



July 18, 2018

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

Regarding: Notice of Exempt Modification – Swap of 3 Antennas and Addition of 3 radios
Property Address: 75 Wells Road, Wethersfield, CT (the “Property”)
Applicant: AT&T Mobility (“AT&T”, Site # CT1074)

Dear Ms. Bachman:

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

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

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

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

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T’s antennas and associated lines will be installed at 106 foot level of the 101 foot 6 Inch Monopole tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.



4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached structural analysis completed by Malouf Engineering Intl., Inc. dated June 29, 2018).

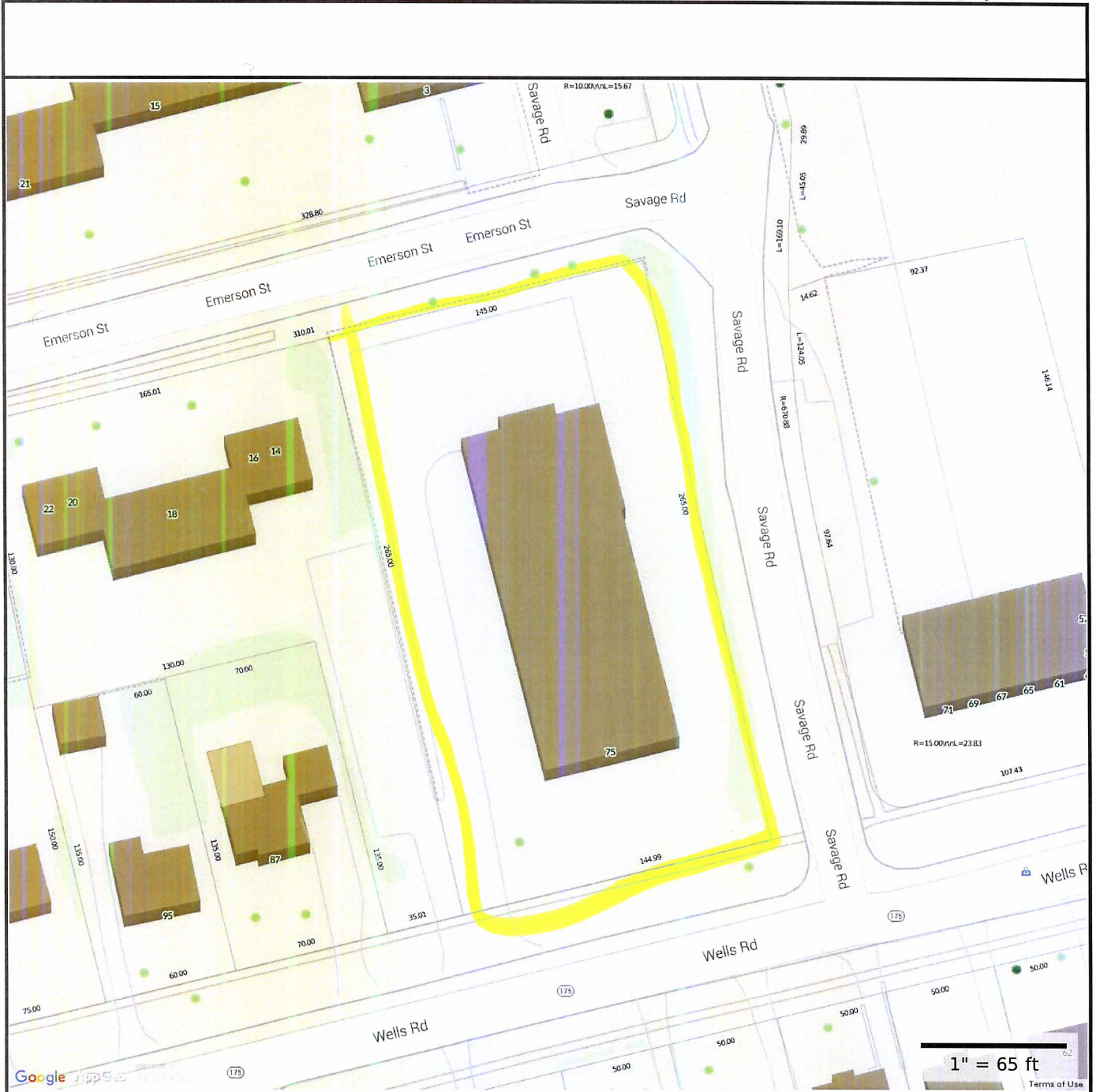
For the foregoing reasons AT&T respectfully requests that the proposed addition of radios be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: Kathy Bagley, Interim Town Manager, Town of Wethersfield
Steve Lattarulo, Chief Building Official, Town of Wethersfield
Peter Gillespie, Director of Planning and Economic Development, Town of Wethersfield
Frontier Communications, c/o Kelley Stewart

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



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

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



WIRELESS COMMUNICATIONS FACILITY

CT1074 - LTE 4C AWS

WETHERSFIELD

75 WELLS ROAD

WETHERSFIELD, CT 06109

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.

SITE DIRECTIONS

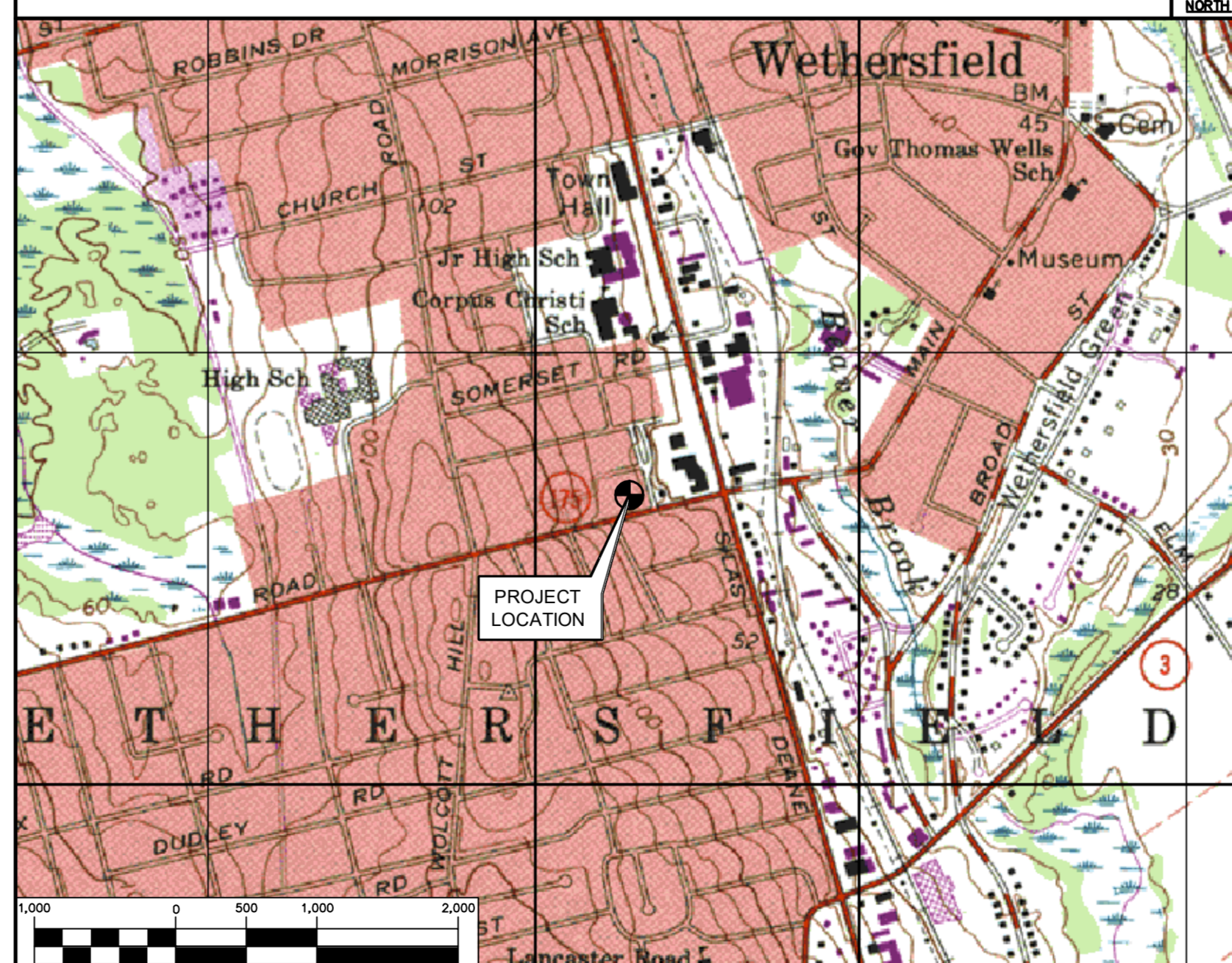
FROM: 500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

TO: 75 WELLS ROAD
WETHERSFIELD, CONNECTICUT

1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD 0.36 MI
2. TURN LEFT ONTO CAPITAL BLVD 0.27 MI
3. TURN LEFT ONTO WEST ST 0.16 MI
4. TURN LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD 2.69 MI
5. TAKE THE CT-99 EXIT, EXIT 24, TOWARD WETHERSFIELD/ROCKY HILL. 0.23 MI
6. MERGE ONTO SILAS DEANE HWY/CT-99 TOWARD WETHERSFIELD. 1.87 MI
7. TURN LEFT ONTO WELLS RD/CT-175. 0.11 MI
8. 75 WELLS RD, WETHERSFIELD, CT 06109-3050, 75 WELLS RD IS ON THE RIGHT.

VICINITY MAP

SCALE: 1" = 1000'



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 ANTENNAS
 - INSTALL (3) NEW RRU-32 B66
 - INSTALL (3) NEW HEX-PORT ANTENNAS
 - RELOCATE (6) EXISTING ANTENNAS AND ASSOCIATED RRU'S AND TMA'S TO POSITIONS PER RFDS
 - INSTALL (6) SWIVEL RRU MOUNTS TO ACCOMMODATE EXISTING AND ADDITIONAL RRU'S
 - B. **WORK WITHIN EXISTING AT&T EQUIPMENT ROOM:**
 - INSTALL (1) ADDITIONAL XMU UNIT WITHIN EXISTING LTE EQUIPMENT RACK

PROJECT INFORMATION

AT&T SITE NUMBER: CT1074

AT&T SITE NAME: WETHERSFIELD

SITE ADDRESS: 75 WELLS ROAD
WETHERSFIELD, CT 06109

LESSEE/APPLICANT: AT&T MOBILITY
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

AT&T PACE ID NUMBERS: MRCTB026770

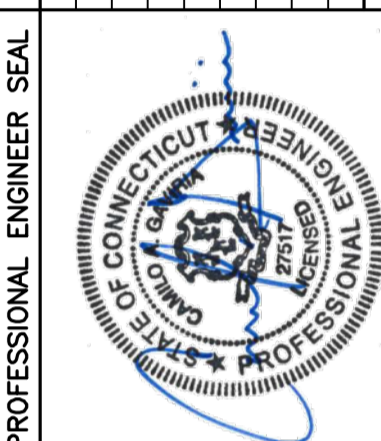
AT&T FA LOCATION CODE: 10035051

ENGINEER: CENTEK ENGINEERING, INC.
63-2 NORTH BRANFORD RD.
BRANFORD, CT 06405

PROJECT COORDINATES: LATITUDE: 41°-42'-21.07" N
LONGITUDE: 72°-39'-48.26" W
GROUND ELEVATION: ±74' 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	LTE 4C AWS ANTENNA LAYOUT PLANS	0
C-3	DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0



CENTEK engineering
Centek on Solutions™
(203) 488-0360
(203) 488-8387 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
WETHERSFIELD
CT1074 - LTE 4C AWS
75 WELLS ROAD
WETHERSFIELD, CT 06109

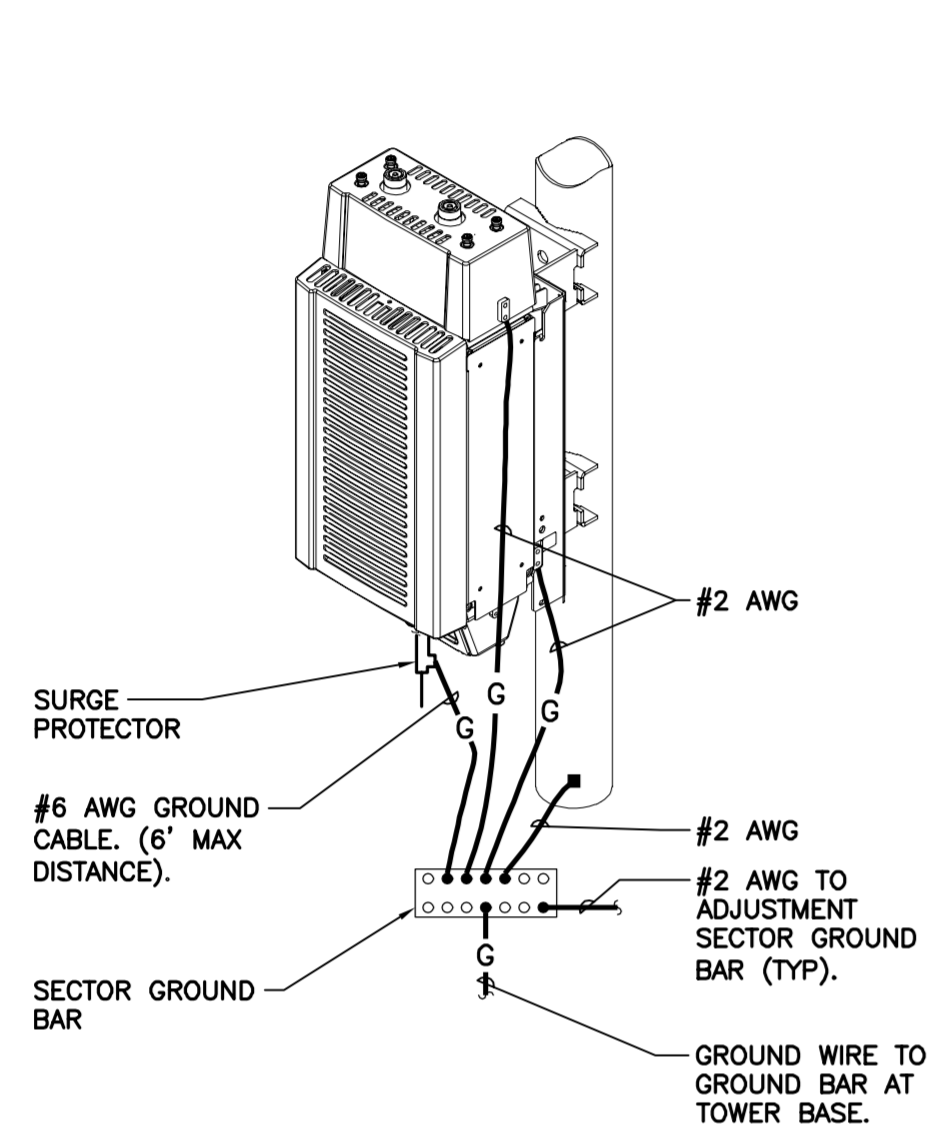
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SCALE: AS NOTED
JOB NO.: 18000.17

