



June 12, 2018

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



Regarding: Notice of Exempt Modification – Equipment Upgrades  
Property Address: 14 Thompson Hill Road, Columbia, CT 06237  
AT&T Site: CT5861 // FA# 10070976

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 180-foot monopole tower at the above-referenced address, latitude 41° 43' 3.44", longitude -72° 17' 59.09". Said monopole tower is owned by Crown Castle, and the ground is owned by Joshua Lanati.

AT&T desires to modify its existing telecommunications facility by installing three (3) additional panel antennas, six (6) remote radio units and accompanying feedlines as detailed in the enclosed plans. The centerline height of the existing antennas is and will remain at 140 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 Steven M. Everett, First Selectman for the Town of Columbia, as well as Crown Castle as the tower owner and Joshua Lanati, as the property 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 equipment to be added will be installed at the existing height of 140 feet on the 180-foot 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 decibels or more, or to levels that exceed state and local criteria.

June 12, 2018

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 Paul J. Ford & Company, dated November 8<sup>th</sup>, 2017).

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

Sincerely,

*Robert C. Wilson*

Robert C. Wilson  
Site Acquisition Specialist

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

cc: Mr. Steven M. Everett, First Selectman for the Town of Columbia; Crown Castle as the tower owner; Joshua Lanati, as the property owner.

**SENDER: COMPLETE THIS SECTION**

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

1. Article Addressed to:

Joshua Lenati  
 14 Thompson Hill Rd  
 Columbia, CT 06237



9590 9402 3770 8032 0967 64

2. Article Number (Transfer from service label)

7017 0190 0000 9032 0454

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

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X

Agent  
 Address

B. Received by (Printed Name)

Eileen Lenati 6-23-18

C. Date of Delivery

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

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation
- Signature Confirmation Restricted Delivery

**SENDER: COMPLETE THIS SECTION**

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

1. Article Addressed to:

Crown Castle  
 Paul Pedicone, Project Manager  
 3 Corporate Drive, Suite 101  
 Clifton Park, NY 12065



9590 9402 3770 8032 0967 57

2. Article Number (Transfer from service label)

7017 0190 0000 9032 0461

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

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X

Agent  
 Address

B. Received by (Printed Name)

C. Date of Delivery

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

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation
- Signature Confirmation Restricted Delivery

**SENDER: COMPLETE THIS SECTION**

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

1. Article Addressed to:

Columbia Town Hall  
 Stephen M. Everett, First Selectman  
 323 Rte - 71  
 Columbia, CT 06237



9590 9402 3770 8032 0967 71

2. Article Number (Transfer from service label)

7017 0190 0000 9032 0447

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

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature

X

Agent  
 Address

B. Received by (Printed Name)

C. Date of Delivery

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

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation
- Signature Confirmation Restricted Delivery

Domestic Return Receipt

# 14 THOMPSON HILL RD

**Location** 14 THOMPSON HILL RD

**Mblu** 011/ / 069/ CELL/

**Acct#** 011069CEL

**Owner** CROWN CABLE TOWERS 09 LLC

**Assessment** \$595,400

**Appraisal** \$850,600

**PID** 102279

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$850,600	\$0	\$850,600
Assessment			
Valuation Year	Improvements	Land	Total
2016	\$595,400	\$0	\$595,400

## Owner of Record

**Owner** CROWN CABLE TOWERS 09 LLC  
**Co-Owner**  
**Address** 4017 WASHINGTON RD PNB 331  
 MCMURRAY, PA 15317

**Sale Price** \$0  
**Certificate**  
**Book & Page** 999  
**Sale Date** 09/30/2011

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
CROWN CABLE TOWERS 09 LLC	\$0		999	09/30/2011

## Building Information

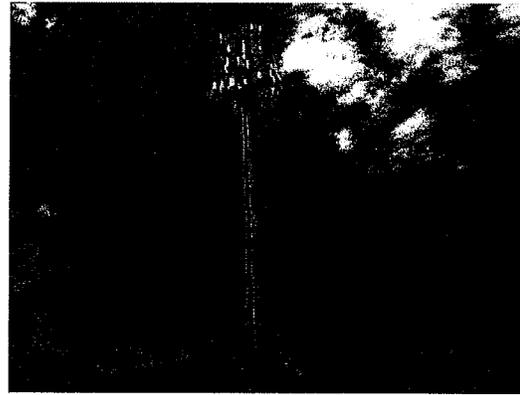
### Building 1 : Section 1

**Year Built:**  
**Living Area:** 0  
**Replacement Cost:** \$0  
**Building Percent**  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$0

