	107	2	TOP	FIBER	0	NO					2233.5722		13	

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121		HPA-65R-BUU-H8				
ANTENNA VENDOR	Kathrein		CCI Antennas				
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9		92.4X14.8X7.4				
ANTENNA WEIGHT	44.1		68				
AZIMUTH	223		235				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	78		78				
ANTENNA TIP HEIGHT	80		82				
MECHANICAL DOWNTILT	0		0				
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025					
SURGE ARRESTOR (QTY/MODEL)			1	DC Fiber Squid			
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860					
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1	RRUS-11 (REUSE ONLY)			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)			1	RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1		4566.C.850.3G.1	CTV51923	CTV51923		UMTS 850	800 10121 @850MHz_04DT	16.2	223	4	None	Andrew 1-5/8 (850)	165.042252	NO					533.33		17	
	PORT 3		4566.C.1900.3G.2	CTU51929	CTU51929		UMTS 1900	800 10121 @1950_Xpol_2dt	18	223	2	None	Andrew 1-5/8 (850)	165.042252	RXAIT 1900					729.46		18	
	PORT 5		4566.C.1900.25G.1	184P51923	184P51923	decom	GSM 1900	800 10121 @1950_Xpol_7dt	16.45	223	7	None	Andrew 1-5/8 (850)	165.042252	RXAIT 1900				28.18	626.61		18	
ANTENNA POSITION 3	PORT 1		4566.C.700.4G.1	CTL05192_7C_1	CTL05192_7C_1		LTE 700	HPA-65R-BUU-H8_725MHz_09DT	15.6	235	9	TOP	FIBER	0	NO					1044.7202		21	

	PORT 3		4566.C.1900.4G.1	CTL05192_9C_1	CTL05192_9C_1		LTE 1900	HPA-65R-BUU-H8_1948MHz_06DT	17.39	235	6	TOP	FIBER	0	NO					2233.5722		21	
	PORT 4		4566.C.1900.4G.tmp2	CTL05192_9C_2	CTL05192_9C_2		LTE 1900	HPA-65R-BUU-H8_1948MHz_06DT	17.39	235	6	TOP	FIBER	0	NO					2233.5722		21	

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		TPA-65R-LCUUUU-H8					
ANTENNA VENDOR		CCI					
ANTENNA SIZE (H x W x D)		96X14.4X8.6					
ANTENNA WEIGHT		75					
AZIMUTH		353					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		78					
ANTENNA TIP HEIGHT		82					
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)		1 4478 B5					
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Bronze Std:- Move antenna/radio positions as per PD.- Add 12 port.- Add LTe radios.- LTE 850 4478 B5 2T2R top.- Switch BB to 5216. Follow Sec 7 or PD.- 5216-XMU.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1		4566.A.850.4G.1	CTL05192_8A_1	CTL05192_8A_1	0	LTE 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	353	4	TOP	FIBER	0						1000		3	
	PORT 3		4566.A.WCS.4G.1	CTL05192_3A_1	CTL05192_3A_1		LTE WCS	TPA-65R-LCUUUU-H8_2360MHz_03DT	17.1	353	3	TOP	FIBER	0						1285.2866		4	
	PORT 5		4566.A.850.5G.1	CTCN005192_N005A_1	CTCN005192_N005A_1		5G 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	353	4	TOP	FIBER	0						1000		3	

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		TPA-65R-LCUUUU-H8					
ANTENNA VENDOR		CCI					
ANTENNA SIZE (H x W x D)		96X14.4X8.6					
ANTENNA WEIGHT		75					
AZIMUTH		107					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		78					
ANTENNA TIP HEIGHT		82					
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)		1 4478 B5					
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Bronze Std: - Move antenna/radio positions as per PD. - Add 12 port. - Add LTe radios. - LTE 850 4478 B5 2T2R top. - Switch BB to 5216. Follow Sec 7 or PD. - 5216-XMU.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1		4566.B.850.4G.1	CTL05192_8B_1	CTL05192_8B_1	0	LTE 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	107	4	TOP	FIBER	0						1000		11	
	PORT 3		4566.B.WCS.4G.1	CTL05192_3B_1	CTL05192_3B_1		LTE WCS	TPA-65R-LCUUUU-H8_2360MHz_03DT	17.1	107	3	TOP	FIBER	0						1285.2866		12	
	PORT 5		4566.B.850.5G.1	CTCN005192_N005B	CTCN005192_N005B		5G 850	TPA-65R-LCUUUU-	15.6	107	4	TOP	FIBER	0						1000		11	

				_1	_1			H8_849MHz_04DT																

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL		TPA-65R-LCUUUU-H8					
ANTENNA VENDOR		CCI					
ANTENNA SIZE (H x W x D)		96X14.4X8.6					
ANTENNA WEIGHT		75					
AZIMUTH		235					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		78					
ANTENNA TIP HEIGHT		82					
MECHANICAL DOWNTILT		0					
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)		1 4478 B5					
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Bronze Std: - Move antenna/radio positions as per PD. - Add 12 port. - Add LTe radios. - LTE 850 4478 B5 2T2R top. - Switch BB to 5216. Follow Sec 7 or PD. - 5216-XMU.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 2	PORT 1		4566.C.850.4G.1	CTL05192_8C_1	CTL05192_8C_1	0	LTE 850	TPA-65R-LCUUUU-H8_849MHz_09DT	15.4	235	9	TOP	FIBER	0						1000		19	
	PORT 3		4566.C.WCS.4G.1	CTL05192_3C_1	CTL05192_3C_1		LTE WCS	TPA-65R-LCUUUU-H8_2360MHz_03DT	17.1	235	3	TOP	FIBER	0						1285.2866		20	
	PORT 5		4566.C.850.5G.1	CTCN005192_N005C	CTCN005192_N005C		5G 850	TPA-65R-LCUUUU-	15.4	235	9	TOP	FIBER	0						1000		19	

				_1	_1			H8_849MHz_09DT																

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	800-10121	TPA-65R-LCUUUU-H8	HPA-65R-BUU-H8				
ANTENNA VENDOR	Kathrein	CCI	CCI Antennas				
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9	96X14.4X8.6	92.4X14.8X7.4				
ANTENNA WEIGHT	44.1	75	68				
AZIMUTH	343	353	353				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	78	78	78				
ANTENNA TIP HEIGHT	80	82	82				
MECHANICAL DOWNTILT	0	0	0				
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein 860-10025						
SURGE ARRESTOR (QTY/MODEL)			1 DC Fiber Squid				
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)	1 Kathrein / 860-10006						
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave LGP 21401 (DB - 850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)						
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 RRUS-11 (REUSE ONLY)				
RRH - 850 band (QTY/MODEL)		1 4478 B5					
RRH - 1900 band (QTY/MODEL)			1 RRUS-12+RRUS-A2				
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)		1 RRUS-32					
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Bronze Std:- Move antenna/radio positions as per PD.- Add 12 port.- Add LTe radios.- LTE 850 4478 B5 2T2R top.- Switch BB to 5216. Follow Sec 7 or PD.- 5216-XMU.						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	4566.A.850.3G.1		CTV51921	CTV51921		UMTS 850	800 10121 @850MHz_04DT	16.2	343	4	None	Andrew 1-5/8 (850)	165.042252						533.33		1	
	PORT 3	4566.A.1900.3G.2		CTU51927	CTU51927		UMTS 1900	800 10121 @1950_Xpol_2dt	18	343	2	None	Andrew 1-5/8 (850)	165.042252						729.46		2	
ANTENNA POSITION 2	PORT 1	4566.A.850.4G.1	4566.A.850.4G.1	CTL05192_8A_1	CTL05192_8A_1		LTE 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	353	4	TOP	FIBER	0						1000		3	
	PORT 3	4566.A.WCS.4G.1	4566.A.WCS.4G.1	CTL05192_3A_1	CTL05192_3A_1		LTE WCS	TPA-65R-LCUUUU-H8_2360MHz_03DT	17.1	353	3	TOP	FIBER	0						1285.2866		4	

	PORT 5	4566.A.850.5G.tmp1	4566.A.850.5G.1	CTCN005192_N005A_1	CTCN005192_N005A_1		5G 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	353	4	TOP	FIBER	0						1000		3	
ANTENNA POSITION 3	**PORT 1**	4566.A.700.4G.1	4566.A.700.4G.1	CTL05192_7A_1	CTL05192_7A_1		LTE 700	HPA-65R-BUU-H8_719MHz_04DT	15.2	353	4	TOP	FIBER	0						1475.7065		5	
	PORT 3	4566.A.1900.4G.1	4566.A.1900.4G.1	CTL05192_9A_1	CTL05192_9A_1		LTE 1900	HPA-65R-BUU-H8_1930MHz_05DT	17.4	353	5	TOP	FIBER	0						3664.3757		6	
	PORT 4	4566.A.1900.4G.2	4566.A.1900.4G.4	CTL05192_9A_2	CTL05192_9A_2		LTE 1900	HPA-65R-BUU-H8_1930MHz_05DT	17.4	353	5	TOP	FIBER	0						3664.3757		6	