TITLE SHEET

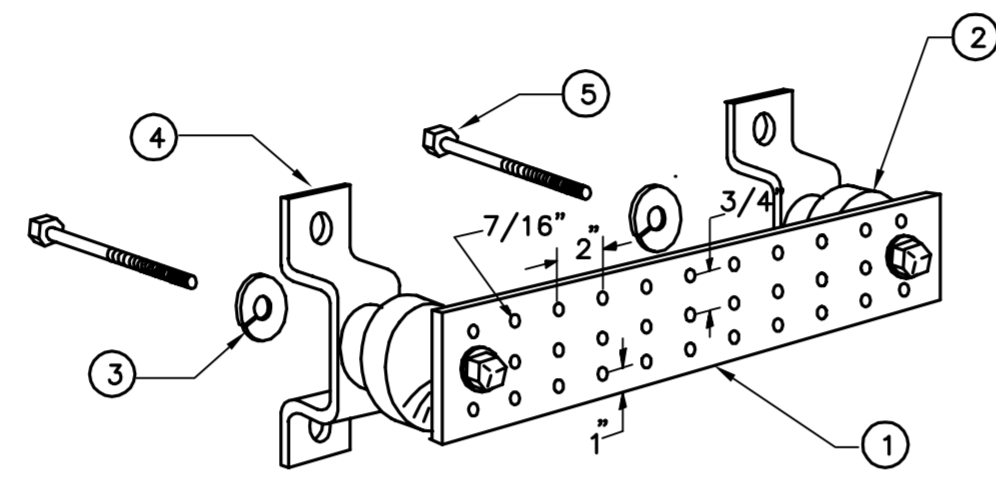
T-1
Sheet No. 1 of 8

REV.	DATE	BY	CHK'D BY	DMD	ISSUED FOR
0	06/15/18	KAWUR			CONSTRUCTION DRAWINGS

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
 1. AT TOP OF THE CABINET
 2. AT RIGHT SIDE OF THE CABINET.



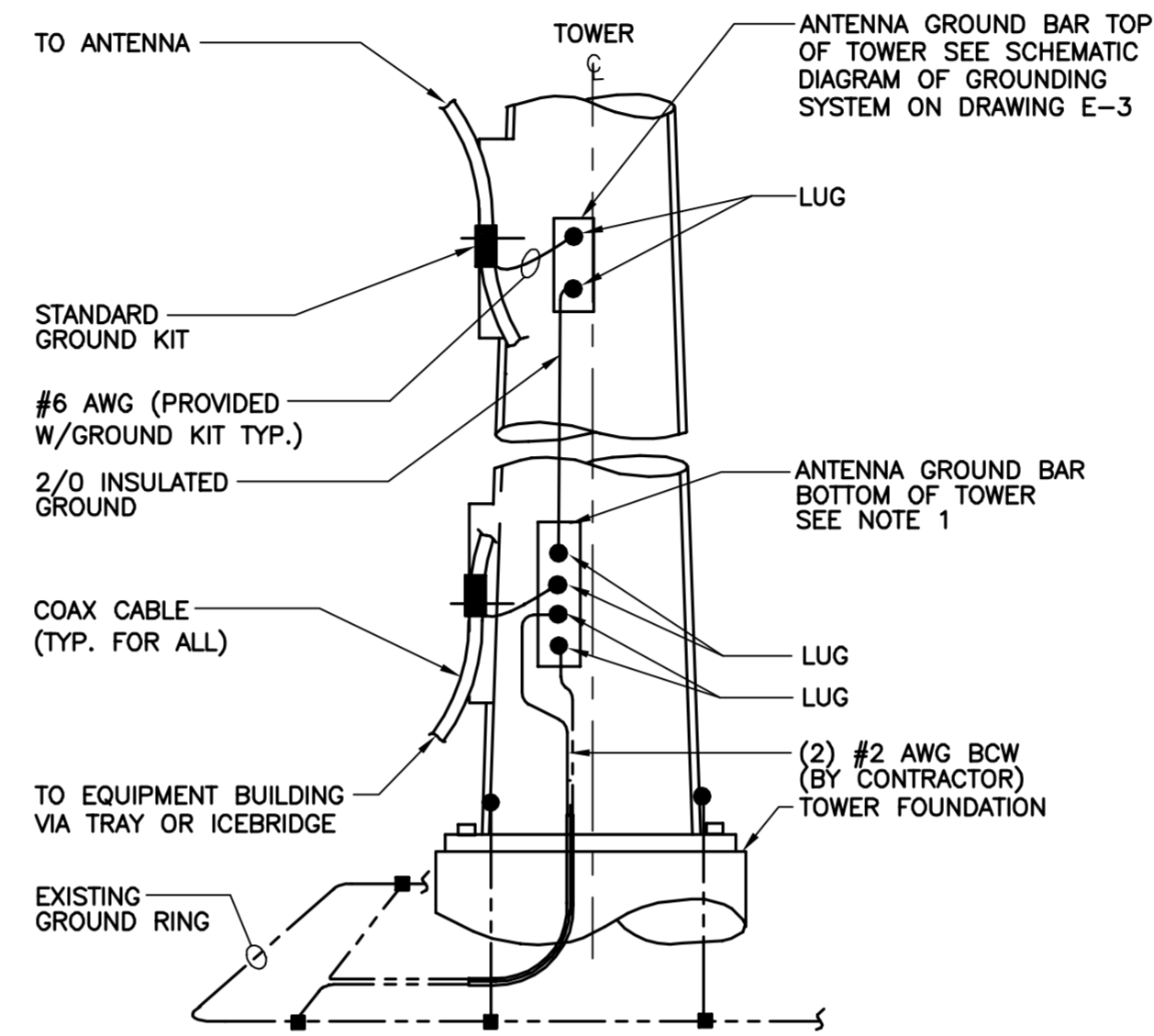
4 RRU POLE MOUNT GROUNDED
 E-3 NOT TO SCALE



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. 3/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

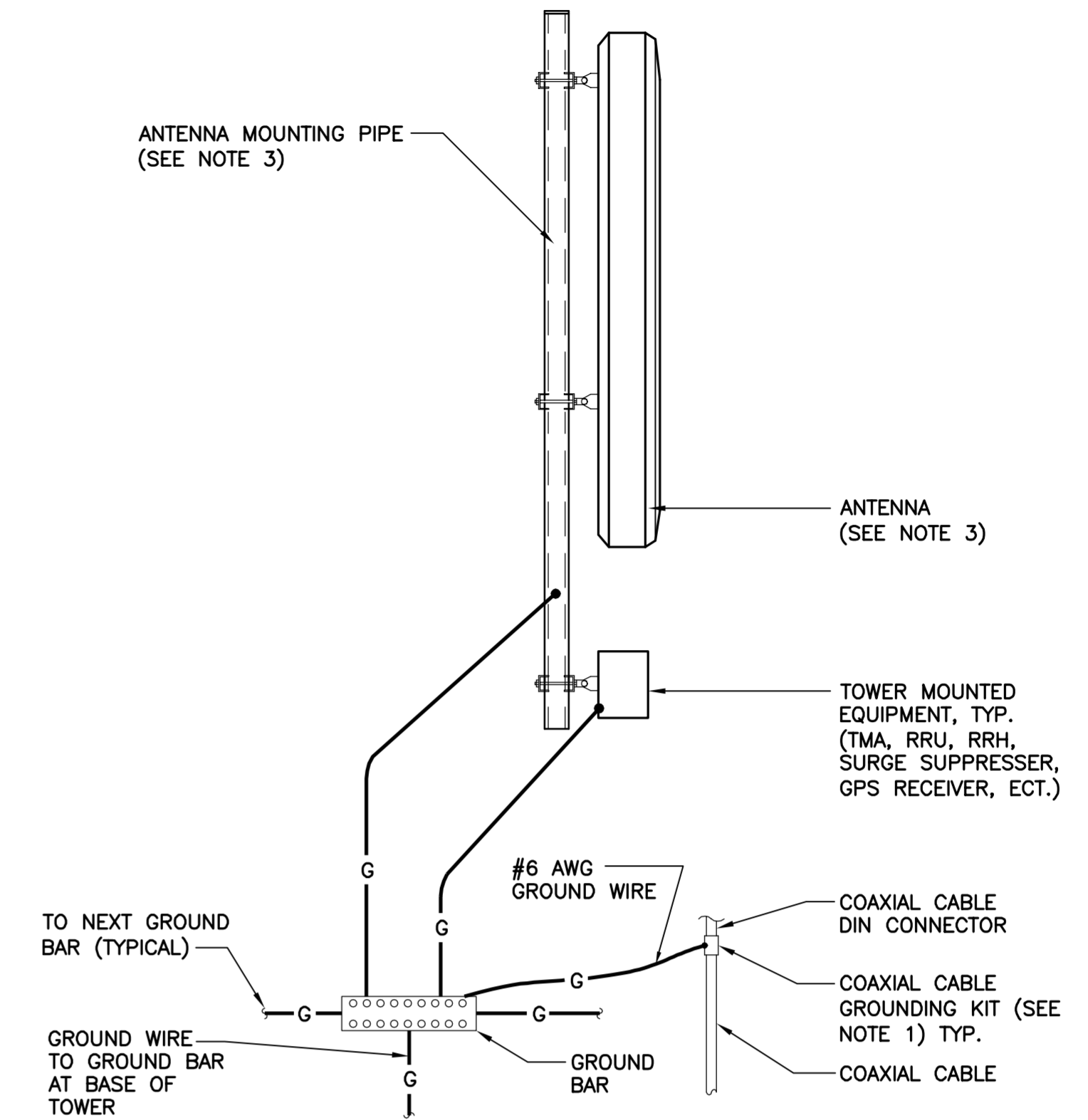
3 GROUND BAR DETAIL
 E-3 NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