### Building Photo

Building Attributes	
Field	Description
Style	Outbuildings
Model	

Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Whirlpool	
Fireplace(s)	
Fndtn. Level	



(http://images.vgsi.com/photos2/ColumbiaCTPhotos//\00\00\83\48.jpg)

### Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

### Extra Features

Extra Features	Legend
No Data for Extra Features	

### Land

#### Land Use

**Use Code** 3900  
**Description** Dev Land  
**Zone**  
**Neighborhood**  
**Alt Land Appr** No  
**Category**

#### Land Line Valuation

**Size (Acres)** 0  
**Frontage**  
**Depth**  
**Assessed Value** \$0  
**Appraised Value** \$0

### Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CELL	Cell Tower			4 UNITS	\$800,000	1

FN3	Fence-6' Chain			200 L.F.	\$2,000	1
CELS	Cell Shed			240 S.F.	\$27,000	1
CELS	Cell Shed			192 S.F.	\$21,600	1

**Valuation History**

<b>Appraisal</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2015	\$705,000	\$0	\$705,000
2014	\$705,000	\$0	\$705,000
2013	\$705,000	\$0	\$705,000

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2015	\$493,500	\$0	\$493,500
2014	\$493,500	\$0	\$493,500
2013	\$493,500	\$0	\$493,500

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# 14 THOMPSON HILL RD

**Location** 14 THOMPSON HILL RD

**Mblu** 011/ / 069/ /

**Acct#** 00054300

**Owner** LANATI JOSHUA & EILEEN

**Assessment** \$250,400

**Appraisal** \$502,300

**PID** 543

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$127,400	\$374,900	\$502,300

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$89,200	\$161,200	\$250,400

## Owner of Record

**Owner** LANATI JOSHUA & EILEEN

**Sale Price** \$155,000

**Co-Owner**

**Certificate**

**Address** 14 THOMPSON HILL RD  
COLUMBIA, CT 06237

**Book & Page** 0197/0163

**Sale Date** 04/14/2011

**Instrument** 28

## Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
LANATI JOSHUA & EILEEN	\$155,000		0197/0163	28	04/14/2011
DEOJAY THOMAS R ESTATE OF	\$0		0122/0722	25	09/23/2010
DEOJAY THOMAS R	\$0		0122/0722		10/25/1999
DEOJAY THOMAS R & WILLIE JO	\$0		0059/0018		05/18/1982

## Building Information

### Building 1 : Section 1

**Year Built:** 1955  
**Living Area:** 1,677  
**Replacement Cost:** \$190,432  
**Building Percent** 66  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$125,700

### Building Photo

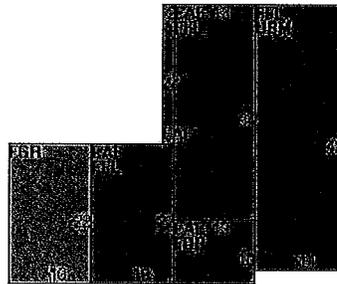
Building Attributes

Field	Description
Style	Conventional
Model	Residential
Grade:	Average +20
Stories:	1 1/2 Stories
Occupancy	1
Exterior Wall 1	Stucco/Masonry
Exterior Wall 2	Wood Shingle
Roof Structure:	Gable/Hip
Roof Cover	Asphalt
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Flr 1	Pine/Soft Wood
Interior Flr 2	
Heat Fuel	Electric
Heat Type:	Electr Basebrd
AC Type:	None
Total Bedrooms:	3 Bedrooms
Total Bthrms:	2
Total Half Baths:	1
Total Xtra Fixtrs:	
Total Rooms:	8 Rooms
Bath Style:	Average
Kitchen Style:	Average
Whirlpool	
Fireplace(s)	1
Fndtn. Level	



(<http://images.vgsi.com/photos2/ColumbiaCTPhotos//\00\00\75\76.jpg>)

### Building Layout



Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
FFL	First Floor Living	1,316	1,316	
EAF	Attic, Expansion, Finished	902	361	
FGR	Garage, Framed	286	0	
FOP	Porch, Open, Finished	130	0	
UBM	Basement, Unfinished	588	0	
		3,222	1,677	