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	800-10121		TPA-65R-LCUUUU-H8		HPA-65R-BUU-H8									
ANTENNA VENDOR	Kathrein		CCI		CCI Antennas									
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9		96X14.4X8.6		92.4X14.8X7.4									
ANTENNA WEIGHT	44.1		75		68									
AZIMUTH	102		107		107									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	78		78		78									
ANTENNA TIP HEIGHT	80		82		82									
MECHANICAL DOWNTILT	0		0		0									
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025												
SURGE ARRESTOR (QTY/MODEL)					1	DC Fiber Squid								
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11 (REUSE ONLY)								
RRH - 850 band (QTY/MODEL)			1	4478 B5										
RRH - 1900 band (QTY/MODEL)					1	RRUS-12+RRUS-A2								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	RRUS-32										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	Bronze Std: - Move antenna/radio positions as per PD. - Add 12 port. - Add LTe radios. - LTE 850 4478 B5 2T2R top. - Switch BB to 5216. Follow Sec 7 or PD. - 5216-XMU.													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	4566.B.850.3G.1		CTV51922	CTV51922		UMTS 850	800 10121 @1950_840MHz_04DT	17.2	102	4	None	Andrew 1-5/8 (850)	165.042252						770.9		9	
	PORT 3	4566.B.1900.3G.2		CTU51928	CTU51928		UMTS 1900	800 10121 @1950_Xpol_2dt	17.5	102	2	None	Andrew 1-5/8 (850)	165.042252						650.13		10	

ANTENNA POSITION 2	**PORT 1**	4566.B.850.4G.1	4566.B.850.4G.1	CTL05192_8B_1	CTL05192_8B_1		LTE 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	107	4	TOP	FIBER	0						1000		11	
	PORT 3	4566.B.WCS.4G.1	4566.B.WCS.4G.1	CTL05192_3B_1	CTL05192_3B_1		LTE WCS	TPA-65R-LCUUUU-H8_2360MHz_03DT	17.1	107	3	TOP	FIBER	0						1285.2866		12	
	PORT 5	4566.B.850.5G.tmp1	4566.B.850.5G.1	CTCN005192_N005B_1	CTCN005192_N005B_1		5G 850	TPA-65R-LCUUUU-H8_849MHz_04DT	15.6	107	4	TOP	FIBER	0						1000		11	
ANTENNA POSITION 3	**PORT 1**	4566.B.700.4G.1	4566.B.700.4G.1	CTL05192_7B_1	CTL05192_7B_1		LTE 700	HPA-65R-BUU-H8_719MHz_04DT	15.2	107	4	TOP	FIBER	0						1475.7065		13	
	PORT 3	4566.B.1900.4G.1	4566.B.1900.4G.1	CTL05192_9B_1	CTL05192_9B_1		LTE 1900	HPA-65R-BUU-H8_1930MHz_02DT	16.9	107	2	TOP	FIBER	0						3664.3757		14	
	PORT 4	4566.B.1900.4G.2	4566.B.1900.4G.4	CTL05192_9B_2	CTL05192_9B_2		LTE 1900	HPA-65R-BUU-H8_1930MHz_02DT	16.9	107	2	TOP	FIBER	0						3664.3757		14	

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	800-10121		TPA-65R-LCUUUU-H8		HPA-65R-BUU-H8									
ANTENNA VENDOR	Kathrein		CCI		CCI Antennas									
ANTENNA SIZE (H x W x D)	54.5X10.3X5.9		96X14.4X8.6		92.4X14.8X7.4									
ANTENNA WEIGHT	44.1		75		68									
AZIMUTH	223		235		235									
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	78		78		78									
ANTENNA TIP HEIGHT	80		82		82									
MECHANICAL DOWNTILT	0		0		0									
FEEDER AMOUNT	2													
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025												
SURGE ARRESTOR (QTY/MODEL)					1	DC Fiber Squid								
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901												
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)												
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860												
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11 (REUSE ONLY)								
RRH - 850 band (QTY/MODEL)			1	4478 B5										
RRH - 1900 band (QTY/MODEL)					1	RRUS-12+RRUS-A2								
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)			1	RRUS-32										
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	Bronze Std: - Move antenna/radio positions as per PD. - Add 12 port. - Add LTe radios. - LTE 850 4478 B5 2T2R top. - Switch BB to 5216. Follow Sec 7 or PD. - 5216-XMU.													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	4566.C.850.3G.1		CTV51923	CTV51923		UMTS 850	800 10121 @850MHz_04DT	16.2	223	4	None	Andrew 1-5/8 (850)	165.042252						533.33		17	
	PORT 3	4566.C.1900.3G.2		CTU51929	CTU51929		UMTS 1900	800 10121 @1950_Xpol_2dt	18	223	2	None	Andrew 1-5/8 (850)	165.042252						729.46		18	

ANTENNA POSITION 2	**PORT 1**	4566.C.850.4G.1	4566.C.850.4G.1	CTL05192_8C_1	CTL05192_8C_1		LTE 850	TPA-65R-LCUUUU-H8_849MHz_09DT	15.4	235	9	TOP	FIBER	0						1000		19	
	PORT 3	4566.C.WCS.4G.1	4566.C.WCS.4G.1	CTL05192_3C_1	CTL05192_3C_1		LTE WCS	TPA-65R-LCUUUU-H8_2360MHz_03DT	17.1	235	3	TOP	FIBER	0						1285.2866		20	
	PORT 5	4566.C.850.5G.tmp1	4566.C.850.5G.1	CTCN005192_N005C_1	CTCN005192_N005C_1		5G 850	TPA-65R-LCUUUU-H8_849MHz_09DT	15.4	235	9	TOP	FIBER	0						1000		19	
ANTENNA POSITION 3	**PORT 1**	4566.C.700.4G.1	4566.C.700.4G.1	CTL05192_7C_1	CTL05192_7C_1		LTE 700	HPA-65R-BUU-H8_719MHz_09DT	14.9	235	9	TOP	FIBER	0						1475.7065		21	
	PORT 3	4566.C.1900.4G.1	4566.C.1900.4G.1	CTL05192_9C_1	CTL05192_9C_1		LTE 1900	HPA-65R-BUU-H8_1930MHz_06DT	17.4	235	6	TOP	FIBER	0						3664.3757		22	
	PORT 4	4566.C.1900.4G.2	4566.C.1900.4G.4	CTL05192_9C_2	CTL05192_9C_2		LTE 1900	HPA-65R-BUU-H8_1930MHz_06DT	17.4	235	6	TOP	FIBER	0						3664.3757		22	

Diagram - Sector	A	Diagram File Name - 5G_CT5192_A_B_C_LTE_4C_R1.3.vsd					
Atoll Site Name -	CTL05192	Location Name -	WINDSOR LOCKS NORTH	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)"

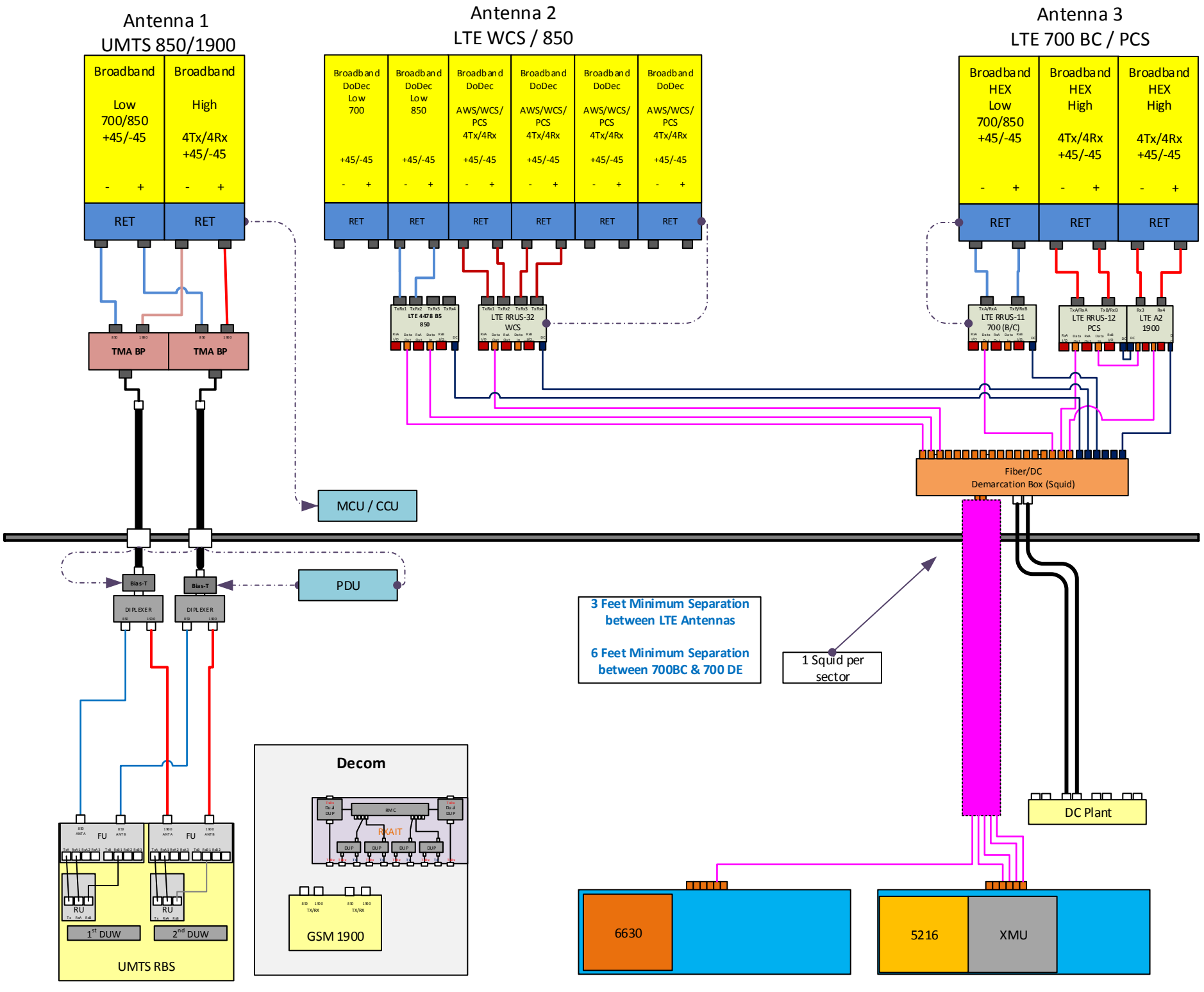


Diagram - Sector	B	Diagram File Name - 5G_CT5192_A_B_C_LTE_4C_R1.3.vsd					
Atoll Site Name -	CTL05192	Location Name -	WINDSOR LOCKS NORTH	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)"