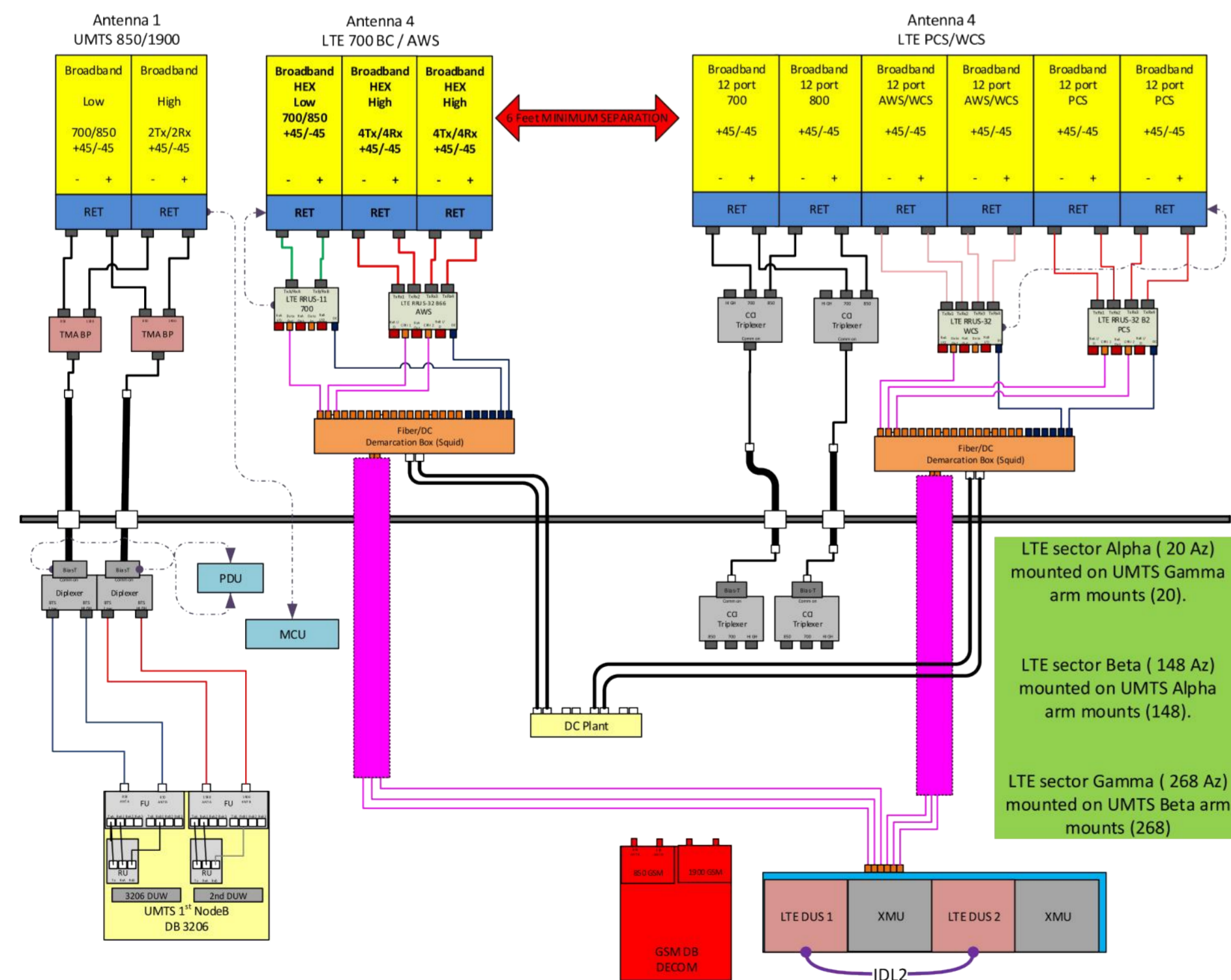
2 ANTENNA CABLE GROUNDED - TOWER
 E-3 NOT TO SCALE



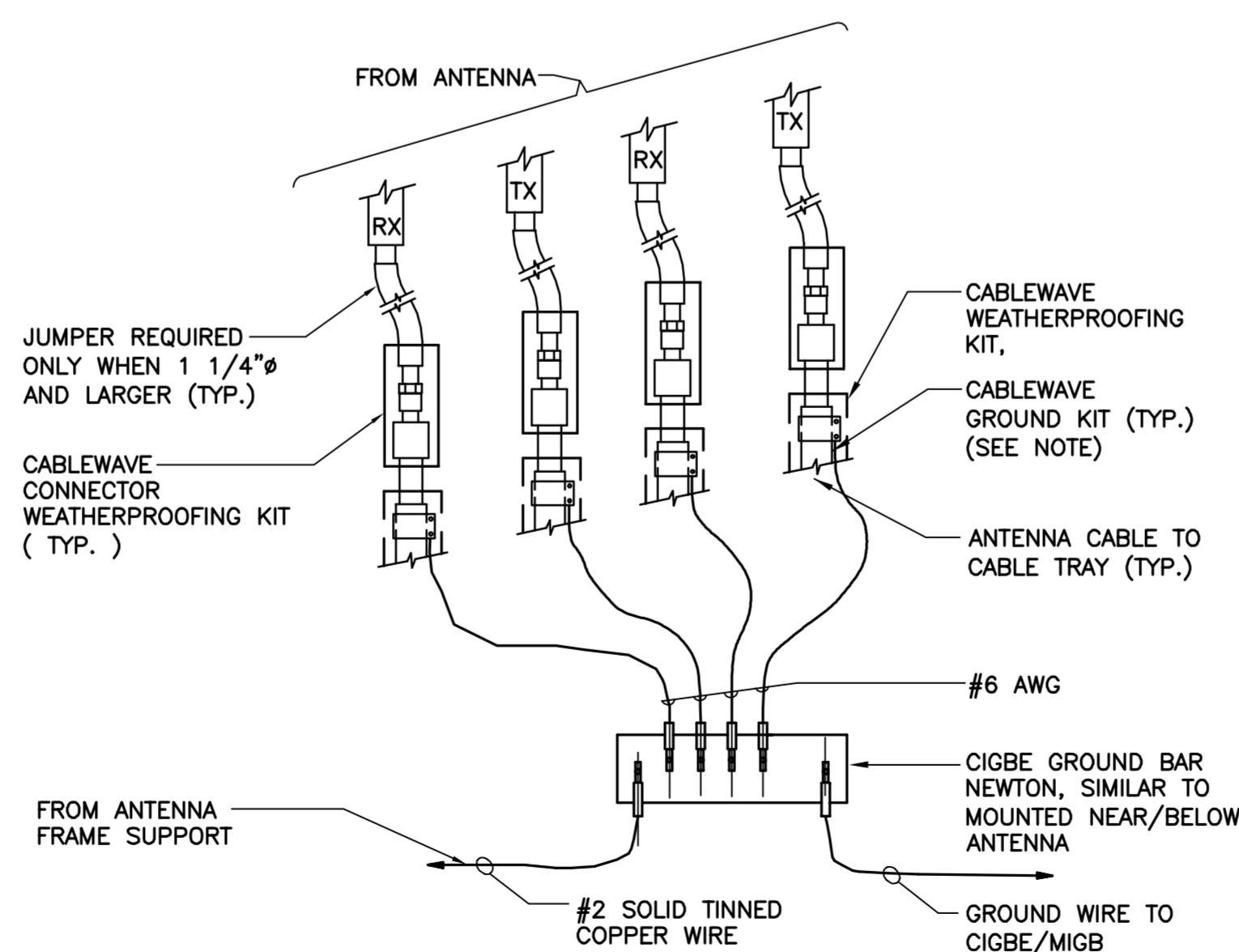
NOTES:

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.

1 TYPICAL ANTENNA GROUNDED DETAIL
 E-3 NOT TO SCALE



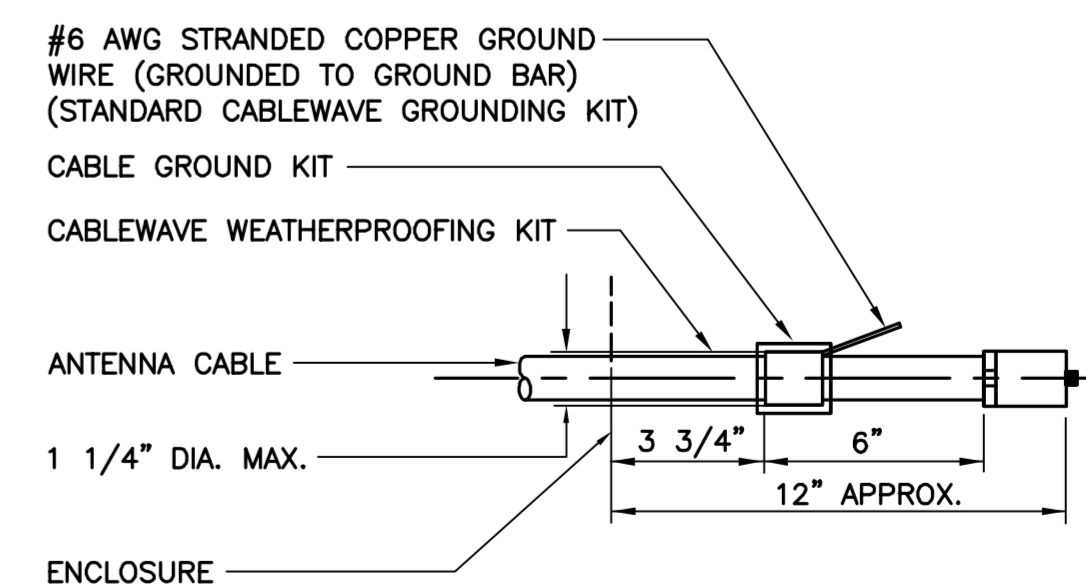
7 RF PLUMBING DIAGRAM
 E-3 NOT TO SCALE



NOTE:

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

6 CONNECTION OF GROUND WIRES TO GROUND BAR
 E-3 NOT TO SCALE



NOTE:

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

5 ANTENNA CABLE GROUNDED DETAIL
 E-3 NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/15/18	KAWUR		CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION



CENTEX engineering
 Centered on Solutions
 (203) 488-0360
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 Branford, CT 06405
 www.CentexEng.com

AT&T MOBILITY
 WIRELESS COMMUNICATIONS FACILITY
WETHERSFIELD
 CT1074 - LTE 4C AWS
 75 WELLS ROAD
 WETHERSFIELD, CT 06109

DATE: 04/02/18
 SCALE: AS NOTED
 JOB NO. 18000.17

TYPICAL ELECTRICAL DETAILS

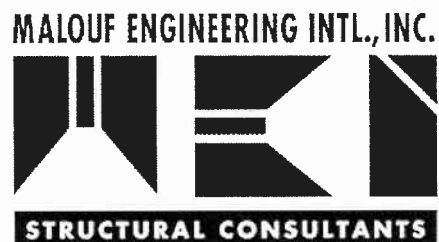
Rigorous Structural Analysis Report



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

June 29, 2018

MEI PROJECT ID: CT04861M-18V0



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

www.maloufengineering.com





June 29, 2018

Ms. Nicole Caplan
Empire Telecom
 Billerica, MA 01862

RIGOROUS STRUCTURAL ANALYSIS

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

EXECUTIVE SUMMARY:

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

Based on the stress analysis performed, the existing structure **is in conformance** with the Int'l Building Code (IBC) / ANSI/TIA-222-G Standard for the loading considered under the criteria listed and referenced in the report sections – tower rated at 91.7% - Foundation.

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

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

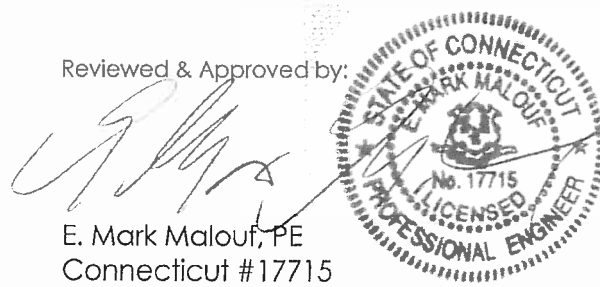
Respectfully submitted,

MALOUF ENGINEERING INT'L, INC.

Analysis performed by:

Luan Nguyen, PE
 Sr. Project Engineer

Reviewed & Approved by:



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

6/29/2018

TABLE OF CONTENTS

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

1. INTRODUCTION & SCOPE

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

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

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

2. SOURCE OF DATA

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

	Source	Information	Reference
STRUCTURE			
Tower	MEI Records	Previous Structural Analysis	ID CT04861M-17V0 Dated 06/28/2017
Foundation	MEI Records	Previous Structural Analysis	ID CT04861M-17V0 Dated 06/28/2017
Material Grade	Not available from supplied documents-Assumed based on typical towers of this type-refer to Appendix		
CURRENT APPURTENANCES			
	MEI Records	Previous Structural Analysis	ID CT04861M-17V0 Dated 06/28/2017
CHANGED CONDITION			
	Frontier Communications Ms. Elissa McOmber	Frontier PDQ	Dated 06/11/2018
	Empire Telecom Ms. Nicole Caplan	AT&T RF Data Sheet	Dated 10/25/2017

Background Information:

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

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

3. ANALYSIS CRITERIA

The structural analysis performed used the following criteria:

CODE / STANDARD	2016 CT Building Code / 2012 Int'l Building Code / ANSI/TIA-222-G-2 Standard	
LOADING CASES	Full Wind:	129 Mph ultimate gust [equiv. 100 Mph (3-sec gust)] w/No Radial Ice**
	Iced Case:	40 Mph + 1.25" Radial Ice
	Service:	60 Mph
	Seismic:	$S_s = 0.181$ / $S_1 = 0.064$ / Site Class: D – Stiff Soil
STRUCTURE CRITERIA	Risk Category (Structural Class): 2	
	Exposure Category: 'B' – Topographic Category: 1	

Appurtenances Configuration

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

Table 1: Tenant with Changed Condition Appurtenances Configuration

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
103.5	AT&T	3	HPA-65R-BUU-H6 Panel Antennas	[Existing Mounts]		[Existing Lines]
		3	RRUS-32 B66 Boxes			
Current Appurtenances to Remain						
103.5	AT&T	3	QS66512-3 Panel Antennas	Top Platform w/ Rails (& Ladder)	12	1-5/8"
		3	7770.00 Panels Panel Antennas		2	5/8" Fiber
		3	RRUS-11 Boxes		4	3/4" DC Power
		3	RRUS-32 Boxes		1	ATCB-B01-xxx
		3	RRUS-32 B2 Boxes			Homerun
		2	Raycap DC6 (Squid) Suppressors			Cable-(I/E)
		6	LGP21401 TMA'S			
6	TPX-070821 Triplexers					
Current Appurtenances to Be Removed						
103.5	AT&T	3	AM-X-CD-16-65-00T-RET Panel Ants.			

Table 2: Remaining Tenants Current and Reserved/Future Appurtenances

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

Notes:

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



4. ANALYSIS PROCEDURE

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

Analysis Program

The computer program used to model the structure is a rigorous Finite Element Analysis program, fnxTower (ver. 8.02), a commercially available program by Tower Numerics Inc. The latticed structures members are modeled using beam/truss and cable members and the pole members using tubular beam elements. The structural parameters and geometry of the members are included in the model. The dead and temperature loads and the wind loads are internally calculated by the program for the different wind directions and then applied as external loads on the structure. Any applicable exemptions, as per Section 15.6 of the TIA-222-G Standard for existing structures originally designed in accordance with a previous revision of the TIA-222 Standard, have been taken.