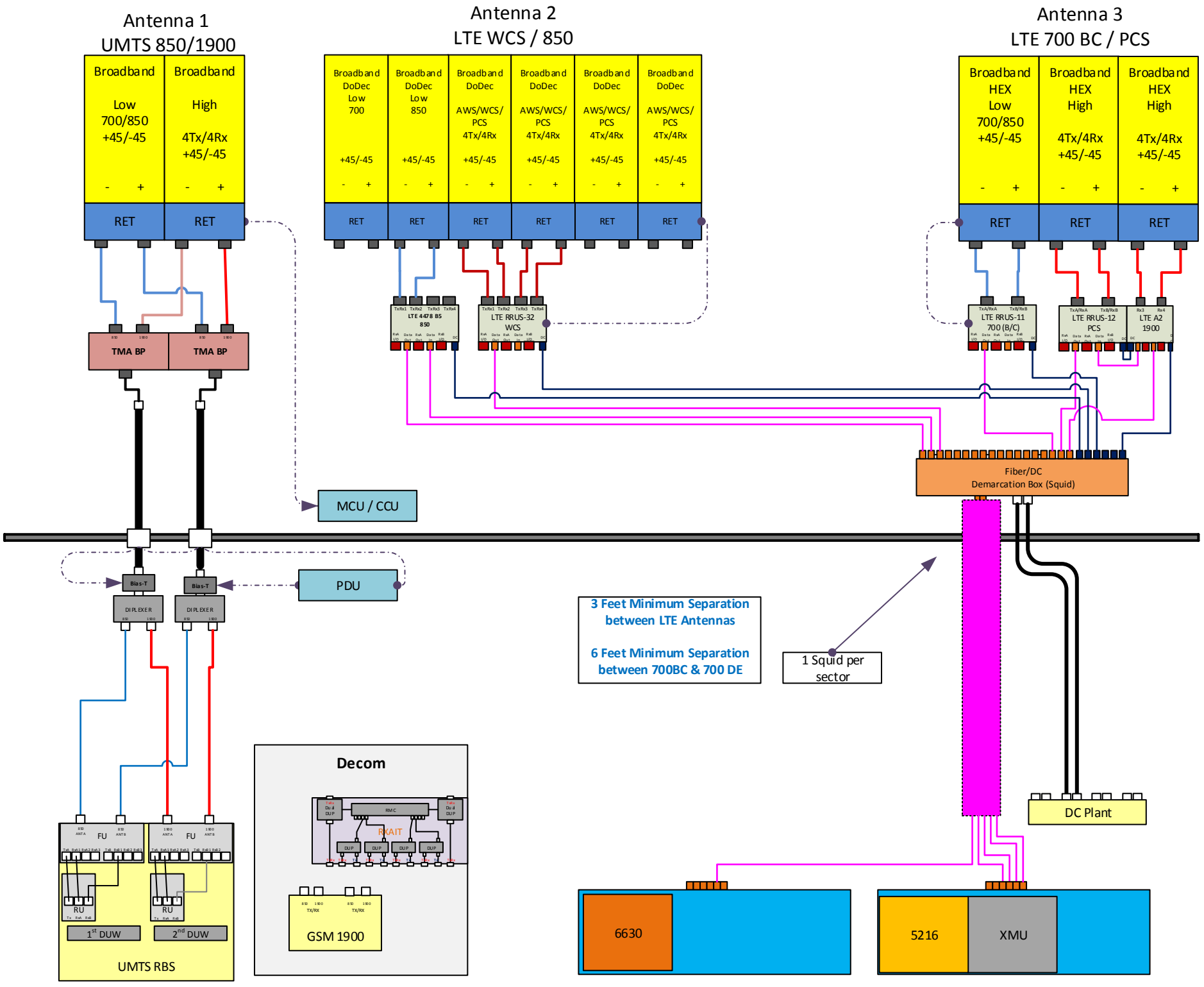
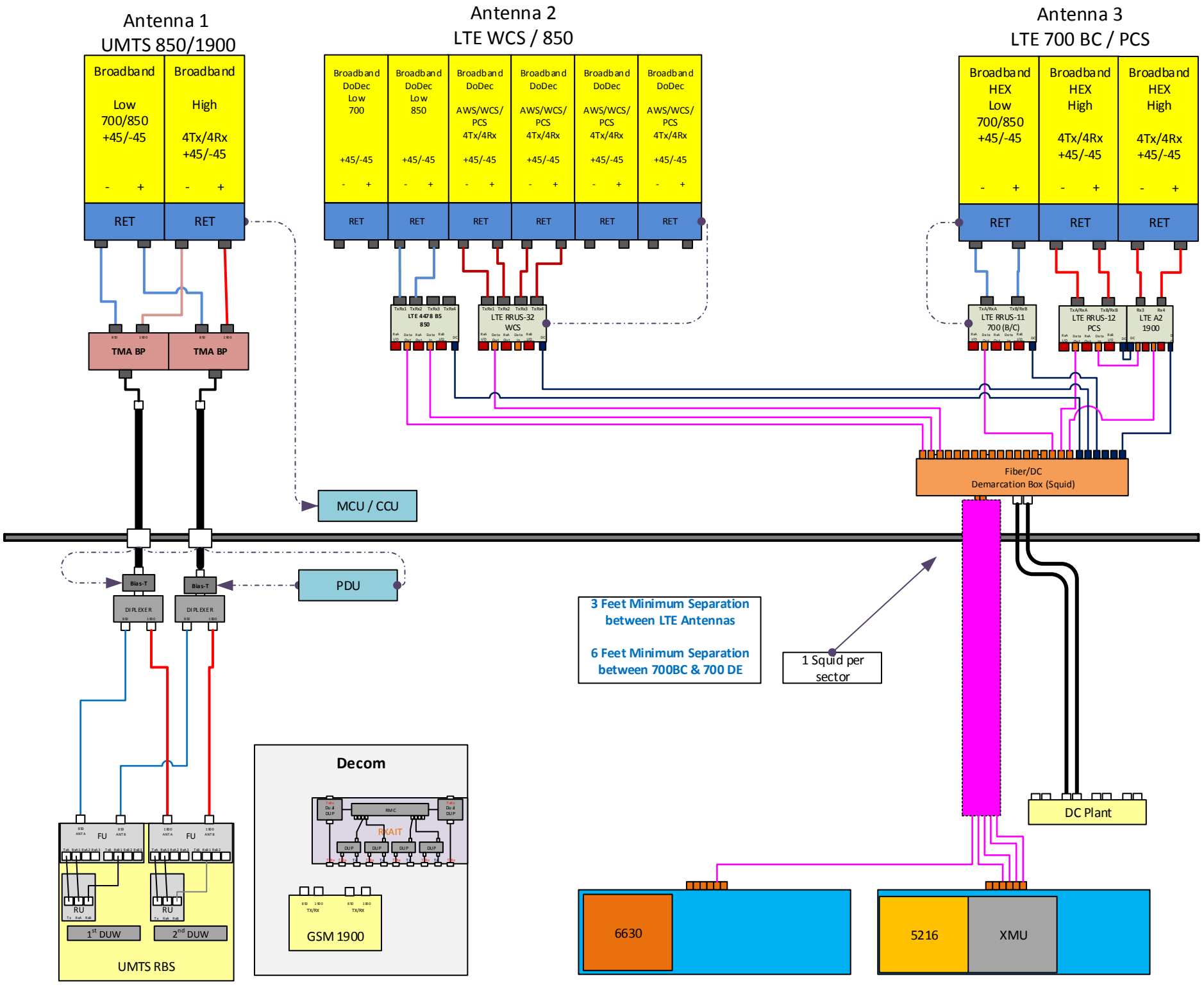


Diagram - Sector	C	Diagram File Name - 5G_CT5192_A_B_C_LTE_4C_R1.3.vsd					
Atoll Site Name -	CTL05192	Location Name -	WINDSOR LOCKS NORTH	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)"



NOTES			
Date Time (Eastern)	Version	ATTUID	Note
7/23/2018 2:57:59 PM	2.00	om636a	RFDS VERSION incremented.
7/23/2018 2:58:04 PM	2.00	om636a	Final RF Approved. Possible CIQ erros resolved
11/26/2018 3:10:17 PM	3.00	rx855w	RFDS VERSION incremented.
11/26/2018 3:10:17 PM	3.00	rx855w	version updated: RFDS updated for AZ as per mapping report. Umts 343/107/235, LTE 353/102/223
1/2/2019 2:35:33 PM	4.00	rx855w	RFDS VERSION incremented.
1/2/2019 2:41:09 PM	4.00	rx855w	version updated for typo in AZ. RFDS updated for Beta&Gamma AZ to be 120/107/107; 223/235/235 as per demotion comments. no other changes to sow/PD

WORKFLOW SUMMARY							
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments	PACE Status
05/06/2018	Preliminary In Progress	rx855w	Preliminary Submitted for Approval	RC475S	Promote	Preliminary RFDS	NER-RCTB-17-07932 MRCTB031263 SUCCESS 05/06/2018 8:53:09 PM NER-RCTB-18-02565 MRCTB031582 SUCCESS 05/06/2018 8:53:09 PM
05/09/2018	Preliminary Submitted for Approval	RC475S	Preliminary Approved	DC5778	Promote		
07/09/2018	Preliminary Approved	DC5778	Final RF Approval	OM636A	Promote	Please promote to final, add 6630 to market note	
07/24/2018	Final RF Approval	OM636A	Final Approved	DC5778	Promote	Final RF Approved. Possible CIQ erros resolved	NER-RCTB-17-07932 MRCTB031263 SUCCESS 07/24/2018 4:41:22 PM NER-RCTB-18-02565 MRCTB031582 SUCCESS 07/24/2018 4:41:22 PM
08/15/2018	Final Approved	DC5778	As Built In Progress	dc5778	Promote		NER-RCTB-17-07932 MRCTB031263 SUCCESS 08/15/2018 1:06:13 PM NER-RCTB-18-02565 MRCTB031582 SUCCESS 08/15/2018 1:06:13 PM
11/15/2018	As Built In Progress	dc5778	Final Modification Recommended	RX855W	Demote	Demoting RFDS. Please update the Azimuths due to inconsistent documentation in FileNet. Thank you.	
11/26/2018	Final Modification Recommended	RX855W	Final Approved	DC5778	Promote	rfds updated as per demotion notes for Az as per mapping.	
12/29/2018	Final Approved	DC5778	As Built In Progress	JI625B	Promote	Promoting RFDS to As Built.	NER-RCTB-17-07932 FAILURE 12/29/2018 9:37:35 AM NER-RCTB-18-02565 FAILURE 12/29/2018 9:37:35 AM
01/02/2019	As Built In Progress	JI625B	As Built In Progress	kc965a	Reassign	Reassigning	
01/02/2019	As Built In Progress	kc965a	Final Modification Recommended	RX855W	Demote	Demoting RFDS to update sec 15/16/17 - Beta sector positions 1, 2 and 3 azimuths 102, 107 and 107.Gamma sector positions 1, 2 and 3 to have 223, 235 and 235.	
01/02/2019	Final Modification Recommended	RX855W	Final Approved	KC965A	Promote	Final Mod RFDS updated for Beta & Gamma Az typo correction.	

NELSON STUD WELDING

General Information for Stud Welding Studs

Stainless Steel (Post Annealed) – 70,000psi Minimum Ultimate, 30,000 psi Minimum Yield

Thread Diameter	META[1] (sq. in.)	Yield Load (lbs.) at 30,000 psi	Ultimate Tensile Load (lbs) at 70,000 psi	Yield Torque[2] (ft-lbs) at 30,000 psi	Ultimate Torque (ft-lbs) at 70,000 psi	Shear Strength[3] (75% of Tensile Strength)
10-24 UNC	0.0174	522	1,218	1.6	3.8	913
10-32 UNF	0.0199	600	1,393	1.9	4.4	1,045
1/4-20 UNC	0.0317	954	2,219	4.0	9.2	1,664
1/4-28 UNF	0.0362	1,086	2,534	4.5	10.5	1,900
5/16-18 UNC	0.0522	1,572	3,654	8.2	19.0	2,740
5/16-24 UNF	0.0579	1,737	4,053	9.0	21.1	3,040
3/8-16 UNC	0.0773	2,325	5,411	14.5	33.9	4,058
3/8-24 UNF	0.0876	2,628	6,132	16.4	38.4	4,599
7/16- 14 UNC	0.1060	3,189	7,420	23.2	54.2	5,565
7/16-20 UNF	0.1185	3,540	8,295	25.8	60.2	6,221
1/2-13 UNC	0.1416	4,257	9,912	35.5	82.8	7,434
1/2-20 UNF	0.1597	4,800	11,179	40.0	93.3	8,384
5/8-11 UNC	0.2256	6,780	15,795	70.6	164.8	11,846
5/8-18 UNF	0.2555	7,650	17,885	79.7	185.9	13,414
3/4-10 UNC	0.3340	10,020	23,380	125.3	292.2	17,535
3/4-16 UNF	0.3724	11,160	26,068	139.5	325.5	19,551
7/8-9 UNC	0.4612	13,860	32,284	202.1	471.6	24,213
7/8-14 UNF	0.5088	15,270	35,616	222.7	519.6	26,712
1-8 UNC	0.6051	18,180	42,357	303.0	707.0	31,768
1-14 UNF	0.6791	20,340	47,537	339.0	791.0	35,653

* Torque figures based on assumption that excessive deformation of thread has not taken relationship between torque/tension out of its proportional range.

In actual practice, stud should not be used at its yield load. A factor of safety must be applied. It is generally recommended that studs not be used at more than 60% of yield strength, however, the factor of safety may vary up or down according to the particular application in which the studs are being used.

The user of these studs will make this determination

Formulae used to make the above calculations are as follows:

Ultimate Tensile	L = SA	Ultimate Torque	T = 0.2 x D x L
Yield	Z = YA	Yield Torque	T = 0.2 x D x Z

Where D = Nominal Thread Diameter; A = Mean Effective Thread Area (META)
S = Tensile Stress (psi); Y = Yield Stress (psi)
L = Tensile Load (lbs); Z = Yield Load
T = Torque (in-lbs)

1 META is used instead of root area in calculating screw lengths because of closer correlation with actual tensile strength. META is based on mean diameter, which is the diameter of an imaginary co-axial cylinder whose surface would pass through the thread profile approximately midway between the minor and pitch diameters.

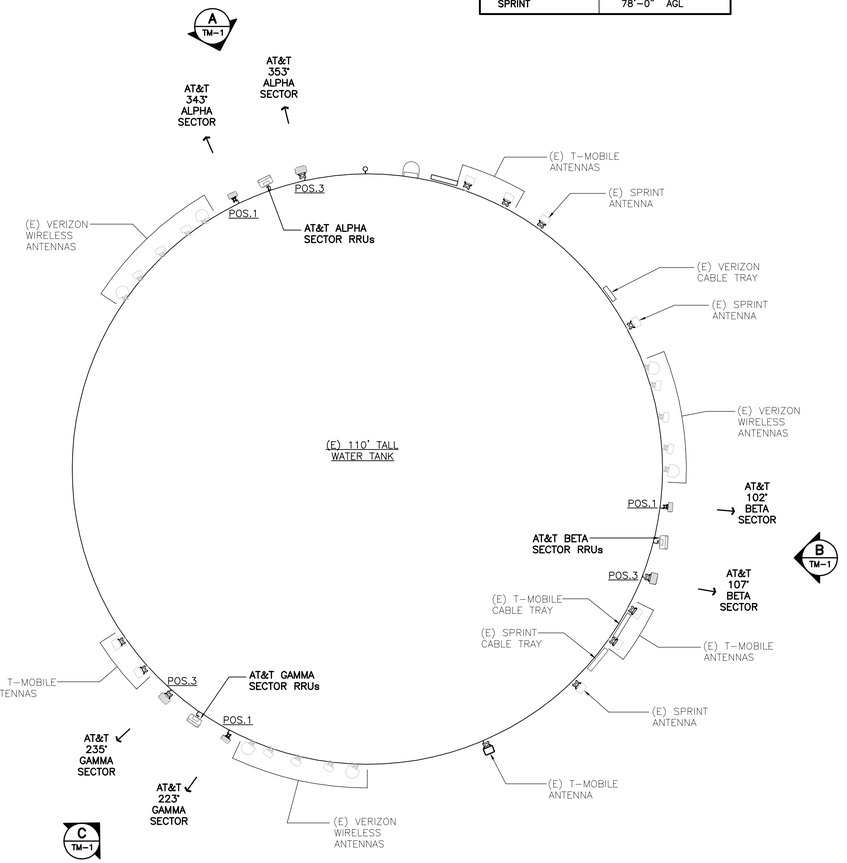
2 In actual practice, stud should not be used at its yield load. A factor of safety must be applied. It is generally recommended that studs not be used at more than 60% of yield strength, however, the factor of safety may vary up or down according to the particular application in which the studs are being used.

The user will make this safety factor determination

3 Shear values are based on Tensile Strength of the stud.

EXISTING AT&T AZIMUTHS	
ALPHA SECTOR	POSITION 1 343° POSITION 3 353°
BETA SECTOR	POSITION 1 107° POSITION 3 102°
GAMMA SECTOR	POSITION 1 235° POSITION 3 223°

ANTENNA CENTERLINE ELEVATIONS	
AT&T	77'-10" AGL
T-MOBILE	95'-0" AGL
VERIZON WIRELESS	87'-4" AGL
SPRINT	78'-0" AGL



1 / TM-1 **WATER TANK PLAN - EXISTING CONDITIONS**
SCALE: 1/8" = 1'- 0"

TRUE NORTH

GRAPHIC SCALE
8 0 4 8 16 32
(IN FEET)
1 inch = 8 ft.