Assumptions

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

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

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

5. ANALYSIS RESULTS

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

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

Table 3: Stress Analysis Results

Component Type	Maximum Stress Ratio	Controlling Elev. (ft) / Component	Pass/Fail	Comment
POLE	78.6%	88 - 61.25	Pass	
BASE PLATE	84.8%	Bending	Pass	
ANCHOR RODS	52%	Tension	Pass	
FOUNDATION	91.7%	Moment	Pass	

Table 4: Serviceability Requirements

	Maximum Value	TIA Requirement (10dB)	Pass/Fail	Comment
TWIST/SWAY	1.7536 Deg.	4 Deg. from Vert. or Horiz. Axis	Pass	
HORIZONTAL DISPLACEMENT	18.670 In./ 1.54% of Ht.	3.0% of Height	Pass	

Notes:

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



6. FINDINGS & RECOMMENDATIONS

- Based on the rigorous stress analysis results, the subject structure is **rated at 91.7%** of its support capacity (controlling component: Foundation) with the proposed changed condition considered. Please refer to Table 3 and to Appendix 1 for more details of the analysis results.
- Based on the stress analysis performed, the existing structure **is in conformance** with the IBC / ANSI/TIA **222-G** Standard for the loading considered under the criteria listed and referenced in the report sections.
- **The installation of the proposed changed condition as noted in Table 1 is structurally acceptable.** Please refer to Appendix 1 for Schematic Lines Layout.
- This structure is near its support capacity for the appurtenances and loading criteria considered. Therefore, no changes to the configuration considered should be made without performing a new proper evaluation.

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



7. REPORT DISCLAIMER

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

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

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

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

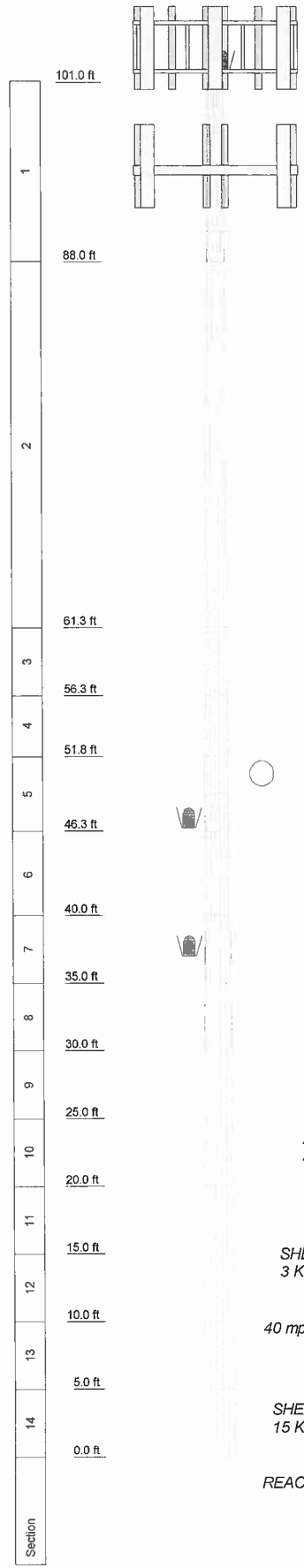
Customer has requested MALOUF ENGINEERING INTERNATIONAL, INC. to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested MALOUF ENGINEERING INTERNATIONAL, INC. to make appropriate recommendations regarding suggested structural modifications and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

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



APPENDIX 1 - ANALYSIS PRINTOUT & GRAPHICS





DESIGNED APPURTENANCE LOADING

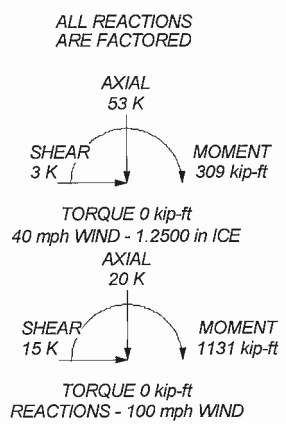
TYPE	ELEVATION	TYPE	ELEVATION
QS66512-3 w/ Pipe Mount (ATI / E)	103.5	Raycap DC6 (Squid) Suppressor (ATI / E)	103.5
QS66512-3 w/ Pipe Mount (ATI / E)	103.5	RRUS-32 B66 (ATI / P)	103.5
QS66512-3 w/ Pipe Mount (ATI / E)	103.5	RRUS-32 B66 (ATI / P)	103.5
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	RRUS-32 B66 (ATI / P)	103.5
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	Top Platform w/ Rails (Ladder) (ATI / E)	103.5
7770.00 Panels w/ Pipe Mount (ATI / E)	103.5	5' Lightning Rod (E)	101
HPA-65R-BUU-H6 w/ Pipe Mounts (ATI / P)	103.5	Beacon/Strobe (E)	101
HPA-65R-BUU-H6 w/ Pipe Mounts (ATI / P)	103.5	AIR21 w/ pipe Mount (T-Mobile / E)	95
HPA-65R-BUU-H6 w/ Pipe Mounts (ATI / P)	103.5	AIR21 w/ pipe Mount (T-Mobile / E)	95
HPA-65R-BUU-H6 w/ Pipe Mounts (ATI / P)	103.5	AIR21 w/ pipe Mount (T-Mobile / E)	95
RRUS-11 (ATT) (ATI / E)	103.5	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95
RRUS-11 (ATT) (ATI / E)	103.5	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95
RRUS-11 (ATT) (ATI / E)	103.5	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	95
RRUS-32 B2 (ATI / E)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 B2 (ATI / E)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 B2 (ATI / E)	103.5	RRUS-11 B12 (T-Mobile / E)	95
RRUS-32 (ATI / C)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
RRUS-32 (ATI / E)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
RRUS-32 (ATI / E)	103.5	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	95
(2) LGP21401 TMA'S (ATI / E)	103.5	GPS (E)	46.5
(2) LGP21401 TMA'S (ATI / E)	103.5	GPS (E)	46.5
(2) LGP21401 TMA'S (ATI / E)	103.5	GPS (E)	37
(2) TPX-070821 Triplexer (ATI / E)	103.5	GPS (E)	37
(2) TPX-070821 Triplexer (ATI / E)	103.5	18" Approx. Standoff Arm (E)	37
Raycap DC6 (Squid) Suppressor (ATI / E)	103.5	18" Approx. Standoff Arm (E)	37

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 84.8%








<p>MALOUF ENGINEERING INT'L, INC. STRUCTURAL CONSULTANTS maloufengineering.com</p>	<p>MALOUF ENGINEERING INT'L, INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583</p>	<p>Job: 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051</p>
	<p>Project: CT04861M-18V0</p>	<p>Client: Empire Telecom / AT&T Drawn by: HLopez App'd:</p>
	<p>Code: TIA-222-G Date: 06/29/18 Scale: NTS</p>	<p>Path: C:\MEI\Projects\18files\18MNP\CT04861M-18V0\CT04861M-18V0.dwg Dwg No E-1</p>

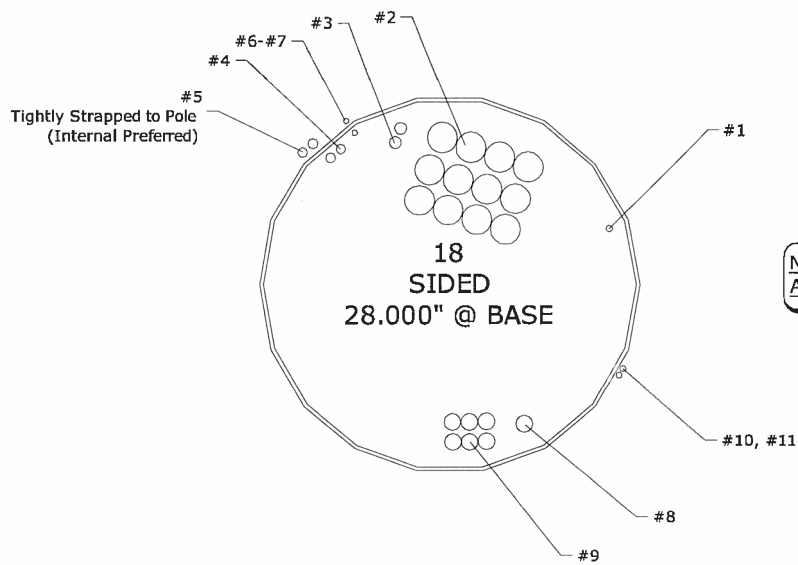
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No.	QTY.	DESCRIPTION	ELEV.	TENANT
1	1	1/2	101'	E (Lighting)
2	12	1 5/8	101'	AT&T / E
3	2	5/8" Fiber Cable	101'	AT&T / E
4	2	3/4" DC Power Cable	101'	AT&T / E
5	2	3/4" DC Power Cable	101'	AT&T / E
6	1	ATCB-B01-xxx Homerun Cable (Ext.)	62'-101'	AT&T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

LEGEND:

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

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



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

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

JUN 29, 2018

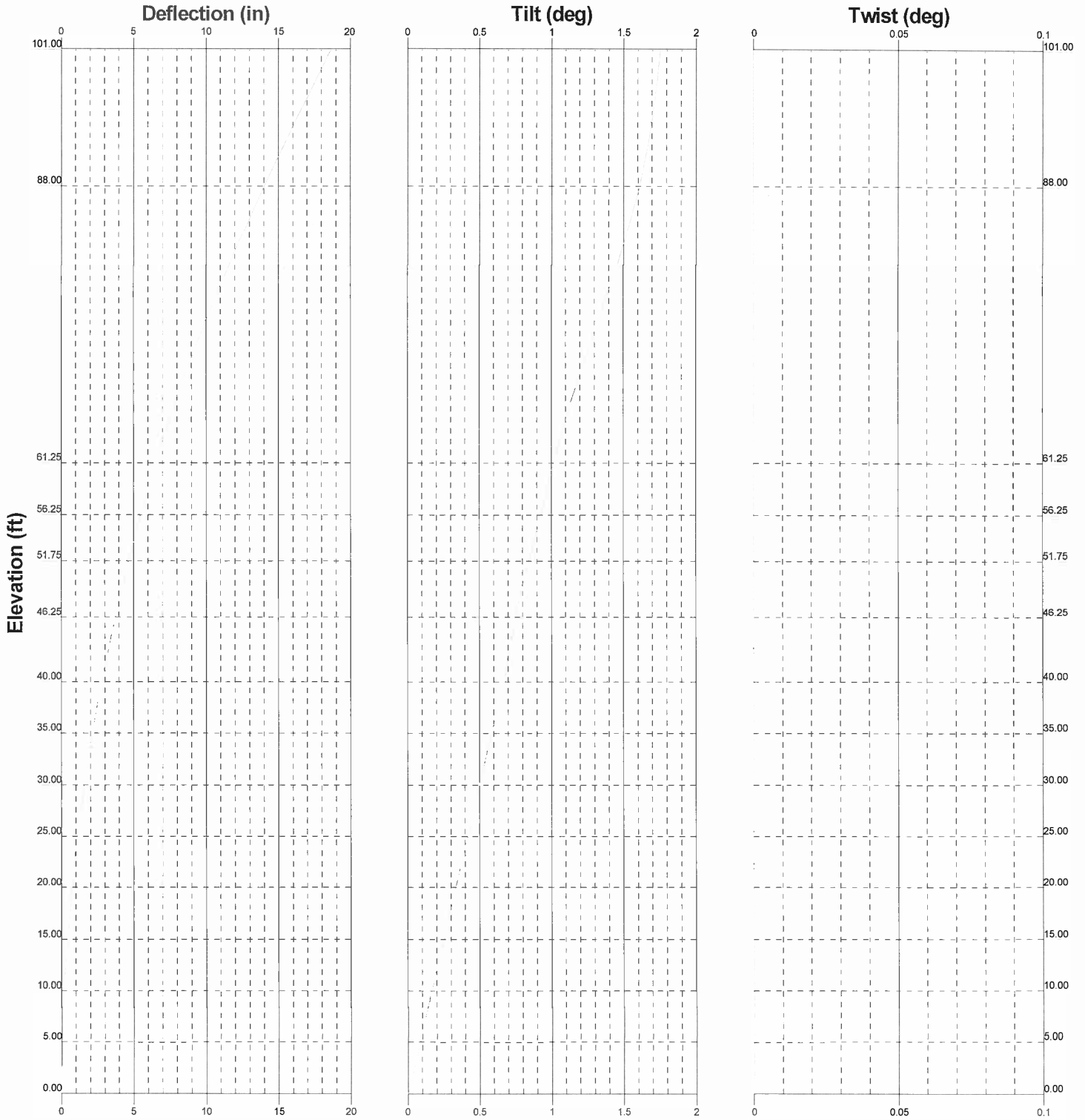
MALOUF ENGINEERING INTERNATIONAL, INC.


 STRUCTURAL CONSULTANTS
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101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051
MONOPOLE TxLINE LAYOUT

MEI PROJECT ID	SHEET NUMBER	REV.
CT04861M-18V0	L01	0



 MALOUF ENGINEERING INT'L. INC. STRUCTURAL CONSULTANTS maloufengineering.com	MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583		Job: 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	
	Project: CT04861M-18V0		Client: Empire Telecom / AT&T	
	Code: TIA-222-G		Drawn by: HLopez	
	Date: 06/29/18		App'd:	
	Path: C:\MEIProjects\18files\MNP\CT04861M-18V0\CT04861M-18V0.eri		Scale: NTS Dwg No: E-5	

<i>tnxTower</i> MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 1 of 5
	Project CT04861M-18V0	Date 15:40:01 06/29/18
	Client Empire Telecom / AT&T	Designed by HLopez

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 100 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.2500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

<i>tnxTower</i> MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 2 of 5
	Project CT04861M-18V0	Date 15:40:01 06/29/18
	Client Empire Telecom / AT&T	Designed by HLopez

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

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

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 3 of 5
	Project CT04861M-18V0	Date 15:40:01 06/29/18
	Client Empire Telecom / AT&T	Designed by HLopez

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Placement ft</i>	<i>Description</i>	<i>Face or Leg</i>	<i>Placement ft</i>
5' Lightning Rod (E)	A	101.00	(AT&T / E)		
Beacon/Strobe (E)	B	101.00	Raycap DC6 (Squid) Suppressor (AT&T / E)	A	103.50
QS66512-3 w/ Pipe Mount (AT&T / E)	A	103.50	Raycap DC6 (Squid) Suppressor (AT&T / E)	B	103.50
QS66512-3 w/ Pipe Mount (AT&T / E)	B	103.50	RRUS-32 B66 (AT&T / P)	A	103.50
QS66512-3 w/ Pipe Mount (AT&T / E)	C	103.50	RRUS-32 B66 (AT&T / P)	B	103.50
7770.00 Panels w/ Pipe Mount (AT&T / E)	A	103.50	RRUS-32 B66 (AT&T / P)	C	103.50
7770.00 Panels w/ Pipe Mount (AT&T / E)	B	103.50	Top Platform w/ Rails (& Ladder) (AT&T / E)	A	103.50
7770.00 Panels w/ Pipe Mount (AT&T / E)	C	103.50	AIR21 w/ pipe Mount (T-Mobile / E)	A	95.00
HPA-65R-BUU-H6 w/ Pipe Mounts (AT&T / P)	A	103.50	AIR21 w/ pipe Mount (T-Mobile / E)	B	95.00
HPA-65R-BUU-H6 w/ Pipe Mounts (AT&T / P)	B	103.50	AIR21 w/ pipe Mount (T-Mobile / E)	C	95.00
HPA-65R-BUU-H6 w/ Pipe Mounts (AT&T / P)	C	103.50	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	A	95.00
RRUS-11 (AT&T) (AT&T / E)	A	103.50	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	B	95.00
RRUS-11 (AT&T) (AT&T / E)	B	103.50	Ericsson KRC 118 057/1 w/ pipe Mount (T-Mobile / E)	C	95.00
RRUS-11 (AT&T) (AT&T / E)	C	103.50	RRUS-11 B12 (T-Mobile / E)	A	95.00
RRUS-32 B2 (AT&T / E)	A	103.50	RRUS-11 B12 (T-Mobile / E)	B	95.00
RRUS-32 B2 (AT&T / E)	B	103.50	RRUS-11 B12 (T-Mobile / E)	C	95.00
RRUS-32 B2 (AT&T / E)	C	103.50	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	A	95.00
RRUS-32 (AT&T / E)	A	103.50	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	B	95.00
RRUS-32 (AT&T / E)	B	103.50	12.5 ft. L.P. T-Arm Mount (SitePro1 RMV12-3XX) (T-Mobile / E)	C	95.00
RRUS-32 (AT&T / E)	C	103.50	GPS (E)	A	46.50
(2) LGP21401 TMA'S (AT&T / E)	A	103.50	18" Approx. Standoff Arm (E)	A	46.50
(2) LGP21401 TMA'S (AT&T / E)	B	103.50	GPS (E)	A	37.00
(2) LGP21401 TMA'S (AT&T / E)	C	103.50	18" Approx. Standoff Arm (E)	A	37.00
(2) TPX-070821 Triplexer (AT&T / E)	A	103.50			
(2) TPX-070821 Triplexer (AT&T / E)	B	103.50			
(2) TPX-070821 Triplexer (AT&T / E)	C	103.50			

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 4 of 5
	Project CT04861M-18V0	Date 15:40:01 06/29/18
	Client Empire Telecom / AT&T	Designed by HLopez

Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt <i>°</i>	Twist <i>°</i>
L1	101 - 88	18.670	40	1.7536	0.0010
L2	90.25 - 61.25	14.817	40	1.6466	0.0007
L3	61.25 - 56.25	6.503	40	1.0151	0.0003
L4	56.25 - 51.75	5.487	40	0.9256	0.0003
L5	51.75 - 46.25	4.653	40	0.8427	0.0003
L6	49 - 40	4.183	40	0.7907	0.0003
L7	40 - 35	2.798	40	0.6648	0.0003
L8	35 - 30	2.144	40	0.5834	0.0002
L9	30 - 25	1.576	40	0.5011	0.0002
L10	25 - 20	1.095	40	0.4182	0.0001
L11	20 - 15	0.701	40	0.3348	0.0001
L12	15 - 10	0.394	40	0.2511	0.0001
L13	10 - 5	0.175	40	0.1673	0.0001
L14	5 - 0	0.044	40	0.0836	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt <i>°</i>	Twist <i>°</i>	Radius of Curvature <i>ft</i>
103.50	QS66512-3 w/ Pipe Mount	40	18.670	1.7536	0.0011	7739
101.00	5' Lightning Rod	40	18.670	1.7536	0.0011	7739
95.00	AIR21 w/ pipe Mount	40	16.495	1.7029	0.0009	6450
46.50	GPS	40	3.774	0.7515	0.0003	4165
37.00	GPS	40	2.395	0.6171	0.0002	3474

Base Plate Design Data

Plate Thickness <i>in</i>	Number of Anchor Bolts	Anchor Bolt Size <i>in</i>	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
3.7000	8	1.7500	111.87 216.48 0.52	2.612 4.080 0.64	38.159 45.000 0.85		Plate	0.85 ✓

tnxTower MALOUF ENGINEERING INT'L. INC. 17950 PRESTON RD. SUITE 720 DALLAS, TEXAS - 75252 Phone: (972) 783-2578 FAX: (972) 783-2583	Job 101 ft. MNP. / Wethersfield Site #CT1074 / FA #10035051	Page 5 of 5
	Project CT04861M-18V0	Date 15:40:01 06/29/18
	Client Empire Telecom / AT&T	Designed by HLopez

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	θP_{allow} K	% Capacity	Pass Fail
L1	101 - 88	Pole	TP16.36x14.64x0.1875	1	-6.04	701.90	39.8	Pass
L2	88 - 61.25	Pole	TP19.7689x15.6873x0.25	2	-8.87	1150.70	78.6	Pass
L3	61.25 - 56.25	Pole	TP20.4726x19.7689x0.250*	3	-9.56	1717.72	58.7	Pass
L4	56.25 - 51.75	Pole	TP21.1059x20.4726x0.250*	4	-10.19	1754.20	62.2	Pass
L5	51.75 - 46.25	Pole	TP21.88x21.1059x0.250*	5	-10.58	1764.42	64.6	Pass
L6	46.25 - 40	Pole	TP22.28x20.725x0.3125*	6	-12.46	2370.46	56.8	Pass
L7	40 - 35	Pole	TP22.995x22.28x0.3125*	7	-13.41	2419.54	59.3	Pass
L8	35 - 30	Pole	TP23.71x22.995x0.3125*	8	-14.35	2466.74	61.8	Pass
L9	30 - 25	Pole	TP24.425x23.71x0.3125*	9	-15.31	2517.17	64.0	Pass
L10	25 - 20	Pole	TP25.14x24.425x0.3125*	10	-16.30	2566.02	66.2	Pass
L11	20 - 15	Pole	TP25.855x25.14x0.3125*	11	-17.30	2613.31	68.3	Pass
L12	15 - 10	Pole	TP26.57x25.855x0.3125*	12	-18.32	2664.61	70.1	Pass
L13	10 - 5	Pole	TP27.285x26.57x0.3125*	13	-19.37	2714.66	71.9	Pass
L14	5 - 0	Pole	TP28x27.285x0.3125*	14	-20.44	2763.46	73.7	Pass
Summary								
Pole (L2)							78.6	Pass
Base Plate							84.8	Pass
RATING =							84.8	Pass

*Modified w/ MP304 & MP303 Channels

APPENDIX 2 – SOURCE / CHANGED CONDITION



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

ITEM #	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	AMX-CD-16-65-00T-RET						
ANTENNA VENDOR	KMW						
ANTENNA SIZE (H x W x D)	55X11X5						
ANTENNA WEIGHT	48.5						
AZIMUTH	20						
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	103.5						
ANTENNA TIP HEIGHT	106.5						
MECHANICAL DOWN TILT	0						
FEEDER AMOUNT	2						
SEPARATION from ANTENNA ABOVE (TIP to TIP)							
SEPARATION from ANTENNA BELOW (TIP to TIP)							
NTAL SEPARATION from CLOSEST LEFT (CENTERLINE to CENTERLINE)							
NTAL SEPARATION from CLOSEST RIGHT (CENTERLINE to CENTERLINE)							
NTAL SEPARATION from ANOTHER MNA (which antenna # if 16 feet inches)							
Antenna RET Motor (QTY/MODEL)	Powerwave / 7020 (DB)	Built-in RET					
SURGE ARRESTOR (QTY/MODEL)	1	DC-Fiber Squid					
DIPLEXER (QTY/MODEL)	2						
DUPLEXER (QTY/MODEL)							
RET CONTROL UNIT (QTY/MODEL)	1	RRH Controlled					
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2						
VECTORS FOR TMA (QTY/MODEL)	2						
POI FOR TMA (QTY/MODEL)	1						
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	RRUS-11					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1	RRUS-32 B2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
RRH #1 - any band (QTY/MODEL)							
RRH #2 - any band (QTY/MODEL)							
ditional Component 1 (QTY/MODEL)							
ditional Component 2 (QTY/MODEL)							
ditional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT NUMBER	USED (GSSng)	USED (Atoll)	ATOLL THID	ATOLL CELL ID	TXRX TECHNOLOGY/FREQ	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top Bottom/ Intra/Outra/ In)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HAT/CP/LAT E POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (GSSNG)
PORT 1		CTU10741	CTU10741	CTU10741	UMTS 850	7770.00.850.08	13.5	148	8	None	Commscope 1-5/8 (850)	170.043535					288.54			1	
PORT 3		CTU10747	CTU10747	CTU10747	UMTS 1900	7770.00.1900.06	15.5	148	6	None	Commscope 1-5/8 (1900)	170.043535					337.29			2	
PORT 1		CTL01074_7A_1	CTL01074_7A_1	CTL01074_7A_1	LTE 700	AMX-CD-16-65-00T-RET_725MHZ_03DT	15.6	20	3	Top	FIBER	150					1475.7065			3	

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

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	HPA-6SR-BUU-H6					
ANTENNA VENDOR	CCI					
ANTENNA SIZE (ft x W x D)	72x14.8x9					
ANTENNA WEIGHT	51					
AZIMUTH	20					
MAGNETIC DECLINATION						
RADIATION CENTER (feet)	1065					
ANTENNA TIP HEIGHT	1065					
MECHANICAL DOWNTILT	0					
FEEDER AMOUNT	Fiber					
SEPARATION from ANTENNA ABOVE (ft to TIP)						
SEPARATION from ANTENNA BELOW (ft to TIP)						
MINIMAL SEPARATION from CLOSEST EFT (CENTERLINE to CENTERLINE)						
MINIMAL SEPARATION from CLOSEST 3HT (CENTERLINE to CENTERLINE)						
VITAL SEPARATION from ANOTHER NMA (which antenna # / ft or inches)	Bulk-in-RET					
SURGE ARRESTOR (QTY/MODEL)						
DIPLEXER (QTY/MODEL)						
DUPLEXER (QTY/MODEL)						
RET CONTROL UNIT (QTY/MODEL)	RRH Controlled					
DC BLOCK (QTY/MODEL)						
THALAMA (QTY/MODEL)						
VECTORS FOR TMA (QTY/MODEL)						
PDU FOR TMA (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)						
RRH - 1900 band (QTY/MODEL)						
RRH - AWS band (QTY/MODEL)	1					
RRH - WCS band (QTY/MODEL)						
RRH #1 - any band (QTY/MODEL)						
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: LTE 4C-AWS(U) low-Replace existing LTE Antenna -Add LTE AWS RRUS -Reuse existing DC Fiber Spaul -Add 2nd XMU.

Local Market Note 2: LTE sector Alpha (20 Az) mounted on UMITS Gamma arm mounts (20). LTE sector Beta (145 Az) mounted on UMITS Alpha arm mounts (145). LTE sector Gamma (268 Az) mounted on UMITS Beta arm mounts (268).