A / TM-1 **AT&T ALPHA SECTOR - EXISTING CONDITIONS**
NOT TO SCALE

B / TM-1 **AT&T BETA SECTOR - EXISTING CONDITIONS**
NOT TO SCALE

C / TM-1 **AT&T GAMMA SECTOR - EXISTING CONDITIONS**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
A	10/23/18	DMD	CAG	TANK AND MOUNT MAPPING DOCUMENT

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

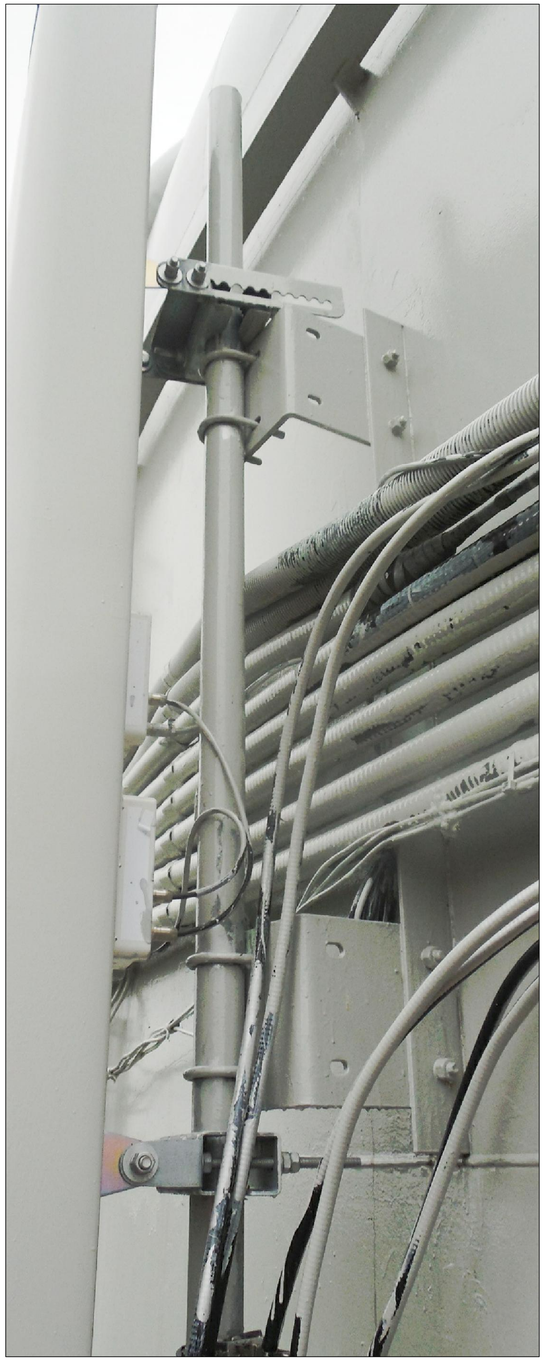
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

WINDSOR LOCKS NORTH
CT5192 - LTE 3C/4C
104 PROSPECT HILL ROAD
EAST WINDSOR, CT 06088

DATE: 07/30/18
SCALE: AS NOTED
JOB NO. 18000.59

TANK MAPPING PLAN AND SECTOR PHOTOS

TM-1
Sheet No. 1 of 2



1 / TM–2 **AT&T ANTENNA MOUNT MAPPING PHOTOS**
NOT TO SCALE

PROFESSIONAL ENGINEER SEAL

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
A	10/23/18	DMD	CAG	TANK AND MOUNT MAPPING DOCUMENT

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WINDSOR LOCKS NORTH
CT5192 - LTE 3C/4C
104 PROSPECT HILL ROAD
EAST WINDSOR, CT 06088

DATE: 07/30/18
SCALE: AS NOTED
JOB NO. 18000.59

MOUNT MAPPING PHOTOS LOG

TM-2

Sheet No. 2 of 2

SITESAFE
RF COMPLIANCE EXPERTS

8618 Westwood Center Drive, Suite 315, Vienna, VA 22182
703.276.1100 ● 703.276.1169 fax
info@sitesafe.com ● www.sitesafe.com

Empire Telecom on behalf of AT&T Mobility, LLC
Site FA – 10071335
Site ID – CT5192
USID – 4566
Site Name – Windsor Locks North

104 Prospect Hill Road
East Windsor, CT 06088

Latitude: N41-55-34.34
Longitude: W72-36-16.70
Structure Type: Water Tank

Report generated date: May 8, 2019
Report by: Zyotty Thamsil
Customer Contact: - New England Compliance

AT&T Mobility, LLC is compliant based on FCC Rules and Regulations.

Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Water Tank	<1% General Public Limit
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
Compliant per FCC Rules and Regulations?	Yes
Compliant per AT&T Mobility, LLC's Policy?	No

The following documents were provided by the client and were utilized to create this report:

RFDS: 10071335.DE113.STRUCTURAL.3C4C.Rev0 190125.CT5192

CD's: 10071335.AE201.FINAL S&S CDS.3C4C Rev1.190416.CT5192

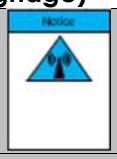
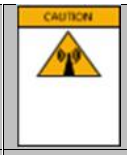
RF Powers Used: Max RRH Power

1.2 Fall Arrest Anchor Point Summary

Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	N	N/A	N

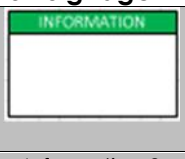
1.3 Signage Summary

a. Pre-Site Visit AT&T Signage (Existing Signage)

AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2	Warning	Warning 2	Barriers
Access Point(s)	**2**				**2**				
Gate(s)	**1**		**1**						
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

Note: All existing signage was documented during a previous site visit 06/02/16.

b. Proposed AT&T Signage

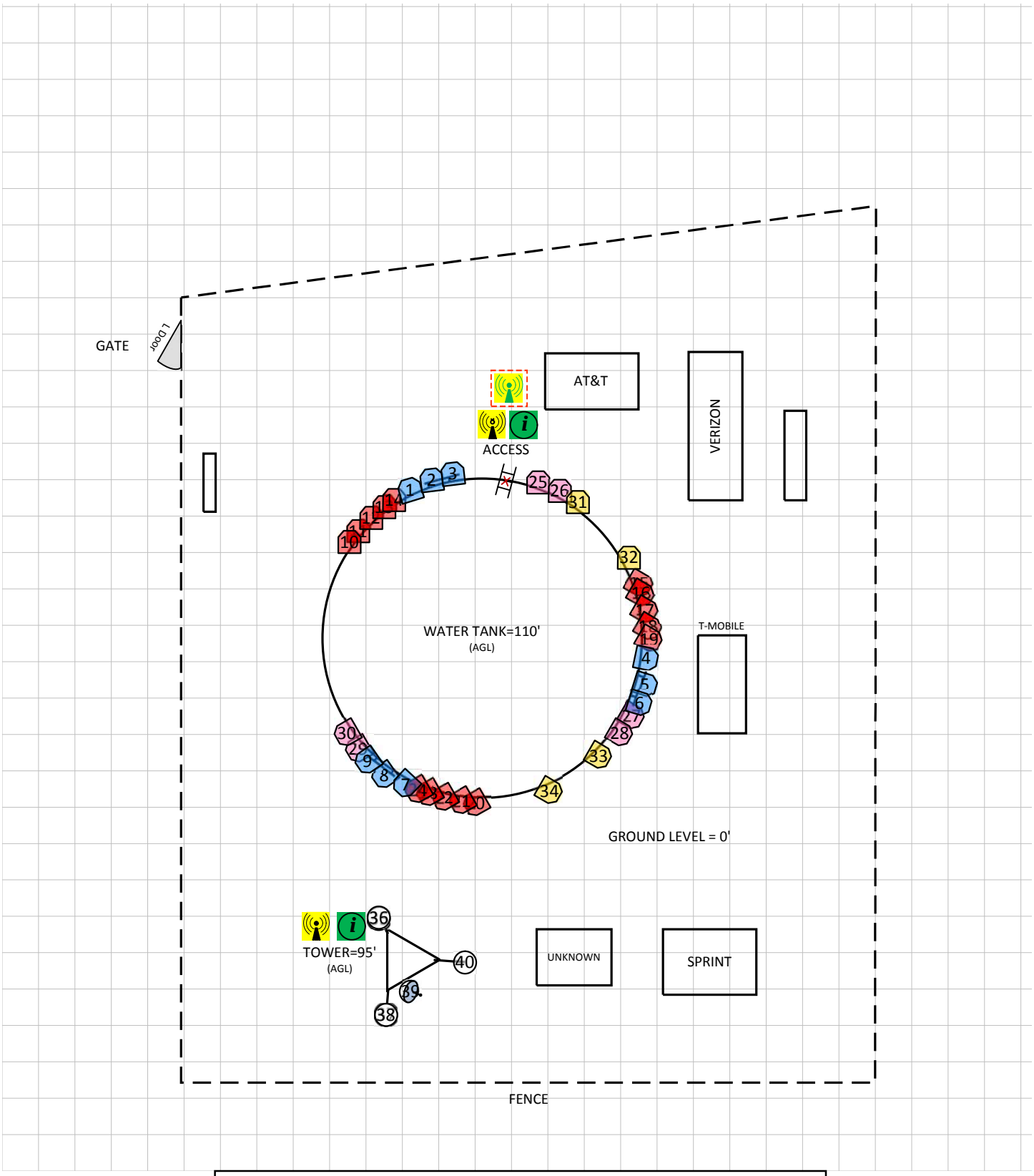
AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2	Warning	Warning 2	Barriers
Access Point(s)						**1**			
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

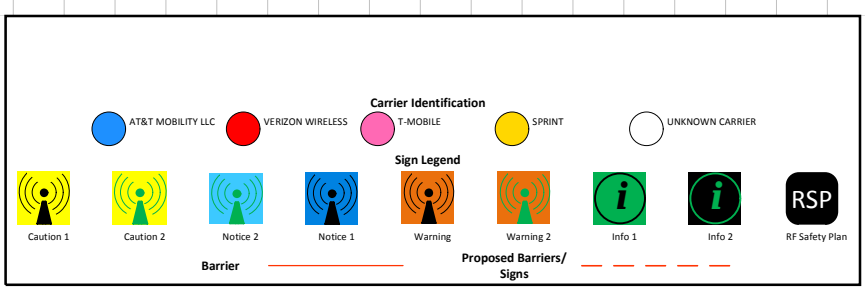
2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- RF Exposure Diagram – All Sector Detailed View
- AT&T Mobility, LLC Contribution

Site Scale Map For: Windsor Locks North





(Feet)

0 14.2 28.3

www.sitesafe.com
Site Name:Windsor Locks North
5/8/2019 8:03:57 PM

3 Antenna Inventory

The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (AGL)	MDT	EDT
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	UMTS	343	87.6	4.5	40	TPO	Watt	0	1	545.8	11.35	75.7'	0°	4°
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	UMTS	343	85.7	4.5	40	TPO	Watt	0	1	1081.6	14.32	75.7'	0°	2°
2	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	LTE	353	63	8	80	TPO	Watt	0	1	1815.9	13.56	74'	0°	4°
2	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	5G 850	LTE	353	63	8	80	TPO	Watt	0	1	1815.9	13.56	74'	0°	4°
2	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	LTE	353	65	8	100	TPO	Watt	0	1	2729	14.36	74'	0°	3°
3	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H8	Panel	1900	LTE	353	63.1	7.7	120	TPO	Watt	0	1	3590.7	14.76	74.2'	0°	5°
3	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H8	Panel	737	LTE	353	64.9	7.7	60	TPO	Watt	0	1	1271	13.26	74.2'	0°	4°
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	UMTS	102	87.6	4.5	40	TPO	Watt	0	1	545.8	11.35	75.7'	0°	4°
4	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	UMTS	102	85.7	4.5	40	TPO	Watt	0	1	1081.6	14.32	75.7'	0°	2°
5	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	LTE	107	63	8	80	TPO	Watt	0	1	1815.9	13.56	74'	0°	4°
5	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	5G 850	LTE	107	63	8	80	TPO	Watt	0	1	1815.9	13.56	74'	0°	4°
5	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	LTE	107	65	8	100	TPO	Watt	0	1	2729	14.36	74'	0°	3°
6	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H8	Panel	1900	LTE	107	63.1	7.7	120	TPO	Watt	0	1	3590.7	14.76	74.2'	0°	2°
6	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H8	Panel	737	LTE	107	64.9	7.7	60	TPO	Watt	0	1	1271	13.26	74.2'	0°	4°
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	UMTS	223	87.6	4.5	40	TPO	Watt	0	1	545.8	11.35	75.7'	0°	4°
7	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	UMTS	223	85.7	4.5	40	TPO	Watt	0	1	1081.6	14.32	75.7'	0°	2°
8	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	LTE	235	63	8	80	TPO	Watt	0	1	1815.9	13.56	74'	0°	9°
8	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	5G 850	LTE	235	63	8	80	TPO	Watt	0	1	1815.9	13.56	74'	0°	9°
8	AT&T MOBILITY LLC (PROPOSED)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	LTE	235	65	8	100	TPO	Watt	0	1	2729	14.36	74'	0°	3°
9	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H8	Panel	1900	LTE	235	63.1	7.7	120	TPO	Watt	0	1	3590.7	14.76	74.2'	0°	6°
9	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H8	Panel	737	LTE	235	64.9	7.7	60	TPO	Watt	0	1	1271	13.26	74.2'	0°	9°
10	VERIZON WIRELESS	Generic	Panel	850		0	65	4.6	160	TPO	Watt	0	1	3027.7	12.77	92.7'	0°	0°
11	VERIZON WIRELESS	Generic	Panel	1900		0	65	4.6	160	TPO	Watt	0	1	5586.2	15.43	92.7'	0°	0°
12	VERIZON WIRELESS	Generic	Panel	751		0	65	4.6	160	TPO	Watt	0	1	2618.9	12.14	92.7'	0°	0°
13	VERIZON WIRELESS	Generic	Panel	2100		0	65	4.6	180	TPO	Watt	0	1	6001.7	15.23	92.7'	0°	0°
14	VERIZON WIRELESS	Generic	Panel	850		0	65	4.6	160	TPO	Watt	0	1	3027.7	12.77	92.7'	0°	0°

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z (AGL)	MDT	EDT
15	VERIZON WIRELESS	Generic	Panel	850		120	65	4.6	160	TPO	Watt	0	1	3027.7	12.77	92.7'	0°	0°
16	VERIZON WIRELESS	Generic	Panel	1900		120	65	4.6	160	TPO	Watt	0	1	5586.2	15.43	92.7'	0°	0°
17	VERIZON WIRELESS	Generic	Panel	751		120	65	4.6	160	TPO	Watt	0	1	2618.9	12.14	92.7'	0°	0°
18	VERIZON WIRELESS	Generic	Panel	2100		120	65	4.6	180	TPO	Watt	0	1	6001.7	15.23	92.7'	0°	0°
19	VERIZON WIRELESS	Generic	Panel	850		120	65	4.6	160	TPO	Watt	0	1	3027.7	12.77	92.7'	0°	0°
20	VERIZON WIRELESS	Generic	Panel	850		240	65	4.6	160	TPO	Watt	0	1	3027.7	12.77	92.7'	0°	0°
21	VERIZON WIRELESS	Generic	Panel	1900		240	65	4.6	160	TPO	Watt	0	1	5586.2	15.43	92.7'	0°	0°
22	VERIZON WIRELESS	Generic	Panel	751		240	65	4.6	160	TPO	Watt	0	1	2618.9	12.14	92.7'	0°	0°
23	VERIZON WIRELESS	Generic	Panel	2100		240	65	4.6	180	TPO	Watt	0	1	6001.7	15.23	92.7'	0°	0°
24	VERIZON WIRELESS	Generic	Panel	850		240	65	4.6	160	TPO	Watt	0	1	3027.7	12.77	92.7'	0°	0°
25	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	1900		0	65	4.7	60	TPO	Watt	0	1	2066.1	15.37	98.7'	0°	0°
26	T-MOBILE	Ericsson AIR 21 B4A B2P	Panel	2100		0	65	4.7	60	TPO	Watt	0	1	2066.1	15.37	98.7'	0°	0°
27	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	1900		120	65	4.7	60	TPO	Watt	0	1	2066.1	15.37	98.7'	0°	0°
28	T-MOBILE	Ericsson AIR 21 B4A B2P	Panel	2100		120	65	4.7	60	TPO	Watt	0	1	2066.1	15.37	98.7'	0°	0°
29	T-MOBILE	Ericsson AIR 21 B2A B4P	Panel	1900		240	65	4.7	60	TPO	Watt	0	1	2066.1	15.37	98.7'	0°	0°
30	T-MOBILE	Ericsson AIR 21 B4A B2P	Panel	2100		240	65	4.7	60	TPO	Watt	0	1	2066.1	15.37	98.7'	0°	0°
31	SPRINT	RFS APXVTM14-C-I20	Panel	2500		0	68	4.7	160	TPO	Watt	0	1	6167.7	15.86	75.7'	0°	0°
32	SPRINT	RFS APXVSPP18-C-A20	Panel	862		0	65	6	100	TPO	Watt	0	1	2172.7	13.37	75'	0°	0°
32	SPRINT	RFS APXVSPP18-C-A20	Panel	1900		0	65	6	90	TPO	Watt	0	1	3812.8	16.27	75'	0°	0°
33	SPRINT	RFS APXVTM14-C-I20	Panel	2500		120	68	4.7	160	TPO	Watt	0	1	6167.7	15.86	75.7'	0°	0°
34	SPRINT	RFS APXVSPP18-C-A20	Panel	1900		120	65	6	100	TPO	Watt	0	1	4236.4	16.27	75'	0°	0°
34	SPRINT	RFS APXVSPP18-C-A20	Panel	862		120	65	6	90	TPO	Watt	0	1	1955.4	13.37	75'	0°	0°
35	UKNOWN	Generic	Omni	450		0	360	4.7	100	ERP	Watt	0	1	100	2.97	77.6'	0°	0°
36	UKNOWN	Generic	Omni	450		0	360	4.7	100	ERP	Watt	0	1	100	2.97	92.6'	0°	0°
37	UKNOWN	Generic	Omni	450		0	360	4.7	100	ERP	Watt	0	1	100	2.97	92.6'	0°	0°
38	UKNOWN	Generic	Omni	450		0	360	4.7	100	ERP	Watt	0	1	100	2.97	77.6'	0°	0°
39	UKNOWN	Generic	Aperture	21692		109.4	2	2	58.2	EIRP	dBmW	0	1	402.4	37.96	80'	0°	0°
40	UKNOWN	Generic	Omni	450		0	360	4.7	100	ERP	Watt	0	1	100	2.97	92.6'	0°	0°