Local Market Note 3: Baseband Config 2 DUS * 2 XMU * IDL2

PORT NUMBER	USED (CSS#)	USED (AtoI)	ATOLL TXID	ATOLL CELLID	TX/RX TECHNOLOGY/FREQ	ANTENNA A TOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RRH KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SOPANCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)	
PORT 1			CTL01074_2A_1	CTL01074_2A_1	LTE 700	HPA-6SR-BUU-H6_719MHz_030T	14.22	20	3	TOP	FIBER	150					1475.7065	1475.7065		3		
PORT 3			CTL01074_2A_2	CTL01074_2A_2	LTE AWS	HPA-6SR-BUU-H6_2350MHz_030T	17.49	20	8	TOP	FIBER	150						1475.7065	1475.7065		4	

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

ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ITEM #	ANTENNA MAKE - MODEL	HPA-65R-BU11-H6				
ITEM #	ANTENNA VENDOR	CCI				
ITEM #	ANTENNA SIZE (H x W x D)	72X14.8X9				
ITEM #	ANTENNA WEIGHT	51				
ITEM #	ANTENNA AZIMUTH	148				
ITEM #	MAGNETIC DECLINATION					
ITEM #	RADIATION CENTER (feet)	103.5				
ITEM #	ANTENNA TIP HEIGHT	106.5				
ITEM #	MECHANICAL DOWN TILT	0				
ITEM #	FEEDER AMOUNT	Fiber				
ITEM #	SEPARATION from ANTENNA ABOVE (Tip to TIP)					
ITEM #	SEPARATION from ANTENNA BELOW (Tip to TIP)					
ITEM #	VERTICAL SEPARATION from CLOSEST EFT (CENTERLINE to CENTERLINE)					
ITEM #	VERTICAL SEPARATION from CLOSEST RHT (CENTERLINE to CENTERLINE)					
ITEM #	VERTICAL SEPARATION from ANOTHER NMA (which antenna # / # of inches)					
ITEM #	Antenna RET Motor (QTY/MODEL)	Built-in RET				
ITEM #	SURGE ARRESTOR (QTY/MODEL)					
ITEM #	DIPLXER (QTY/MODEL)					
ITEM #	DIPLXER (QTY/MODEL)					
ITEM #	RET CONTROL UNIT (QTY/MODEL)	RRH Controlled				
ITEM #	DC BLOCK (QTY/MODEL)					
ITEM #	T/M/L/M/A (QTY/MODEL)					
ITEM #	VECTORS FOR TMA (QTY/MODEL)					
ITEM #	PDU FOR TMA (QTY/MODEL)					
ITEM #	FILTER (QTY/MODEL)					
ITEM #	SQUID (QTY/MODEL)					
ITEM #	FIBER TRUNK (QTY/MODEL)					
ITEM #	DC TRUNK (QTY/MODEL)					
ITEM #	REPEATER (QTY/MODEL)					
ITEM #	RRH - 706 band (QTY/MODEL)					
ITEM #	RRH - 850 band (QTY/MODEL)					
ITEM #	RRH - 800 band (QTY/MODEL)					
ITEM #	RRH - AWS band (QTY/MODEL)	1				
ITEM #	RRH - WCS band (QTY/MODEL)					
ITEM #	RRH #1 - any band (QTY/MODEL)					
ITEM #	RRH #2 - any band (QTY/MODEL)					
ITEM #	RRH #3 - any band (QTY/MODEL)					
ITEM #	RRH #4 - any band (QTY/MODEL)					
ITEM #	RRH #5 - any band (QTY/MODEL)					
ITEM #	RRH #6 - any band (QTY/MODEL)					
ITEM #	RRH #7 - any band (QTY/MODEL)					
ITEM #	RRH #8 - any band (QTY/MODEL)					
ITEM #	RRH #9 - any band (QTY/MODEL)					
ITEM #	RRH #10 - any band (QTY/MODEL)					
ITEM #	RRH #11 - any band (QTY/MODEL)					
ITEM #	RRH #12 - any band (QTY/MODEL)					
ITEM #	RRH #13 - any band (QTY/MODEL)					
ITEM #	RRH #14 - any band (QTY/MODEL)					
ITEM #	RRH #15 - any band (QTY/MODEL)					
ITEM #	RRH #16 - any band (QTY/MODEL)					
ITEM #	RRH #17 - any band (QTY/MODEL)					
ITEM #	RRH #18 - any band (QTY/MODEL)					
ITEM #	RRH #19 - any band (QTY/MODEL)					
ITEM #	RRH #20 - any band (QTY/MODEL)					
ITEM #	RRH #21 - any band (QTY/MODEL)					
ITEM #	RRH #22 - any band (QTY/MODEL)					
ITEM #	RRH #23 - any band (QTY/MODEL)					
ITEM #	RRH #24 - any band (QTY/MODEL)					
ITEM #	RRH #25 - any band (QTY/MODEL)					
ITEM #	RRH #26 - any band (QTY/MODEL)					
ITEM #	RRH #27 - any band (QTY/MODEL)					
ITEM #	RRH #28 - any band (QTY/MODEL)					
ITEM #	RRH #29 - any band (QTY/MODEL)					
ITEM #	RRH #30 - any band (QTY/MODEL)					
ITEM #	RRH #31 - any band (QTY/MODEL)					
ITEM #	RRH #32 - any band (QTY/MODEL)					
ITEM #	RRH #33 - any band (QTY/MODEL)					
ITEM #	RRH #34 - any band (QTY/MODEL)					
ITEM #	RRH #35 - any band (QTY/MODEL)					
ITEM #	RRH #36 - any band (QTY/MODEL)					
ITEM #	RRH #37 - any band (QTY/MODEL)					
ITEM #	RRH #38 - any band (QTY/MODEL)					
ITEM #	RRH #39 - any band (QTY/MODEL)					
ITEM #	RRH #40 - any band (QTY/MODEL)					
ITEM #	RRH #41 - any band (QTY/MODEL)					
ITEM #	RRH #42 - any band (QTY/MODEL)					
ITEM #	RRH #43 - any band (QTY/MODEL)					
ITEM #	RRH #44 - any band (QTY/MODEL)					
ITEM #	RRH #45 - any band (QTY/MODEL)					
ITEM #	RRH #46 - any band (QTY/MODEL)					
ITEM #	RRH #47 - any band (QTY/MODEL)					
ITEM #	RRH #48 - any band (QTY/MODEL)					
ITEM #	RRH #49 - any band (QTY/MODEL)					
ITEM #	RRH #50 - any band (QTY/MODEL)					
ITEM #	RRH #51 - any band (QTY/MODEL)					
ITEM #	RRH #52 - any band (QTY/MODEL)					
ITEM #	RRH #53 - any band (QTY/MODEL)					
ITEM #	RRH #54 - any band (QTY/MODEL)					
ITEM #	RRH #55 - any band (QTY/MODEL)					
ITEM #	RRH #56 - any band (QTY/MODEL)					
ITEM #	RRH #57 - any band (QTY/MODEL)					
ITEM #	RRH #58 - any band (QTY/MODEL)					
ITEM #	RRH #59 - any band (QTY/MODEL)					
ITEM #	RRH #60 - any band (QTY/MODEL)					
ITEM #	RRH #61 - any band (QTY/MODEL)					
ITEM #	RRH #62 - any band (QTY/MODEL)					
ITEM #	RRH #63 - any band (QTY/MODEL)					
ITEM #	RRH #64 - any band (QTY/MODEL)					
ITEM #	RRH #65 - any band (QTY/MODEL)					
ITEM #	RRH #66 - any band (QTY/MODEL)					
ITEM #	RRH #67 - any band (QTY/MODEL)					
ITEM #	RRH #68 - any band (QTY/MODEL)					
ITEM #	RRH #69 - any band (QTY/MODEL)					
ITEM #	RRH #70 - any band (QTY/MODEL)					
ITEM #	RRH #71 - any band (QTY/MODEL)					
ITEM #	RRH #72 - any band (QTY/MODEL)					
ITEM #	RRH #73 - any band (QTY/MODEL)					
ITEM #	RRH #74 - any band (QTY/MODEL)					
ITEM #	RRH #75 - any band (QTY/MODEL)					
ITEM #	RRH #76 - any band (QTY/MODEL)					
ITEM #	RRH #77 - any band (QTY/MODEL)					
ITEM #	RRH #78 - any band (QTY/MODEL)					
ITEM #	RRH #79 - any band (QTY/MODEL)					
ITEM #	RRH #80 - any band (QTY/MODEL)					
ITEM #	RRH #81 - any band (QTY/MODEL)					
ITEM #	RRH #82 - any band (QTY/MODEL)					
ITEM #	RRH #83 - any band (QTY/MODEL)					
ITEM #	RRH #84 - any band (QTY/MODEL)					
ITEM #	RRH #85 - any band (QTY/MODEL)					
ITEM #	RRH #86 - any band (QTY/MODEL)					
ITEM #	RRH #87 - any band (QTY/MODEL)					
ITEM #	RRH #88 - any band (QTY/MODEL)					
ITEM #	RRH #89 - any band (QTY/MODEL)					
ITEM #	RRH #90 - any band (QTY/MODEL)					
ITEM #	RRH #91 - any band (QTY/MODEL)					
ITEM #	RRH #92 - any band (QTY/MODEL)					
ITEM #	RRH #93 - any band (QTY/MODEL)					
ITEM #	RRH #94 - any band (QTY/MODEL)					
ITEM #	RRH #95 - any band (QTY/MODEL)					
ITEM #	RRH #96 - any band (QTY/MODEL)					
ITEM #	RRH #97 - any band (QTY/MODEL)					
ITEM #	RRH #98 - any band (QTY/MODEL)					
ITEM #	RRH #99 - any band (QTY/MODEL)					
ITEM #	RRH #100 - any band (QTY/MODEL)					

Local Market Note 1: LTE 4C-AWS/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/106

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

ITEM #	ITEM NAME	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
1	Existing Antenna? HPA-6SR-BUJL-H6							
2	Antenna Vendor CCI							
3	Antenna Size (H x W x D) 72X14.8X9							
4	Antenna Weight 51							
5	Antenna Azimuth 268							
6	Magnetic Declination 103.5							
7	Radiation Center (feet) 106.5							
8	Mechanical Down Tilt 0							
9	Feeder Amount Fiber							
10	Separation from Antenna Above (Tip to Tip)							
11	Separation from Antenna Below (Tip to Tip)							
12	Vertical Separation from Closest EFT (Centerline to Centerline)							
13	Vertical Separation from Closest EHT (Centerline to Centerline)							
14	Vertical Separation from Another Antenna (Antenna #1/#2 inches)							
15	Surge Arrestor (QTY/Model)		Built-in RET					
16	Duplexer (QTY/Model)							
17	Duplexer (QTY/Model)		RRH Controlled					
18	DC Block (QTY/Model)							
19	Thermal (QTY/Model)							
20	Vectors for TMA (QTY/Model)							
21	POI for TMA (QTY/Model)							
22	Filter (QTY/Model)							
23	Squid (QTY/Model)							
24	Fiber Trunk (QTY/Model)							
25	DC Trunk (QTY/Model)							
26	Repeater (QTY/Model)							
27	RRH - 700 band (QTY/Model)							
28	RRH - 850 band (QTY/Model)							
29	RRH - 1900 band (QTY/Model)							
30	RRH - AWS band (QTY/Model)		RRUS-32 B58					
31	RRH - WCS band (QTY/Model)							
32	RRH #1 - any band (QTY/Model)							
33	RRH #2 - any band (QTY/Model)							
34	Additional Component 1 (QTY/Model)							
35	Additional Component 2 (QTY/Model)							
36	Additional Component 3 (QTY/Model)							

Local Market Note 1
LTE 4C-AWS/U/s low-Replace existing LTE Antenna -Add LTE AWS RRUS-Reuse existing DC Fiber Squid -Add 2nd XMU

Local Market Note 2
LTE sector Alpha (20 Hz) mounted on UMS Gamma arm mounts (20) LTE sector Beta (148 Az) mounted on UMS Alpha arm mounts (148) LTE sector Gamma (268 Az) mounted on UMS Beta arm mounts (268)

Local Market Note 3
Baseband Config 2 DUS + 2 XMU + DLZ

PORT NUMBER	USED (CSS#)	USED (A#)	ATOLL TXID	ATOLL CELLID	TXRX TECHNOLOGY/FREQ	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL TILT	RRH LOCATION	FEEDERS TYPE	FEEDER LENGTH	RRH KIT	TRIPLEXER	SCPA/CPA	HATCHPLATE POWER	ERP	Antenna RET Name	CABLE NUMBER	CABLE ID (CSS#)
PORT 1			CTL01074_TC_1	CTL01074_TC_1	LTE 700	HPA-6SR-BUJL-H6_719MHz_06DT	14.08	268	6	FIBER	150				1475 7065			19	
PORT 3			CTL01074_3C_2	CTL01074_3C_2	LTE AWS	HPA-6SR-BUJL-H6_2360MHz_06DT	17.64	268	6	FIBER	150				1475 7065			20	

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

ITEM POSITION # (#1 from BACK OF ANTENNA #2 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	7770	HPA-6SR-BUJ-H6	OS66612-2				
ANTENNA VENDOR	Powersense	CCI	Quintel				
ANTENNA SIZE (H x W x D)	56X11X5	72X14.8X9	72X12X9.6				
ANTENNA WEIGHT	35	51	111				
AZIMUTH	148	20	20				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	103.5	103.5	103.5				
ANTENNA TIP HEIGHT	105.5	106.5	106.5				
MECHANICAL DOWN TILT	0	0	0				
FEEDER AMOUNT	2	Fiber	Fiber + 2 coax				
SEPARATION from ANTENNA ABOVE (TIP to TIP)							
SEPARATION from ANTENNA BELOW (TIP to TIP)							
NTAL SEPARATION from CLOSEST LEFT (CENTERLINE to CENTERLINE)							
NTAL SEPARATION from CLOSEST RIGHT (CENTERLINE to CENTERLINE)							
NTAL SEPARATION from ANOTHER MMA (which antenna # if 0 inches)							
Antenna RET Motor (QTY/MODEL)	2	Powerwave / 7020 (DB)		Built-in RET			
SURGE ARRESTOR (QTY/MODEL)	1	DC/Fiber Squid		DC/Fiber Squid (1) + PolyPhaser 1006860 (2)			
DIPLEXER (QTY/MODEL)	2	Powerwave / LCP 21901		CCI TRIPLER TPK- 970821			
DUPLEXER (QTY/MODEL)		Powerwave / 7020 (DB)		RRH Controlled			
RET CONTROL UNIT (QTY/MODEL)	1						
DC BLOCK (QTY/MODEL)							
T-MALNA (QTY/MODEL)	2	Powerwave / LCP 21481 (Dual Band - 850 Bypass)					
VECTORS FOR TMA (QTY/MODEL)	2	POLYPHASER 1006860					
PIU FOR TMAS (QTY/MODEL)	1	LCP 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					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)	1	RRUS-32 B2					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)	1	RRUS-32 B36					
all RRH #1 - any band (QTY/MODEL)							
all RRH #2 - any band (QTY/MODEL)							
ditional Component 1 (QTY/MODEL)							
ditional Component 2 (QTY/MODEL)							
ditional Component 3 (QTY/MODEL)							