Note: The Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

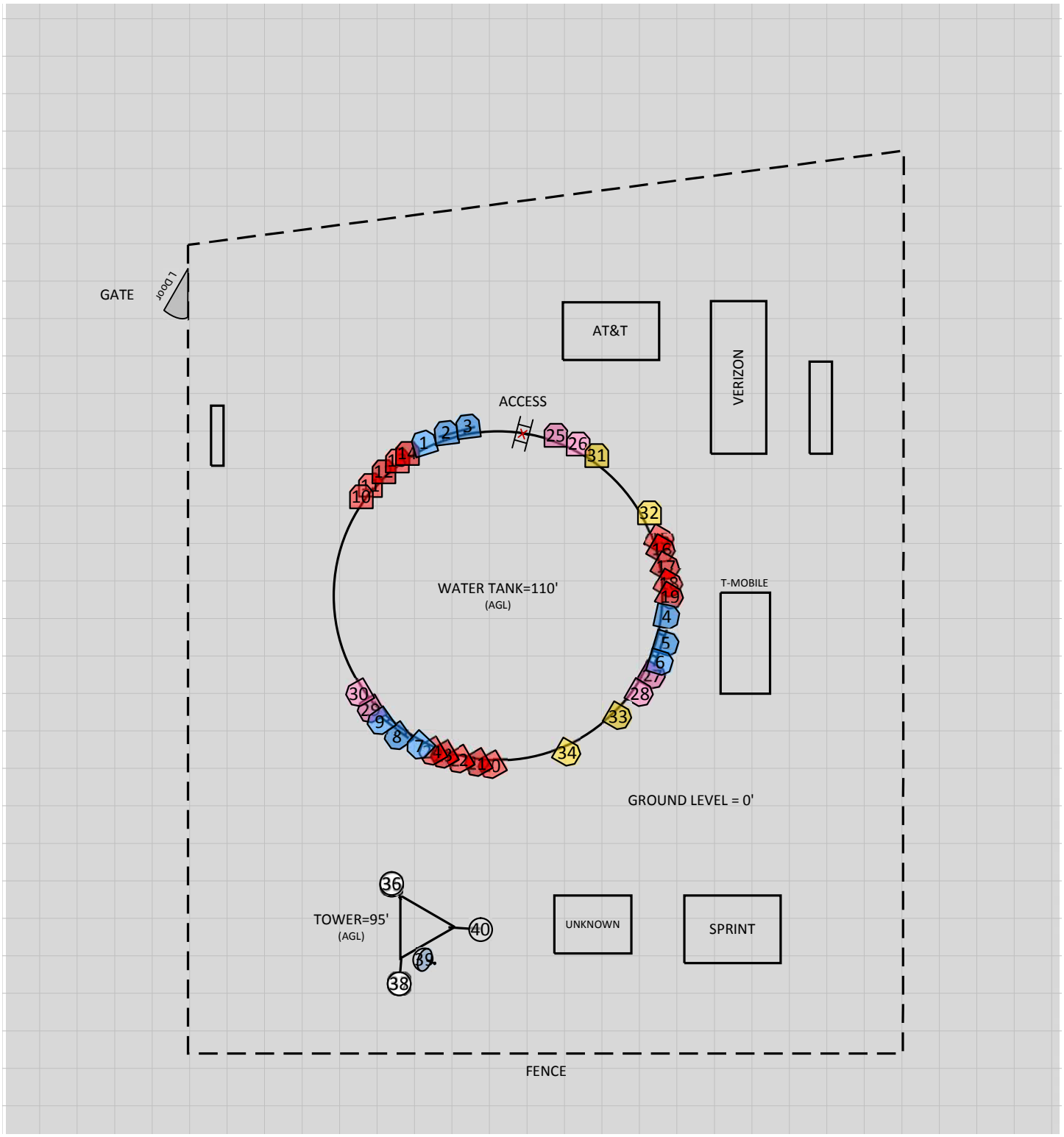
4 Emission Predictions

In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas. The total analyzed elevations in the below RF Exposure Simulations are listed below.

- Ground Level = 0'
- Water Tank = 110'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: Windsor Locks North
Composite Diagram



% of FCC Public Exposure Limit
Spatial average 0' - 6'

% of FCC Public Exposure Limit
>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification
AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

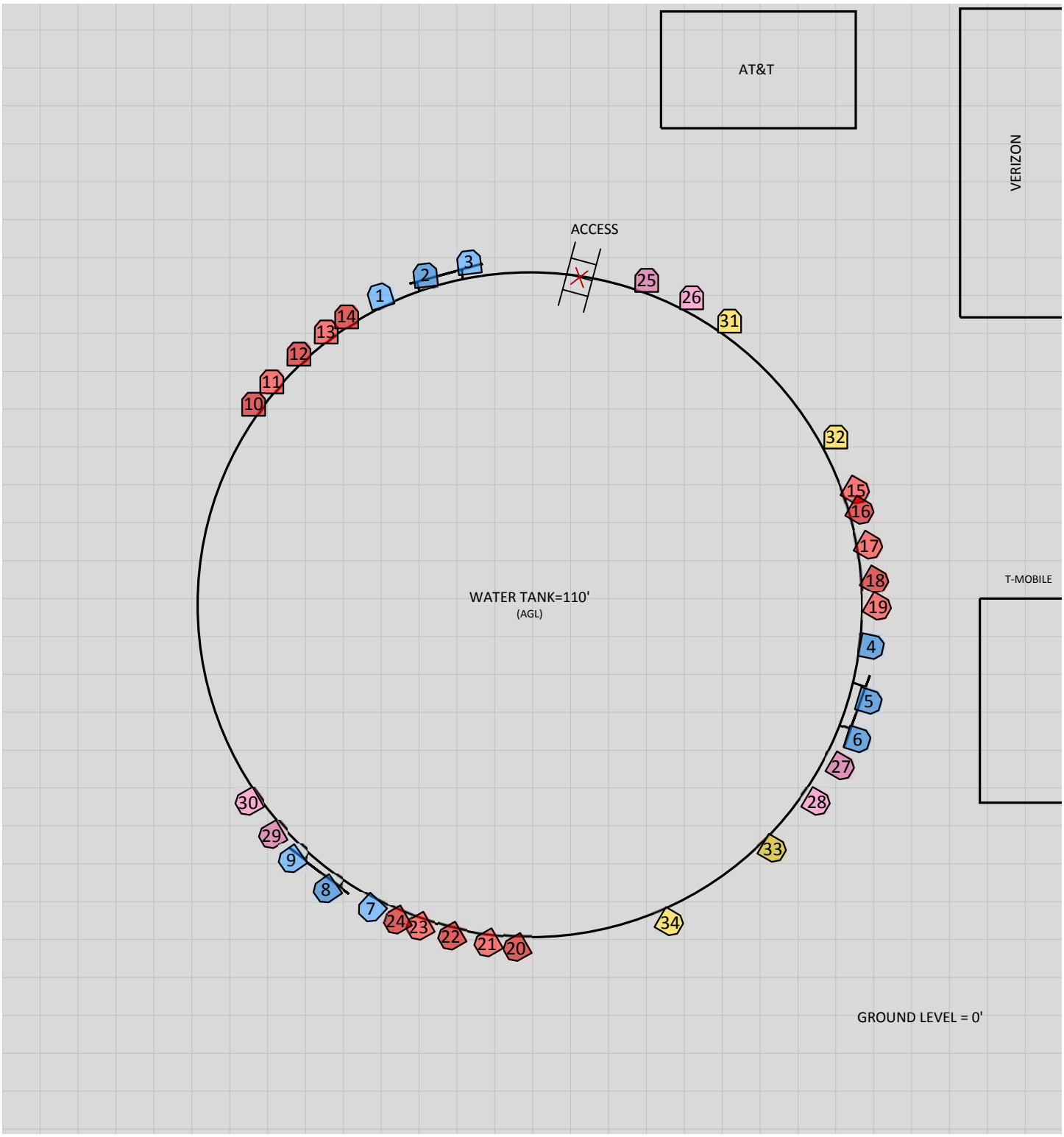
Barrier | Proposed Barriers/ Signs

(Feet)
0 15 30

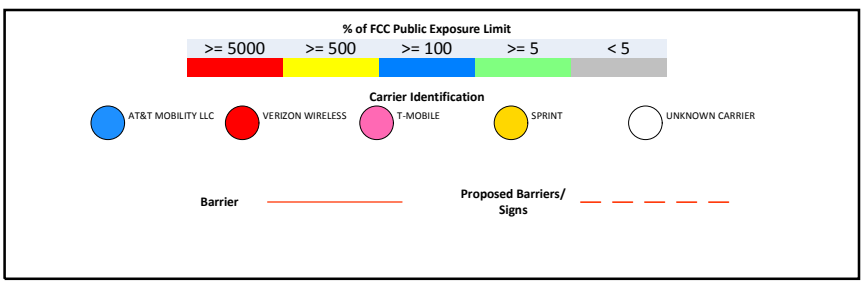
www.sitesafe.com
Site Name:Windsor Locks North
5/8/2019 7:59:35 PM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Windsor Locks North
All Sector Detailed View



% of FCC Public Exposure Limit
Spatial average 0' - 6'