Local Market Note 1
LTE IC AWS/J1 show Repeater existing LTE Antenna -Add LTE AWS RRUS -Reuse existing DC Fiber Spauld -Add 2nd XMU

Local Market Note 2
LTE sector Alpha (148 Az) mounted on UMTS Alpha arm mounts (148). LTE sector Gamma (268 Az) mounted on UMTS Beta arm mounts (268)

Local Market Note 3
Biosband Config 2 DU6 + 2 XMU + IDL2

PORT NUMBER	USED (CSSng)	USED (Aolt)	ATOLL TXID	ATOLL CELLID	TXRX TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Ingrate/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCP/MC/PA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
PORT 1	59365 A 800.3G.1	CTU10741	CTU10741	CTU10741	UMTS 800	7770.00.650.08	13.5	148	8	None	Commscope 1-5/8 (850)	170.043535					288.54			1	
PORT 3	59365 A 1900.3G.1	CTU10747	CTU10747	CTU10747	UMTS 1900	7770.00.1900.06	15.5	148	6	None	Commscope 1-5/8 (1900)	170.043535					337.29			2	
PORT 1	59365 A 700.4G Imp1	CTU1074_7A_1	CTU1074_7A_1	CTU1074_7A_1	LTE 700	HPA-6SR-BUJ-H6_719MHz_D3DT	14.22	20	3	TOP	FIBER	150					1475.7065			3	

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION #	ANTENNA MAKE - MODEL	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770		HPA-6SR-BUJ-HB		OS66512-2			
ANTENNA VENDOR	Powertech		CCI		Quintel			
ANTENNA SIZE (H x W x D)	50x11x5		72x14.6x9		72x12x9.6			
ANTENNA WEIGHT	35		51		111			
AZIMUTH	268		148		148			
MAGNETIC DECLINATION								
RADIATION CENTER (Rad)	103.5		103.5		103.5			
ANTENNA TIP HEIGHT	105.5		105.5		105.5			
MECHANICAL DOWNTILT	0		0		0			
FEEDER AMOUNT	2		Fiber		Fiber - 2 coax			
SEPARATION FROM ANTENNA ABOVE (TIP to TIP)								
SEPARATION FROM ANTENNA BELOW (TIP to TIP)								
VERTICAL SEPARATION FROM CLOSEST FEED (CENTERLINE to CENTERLINE)								
VERTICAL SEPARATION FROM CLOSEST FEED (CENTERLINE to CENTERLINE)								
VERTICAL SEPARATION FROM ANOTHER MNA (which antenna # / # of inches)								
Antenna RET Motor (QTY/MODEL)		Powerwave / 7020 (DB)	Built-in RET		Built-in RET			
SURGE ARRESTOR (QTY/MODEL)		Powerwave / LGP 21901			2	Polyphaser 1000860		
DIPLEXER (QTY/MODEL)					4	CCO TRIPLEXER TPX-070821		
DUPLEXER (QTY/MODEL)			RRH Controlled			RRH Controlled		
DC BLOCK (QTY/MODEL)								
THALINA (QTY/MODEL)		Powerwave / LSP 21401 (Dual Band - 850 Bypass)						
VECTORS FOR TMA (QTY/MODEL)		POLYPHASER 1003680						
PDU FOR TMA (QTY/MODEL)								
FILTER (QTY/MODEL)								
SQUID (QTY/MODEL)								
FIBER TRUNK (QTY/MODEL)								
DC TRUNK (QTY/MODEL)								
REPEATER (QTY/MODEL)								
RRH - 850 band (QTY/MODEL)			RRUS-11					
RRH - 1900 band (QTY/MODEL)						1	RRUS-32 B2	
RRH - AWS band (QTY/MODEL)						1	RRUS-32	
RRH - WCS band (QTY/MODEL)								
RRH #1 - any band (QTY/MODEL)								
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
LTE 4C-AWS(U) now-Replace existing LTE Antenna -Add LTE AWS RRUS -Reuse existing DC Fiber Spaul -Add 2nd AXU.

Local Market Note 2
LTE sector Alpha (20 Az) mounted on UMTS Alpha arm mounts (20). LTE sector Beta (148 Az) mounted on UMTS Alpha arm mounts (148). LTE sector Gamma (268 Az) mounted on UMTS Beta arm mounts (268).

Local Market Note 3
Baseband Config 2 DUS - 2 AXU - ID 2

PORT NUMBER	USED (C/SSWG)	USED (A/til)	ATOLL TMD	ATOLL CELL ID	TXRX TECHNOLOGY/FREQ	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Ingraining)	FEEDERS TYPE	FEEDER LENGTH (feet)	RRAT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPM/CPA MODULE?	HATCHPLAT E-POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (C/SSWG)
PORT 1	59365 B 650.3G.1		CTU10742	CTU10742	UMTS 850	7770.00.850.06	13.5	268	6	Nene	Commscope 1.5/8 (650)	170.043535					268.54	268.54		9	
PORT 3	59365 B 1900.3G.1		CTU10748	CTU10748	UMTS 1900	7770.00.1900.04	15.5	268	4	Nene	Commscope 1.5/8 (1900)	170.043535					337.29	337.29		10	
PORT 1	59365 B 700.4G.1		CTU1074_7B_1	CTU1074_7B_1	LTE 700	HPA-6SR-BUJ-HE_719MHZ_06DT	13.97	148	9	TOP	FIBER	150					1475.7065	1475.7065		11	
PORT 3	59365 B AWS_4G Imp4		CTU1074_2B_2	CTU1074_2B_2	LTE AWS	HPA-6SR-BUJ-HE_2360MHZ_06DT	17.59	148	5	TOP	FIBER	150					1475.7065	1475.7065		12	

PORT #	Site ID	Cell ID	Technology	Bandwidth (MHz)	Power (W)	Height (m)	Antenna Type	Frequency (MHz)	Channel Width (MHz)	Channel Number	Frequency Range (MHz)	Power (W)	Height (m)	Antenna Type	Frequency (MHz)	Channel Width (MHz)	Channel Number	Frequency Range (MHz)	Power (W)	Height (m)	Antenna Type
PORT 1	53365 B 1900-4G-1	CTL01074_9B_1	GSM 850	148	148	15.6	TOP	OS66612-2_1930MHz_05DT	148	5	4842.058	148	16	FIBER	4842.058	148	5	4842.058	148	16	FIBER
PORT 5	53365 B 1900-4G-1	CTL01074_9B_1	LTE 1900	148	148	15.6	TOP	OS66612-2_1930MHz_05DT	148	5	4842.058	148	16	FIBER	4842.058	148	5	4842.058	148	16	FIBER
PORT 7	53365 B WCS-4G-1	CTL01074_3B_1	LTE WCS	148	148	16.8	TOP	OS66612-2_2355MHz_02DT	148	2	1255.2666	148	16	FIBER	1255.2666	148	2	1255.2666	148	16	FIBER
PORT 8	53365 B 1900-4G-tnp4	CTL01074_9B_2	LTE 1900	148	148	15.6	TOP	OS66612-2_1930MHz_05DT	148	5	4842.058	148	16	FIBER	4842.058	148	5	4842.058	148	16	FIBER

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ITEM POSITION 1	ANTENNA MAKE - MODEL	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL 7770	HPA-6SR-BUJ-H6		Q566512-2				
ANTENNA VENDOR	CCI		Quintel				
ANTENNA SIZE (R x W x D)	72x14.6x9		72x14.6x9				
ANTENNA WEIGHT	51		111				
AZIMUTH	268		268				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	103.5		103.5				
ANTENNA TIP HEIGHT	106.5		106.5				
MECHANICAL DOWNTILT	0		0				
FEEDER AMOUNT	Fiber		Fiber + 2 coax				
SEPARATION from ANTENNA ABOVE (Tip to Tip)							
SEPARATION from ANTENNA BELOW (Tip to Tip)							
NTAL SEPARATION from CLOSEST EFT CENTERLINE to CENTERLINE)							
NTAL SEPARATION from CLOSEST 3HT (CENTERLINE to CENTERLINE)							
NTAL SEPARATION from ANOTHER NMA (which antenna is # of inches)							
Antenna RET Motor (QTY/MODEL)	Powerwave / 7020 (DB)	Built-in RET		Built-in RET			
SURGE ARRESTOR (QTY/MODEL)	Powerwave / LQP 21901		2	Polyphaser 1000660			
DIPLEXER (QTY/MODEL)			4	CCI TRIPLEXER TPX-970821			
DUPLEXER (QTY/MODEL)		RRH Controlled		RRH Controlled			
RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TIMALNA (QTY/MODEL)	Powerwave / LQP 21401 (Dual Band - 850 Bypass)						
VECTORS FOR TMA (QTY/MODEL)	POLYPHASER 1000660						
PDU FOR TMA (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)		RRUS-11					
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)			1	RRUS-32 B2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)			1	RRUS-32			
RRH #1 - any band (QTY/MODEL)							
RRH #2 - any band (QTY/MODEL)							
ditional Component 1 (QTY/MODEL)							
ditional Component 2 (QTY/MODEL)							
ditional Component 3 (QTY/MODEL)							

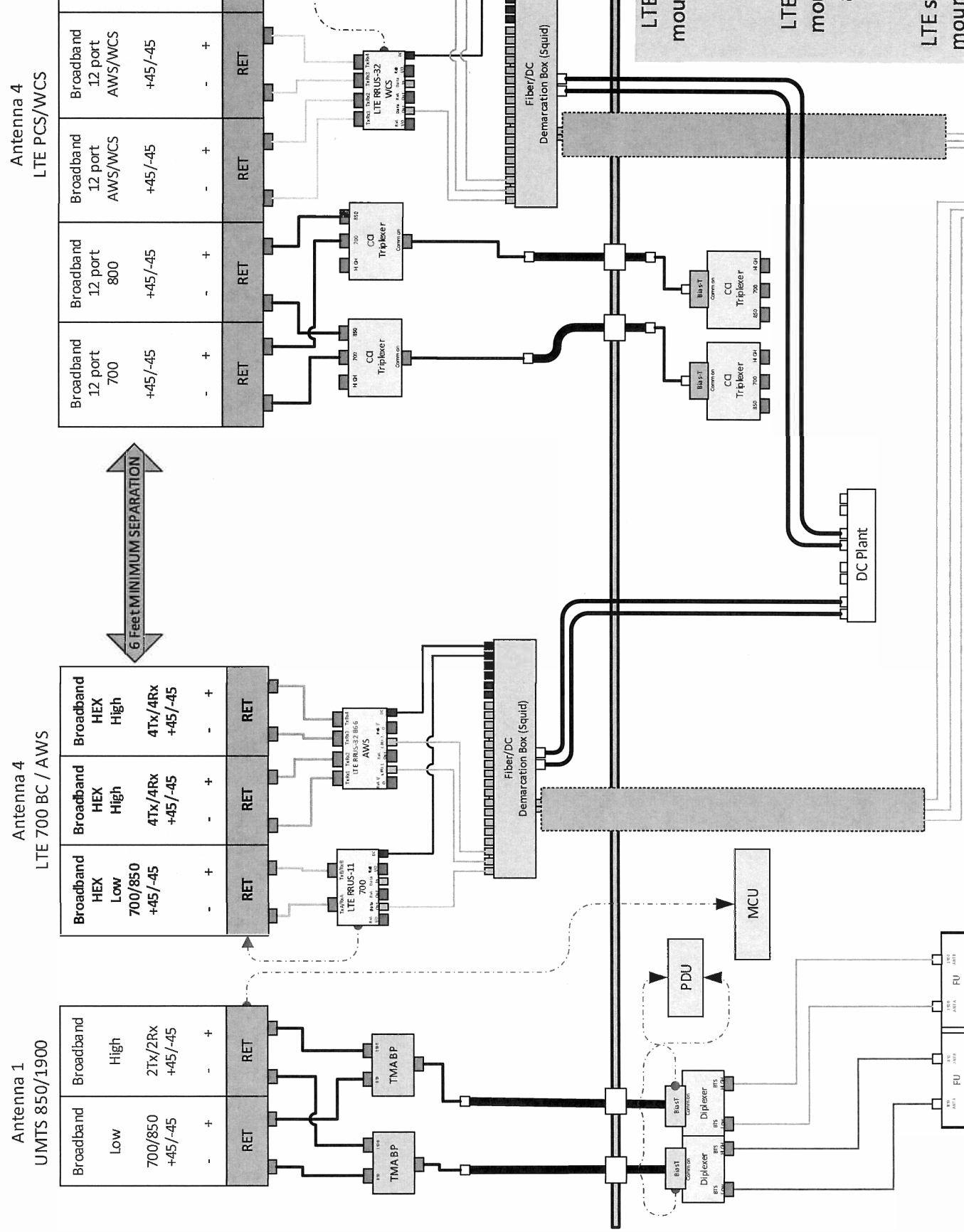
Local Market Note 1: LTE 4C-AWS(U) low - Replace existing LTE Antenna -Add LTE AWS RRUS -Replace existing DC Fiber Squid -Add 2nd XMU

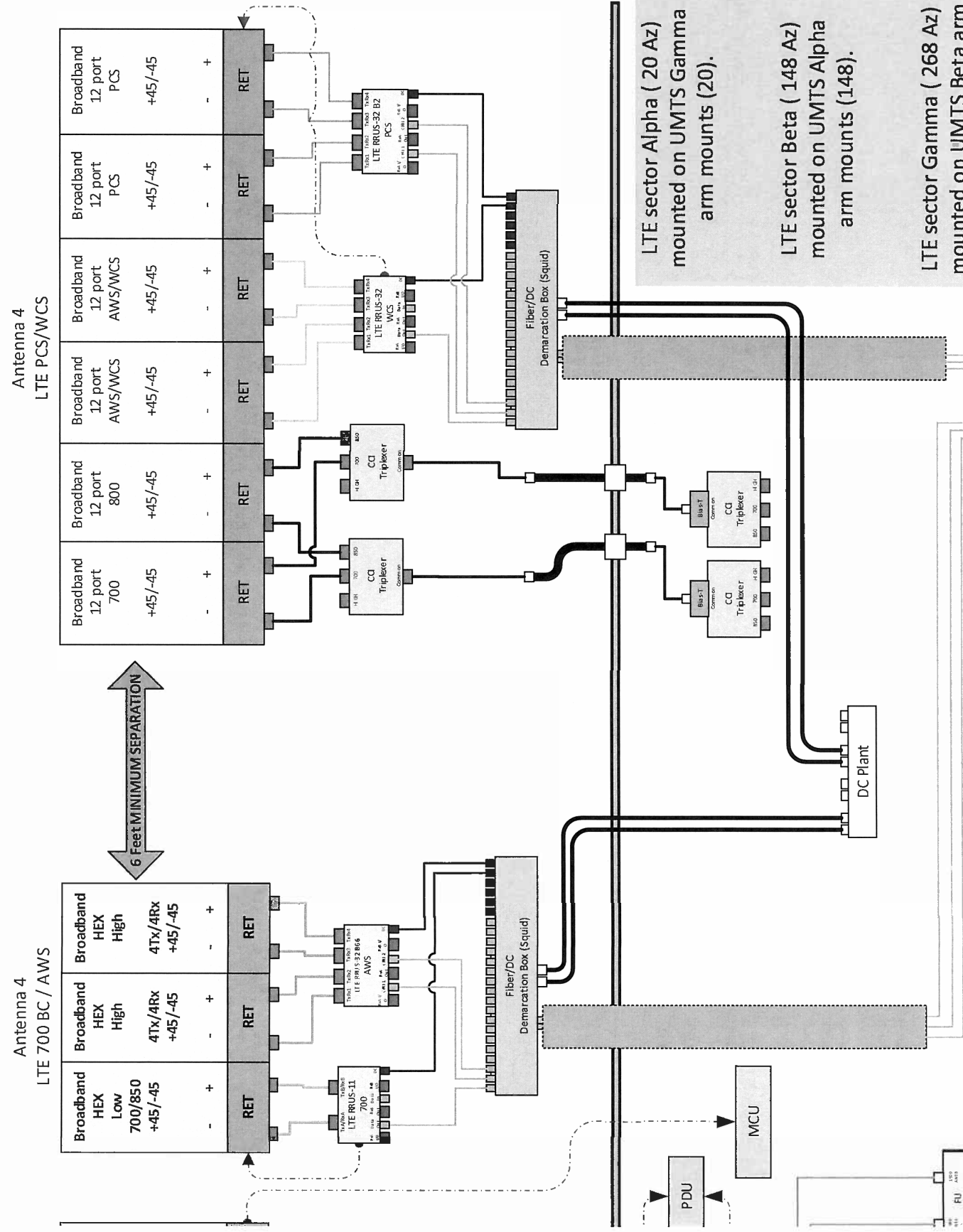
Local Market Note 2: LTE sector Alpha (20 Az) mounted on UMTS Gamma arm mounts (20). LTE sector Beta (148 Az) mounted on UMTS Alpha arm mounts (148). LTE sector Gamma (258 Az) mounted on UMTS Beta arm mounts (258)

Local Market Note 3: Baseband Config 2 DUS + 2 XMU + IDL2

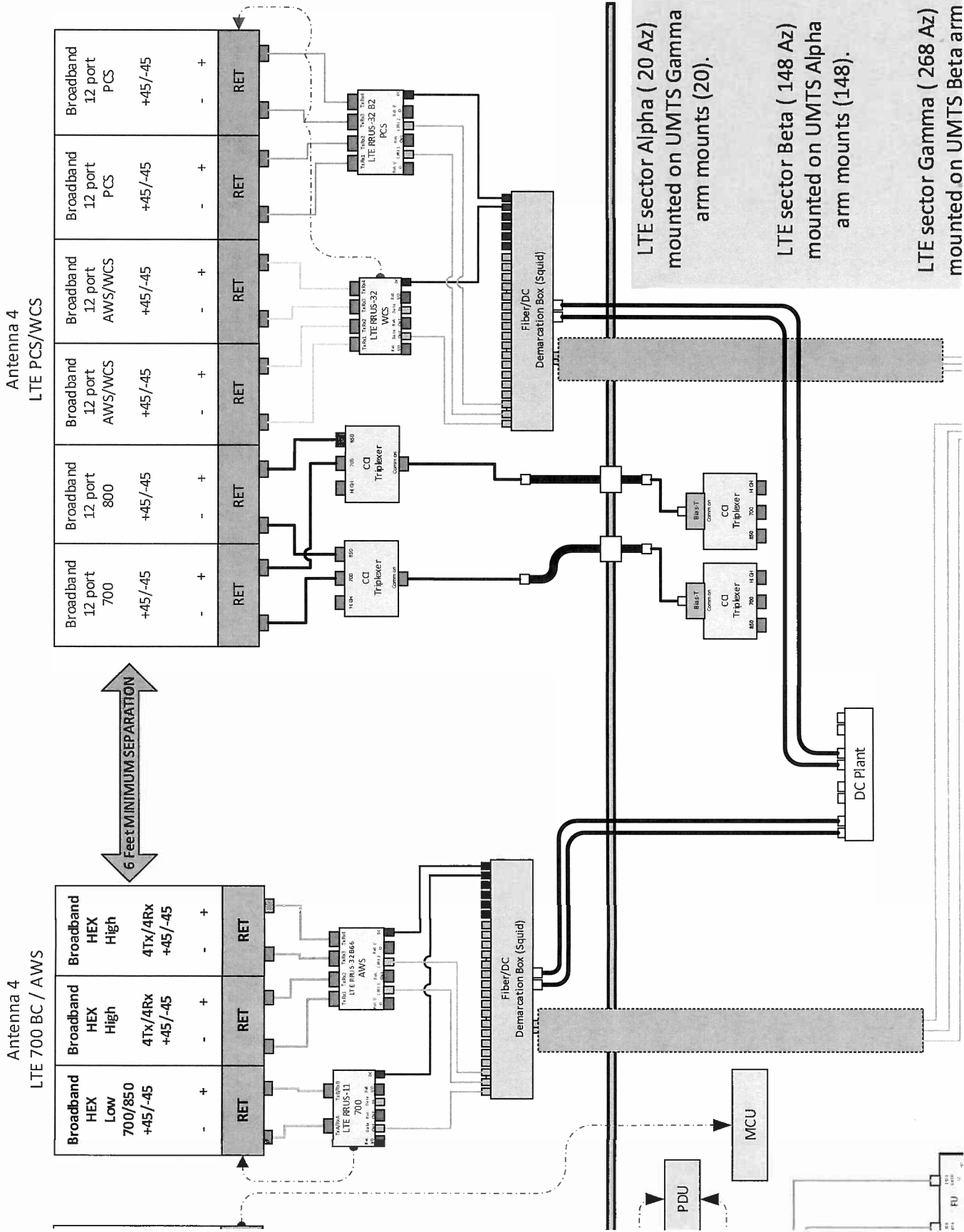
PORT NUMBER	USEID (CSSng)	USEID (Abn)	ATOLL TRID	ATOLL CELL ID	TARI ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/TX KIT or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCP/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
PORT 1	59365 C. 850.3G.1	CTU10743	CTU10743	CTU10743		UMTS 850	7770.00.850.10	13.5	20	10	None	Commscope 1-5/8 (850)	170.043535				298.54			17	
PORT 3	59365 C. 1900.3G.1	CTU10749	CTU10749	CTU10749		UMTS 1900	7770.00.1900.08	15.5	20	6	None	Commscope 1-5/8 (1900)	170.043535				337.29			18	
PORT 1	59365 C. 700.4G.1	CTU1074_7C_1	CTU1074_7C_1	CTU1074_7C_1		LTE 700	HPA-6SR-BUJ-HE_759MHz_06DT	14.08	268	6	TOP	FIBER	150				1475.7065			19	
PORT 3	59365 C. AWS. 4G.tmp4	CTU1074_7C_2	CTU1074_7C_2	CTU1074_7C_2		LTE AWS	HPA-6SR-BUJ-HE_2360MHz_06DT	17.64	268	6	TOP	FIBER	150				1475.7065			20	

PORT	Deco m	GSM 1800	268	6	TOP	FIBER	0	4842 058	24
PORT 5 69265 C 1800 4G 1	CTL01074_9C_1	LTE 1800 CS66E12 2_1930MHz_DSDT	15.9	6	TOP	FIBER	0	4842 058	24
PORT 7 69385 C WCS 4G 1	CTL01074_3C_1	LTE WCS CS66E12 2_2350MHz_DSDT	16.9	5	TOP	FIBER	0	1215 2686	24
PORT 6 69385 C 1800 4G 1mp4	CTL01074_9C_2	LTE 1800 CS66E12 2_1930MHz_DSDT	15.9	6	TOP	FIBER	0	4842 058	24





For detailed radio to antenna wiring, refer to the latest 4T4R Antenna radio Port connections Field Notice (RF-HW-2016-265)''





Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1074

FA#: 10035051

Wethersfield
75 Wells Road
Wethersfield, CT 06109

July 16, 2018

Centerline Communications Project Number: 950006-134

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	13.51 %



July 16, 2018

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

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

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **75 Wells Road, Wethersfield, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.



CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **75 Wells Road, Wethersfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	40
LTE	2100 MHz (AWS)	4	30
LTE	1900 MHz (PCS)	4	40
LTE	2300 MHz (WCS)	4	30

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	103.5
A	2	CCI HPA-65R-BUU-H6	103.5
A	3	Quintel QS66512-2	103.5
B	1	Powerwave 7770	103.5
B	2	CCI HPA-65R-BUU-H6	103.5
B	3	Quintel QS66512-2	103.5
C	1	Powerwave 7770	103.5
C	2	CCI HPA-65R-BUU-H6	103.5
C	3	Quintel QS66512-2	103.5

Table 2: Antenna Data

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



RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.05
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 2100 MHz (AWS)	11.95 / 15.05	6	320	8,930.75	3.92
Antenna A3	Quintel QS66512-2	1900 MHz (PCS) / 2300 MHz (WCS)	13.85 / 14.85	8	400	11,214.39	4.24
Sector A Composite MPE%							9.21
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.05
Antenna B2	CCI HPA-65R-BUU-H6	700 MHz / 2100 MHz (AWS)	11.95 / 15.05	6	320	8,930.75	3.92
Antenna B3	Quintel QS66512-2	1900 MHz (PCS) / 2300 MHz (WCS)	13.85 / 14.85	8	400	11,214.39	4.24
Sector B Composite MPE%							9.21
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	1.05
Antenna C2	CCI HPA-65R-BUU-H6	700 MHz / 2100 MHz (AWS)	11.95 / 15.05	6	320	8,930.75	3.92
Antenna C3	Quintel QS66512-2	1900 MHz (PCS) / 2300 MHz (WCS)	13.85 / 14.85	8	400	11,214.39	4.24
Sector C Composite MPE%							9.21

Table 3: AT&T Emissions Levels



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

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	9.21 %
T-Mobile	4.30 %
Site Total MPE %:	13.51 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	9.21 %
AT&T Sector B Total:	9.21 %
AT&T Sector C Total:	9.21 %
Site Total:	13.51 %

Table 5: Site MPE Summary



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

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	103.5	3.13	850 MHz	567	0.55%
AT&T 1900 MHz (PCS) UMTS	2	656.33	103.5	4.96	1900 MHz (PCS)	1000	0.50%
AT&T 700 MHz LTE	2	626.70	103.5	4.74	700 MHz	467	1.02%
AT&T 2100 MHz (AWS) LTE	4	1,919.34	103.5	29.03	2100 MHz (AWS)	1000	2.90%
AT&T 1900 MHz (PCS) LTE	4	970.64	103.5	14.68	1900 MHz (PCS)	1000	1.47%
AT&T 2300 MHz (WCS) LTE	4	1,832.95	103.5	27.73	2300 MHz (WCS)	1000	2.77%
						Total:	9.21%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

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

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	9.21 %
Sector B:	9.21 %
Sector C:	9.21 %
AT&T Maximum Total (per sector):	9.21 %
Site Total:	13.51 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **13.51 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is written over a light blue horizontal line.

Scott Heffernan
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