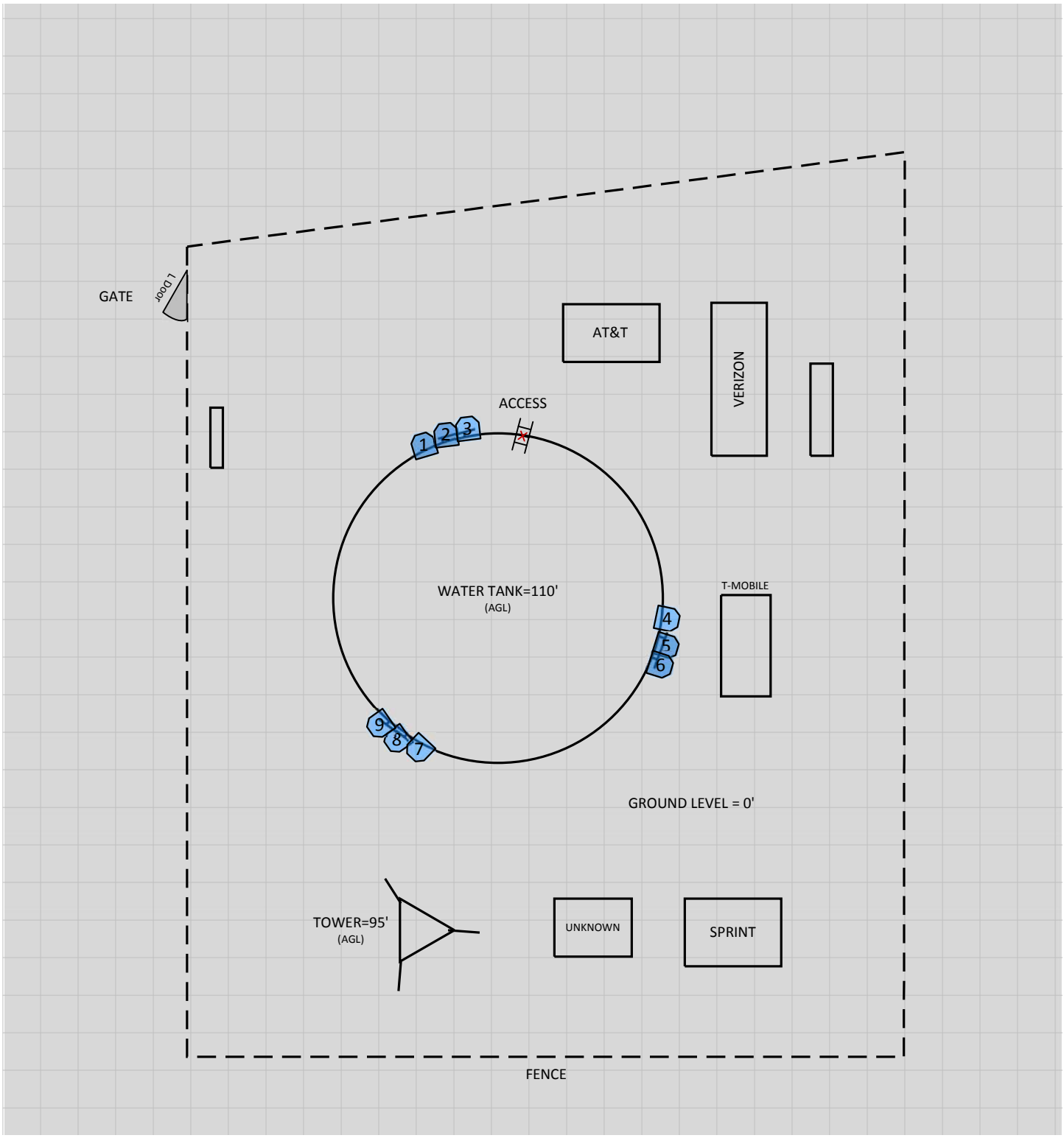


(Feet)
0 7.4 14.9

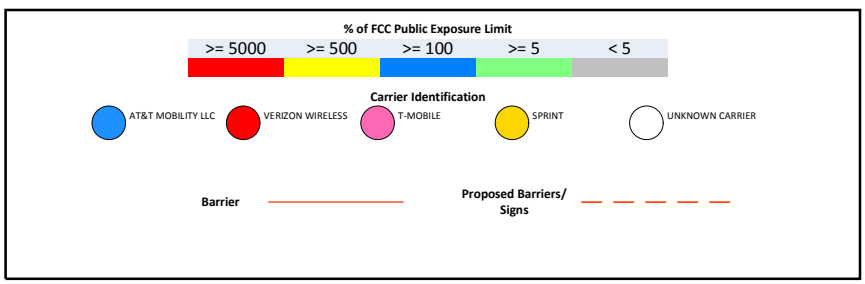
www.sitesafe.com
Site Name:Windsor Locks North
5/8/2019 8:01:19 PM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Windsor Locks North
AT&T Mobility, LLC Contribution



% of FCC Public Exposure Limit
Spatial average 0' - 6'



(Feet)
0 15 30
www.sitesafe.com
Site Name:Windsor Locks North
5/8/2019 8:02:08 PM

Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC is compliant with the FCC rules and regulations, as described in OET Bulletin 65.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC is compliant with the FCC rules and regulations.

Recommended per AT&T Mobility, LLC's Policy:

Water Tank Access Location

The existing Caution 1 and Information 1 sign is recommended to be replaced with a Caution 2 sign.

Gate Location

Remove the existing Notice 1 and Information 1 sign(s) from this location.

Tower Access Location

Remove the existing Caution 1 and Information 1 sign(s) from this location.

Notes:

- Ensure all existing signage and barriers documented in this report still exist at the site, unless otherwise indicated.
- Any existing signage that conflicts with the proposed signage in this report should be removed per AT&T Signage Posting Rules.

6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Site Safe, LLC, in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Zyotty Thamsil.

May 8, 2019

Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

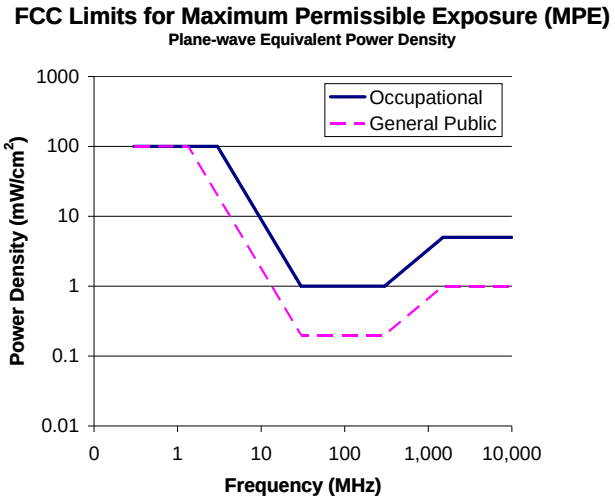
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lockout/Tagout procedure aimed to control the unexpected energization or startup of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a worker's understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet-based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst-case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. Gray represents areas more than 20 times below the most conservative exposure limit. **Gray areas are accessible to anyone**.
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone.**
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers**.
- Yellow represents areas predicted to exceed Occupational MPE limits. **Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.**
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

If trained occupational personnel require access to areas that are delineated as above 100% of the limit, Sitesafe recommends that they utilize the proper personal protection equipment (RF monitors), coordinate with the carriers to reduce or shutdown power, or make real-time power density measurements with the appropriate power density meter to determine real-time MPE levels. This will allow the personnel to ensure that their work area is within exposure limits.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Appendix F – Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible for taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site complies with FCC standards with regards to Human Exposure to Radio Frequency Electromagnetic Fields from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to a half-wave dipole antenna.

Gain (of an antenna) – The ratio of the maximum power in a given direction to the maximum power in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antenna as compared to an omnidirectional antenna.

General Population/Uncontrolled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **unaware** of the potential for exposure and who have no control over their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use its industry specific knowledge of antenna models to select a worst-case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **aware** of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of RF exposure on humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency Exposure or Electromagnetic Fields – Electromagnetic waves that are propagated from antennas through space.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy a 6-foot tall human body will absorb while present in an electromagnetic field of energy.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix G – References

The following references can be followed for further information about RF Health and Safety.

Site Safe, LLC
http://www.sitesafe.com
FCC Radio Frequency Safety
http://www.fcc.gov/encyclopedia/radio-frequency-safety
National Council on Radiation Protection and Measurements (NCRP)
http://www.ncrponline.org
Institute of Electrical and Electronics Engineers, Inc., (IEEE)
http://www.ieee.org
American National Standards Institute (ANSI)
http://www.ansi.org
Environmental Protection Agency (EPA)
http://www.epa.gov/radtown/wireless-tech.html
National Institutes of Health (NIH)
http://www.niehs.nih.gov/health/topics/agents/emf/
Occupational Safety and Health Agency (OSHA)
http://www.osha.gov/SLTC/radiofrequencyradiation/
International Commission on Non-Ionizing Radiation Protection (ICNIRP)
http://www.icnirp.org
World Health Organization (WHO)
http://www.who.int/peh-emf/en/
National Cancer Institute
http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones
American Cancer Society (ACS)
http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?siteareа=PED
European Commission Scientific Committee on Emerging and Newly Identified Health Risks
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf
Fairfax County, Virginia Public School Survey
http://www.fcps.edu/fts/safety-security/RFEESurvey/
UK Health Protection Agency Advisory Group on Non-Ionizing Radiation
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368
Norwegian Institute of Public Health
http://www.fhi.no/dokumenter/545eea7147.pdf

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MONDAY

20 MAY 2019 ⓘ by **8:00pm** ⓘ

Status

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