### Extra Features

Extra Features		Legend
No Data for Extra Features		

### Land

#### Land Use

**Use Code** 1010  
**Description** Single Fam  
**Zone** RA  
**Neighborhood** 12

#### Land Line Valuation

**Size (Acres)** 29.4  
**Frontage** 0  
**Depth** 0  
**Assessed Value** \$161,200

Alt Land Appr No  
 Category

Appraised Value \$374,900

**Outbuildings**

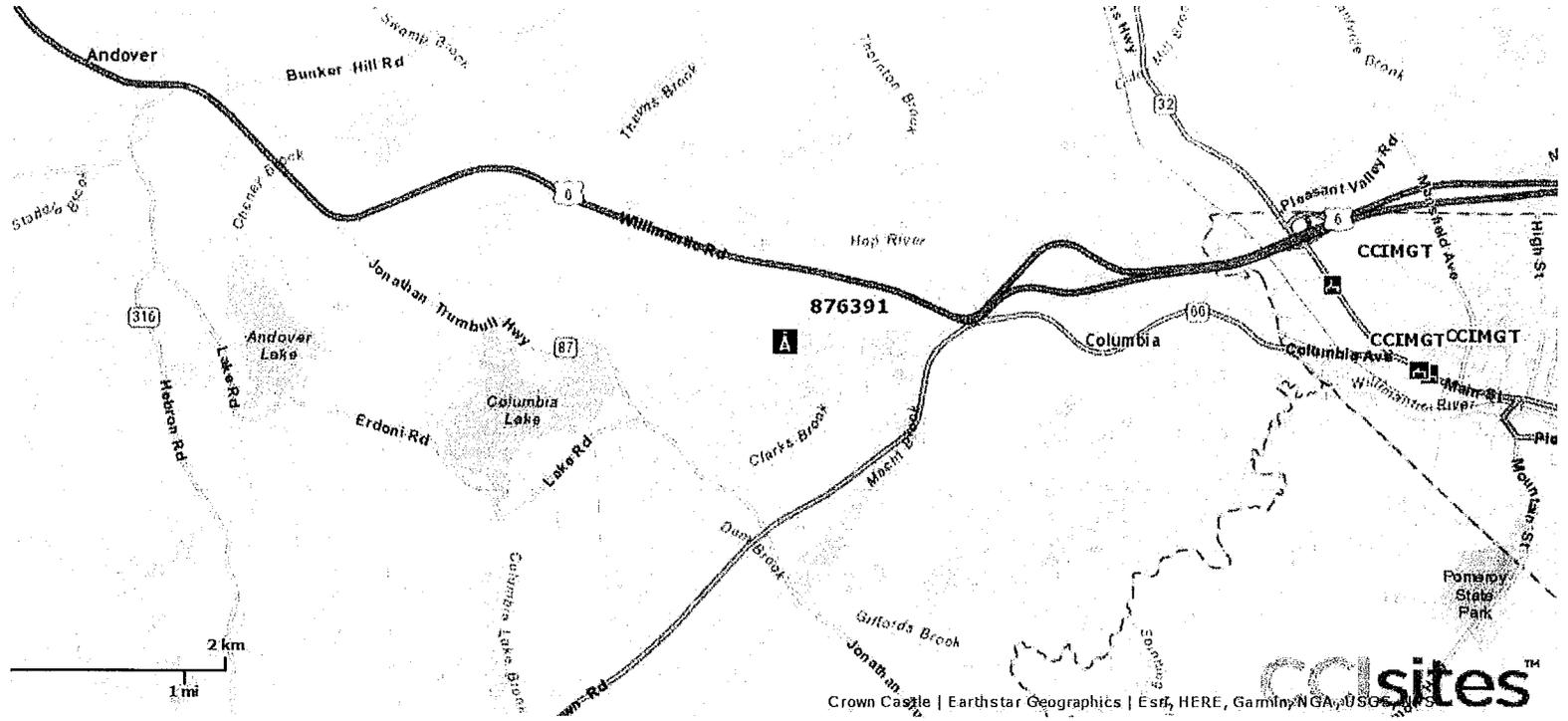
Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
BRN3	Barn 1 St. w Loft			540 S.F.	\$1,300	1
SHD1	Shed Frame			64 S.F.	\$400	1

**Valuation History**

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$123,000	\$374,900	\$497,900
2014	\$123,000	\$374,900	\$497,900
2013	\$123,000	\$374,900	\$497,900

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$86,100	\$160,330	\$246,430
2014	\$86,100	\$160,330	\$246,430
2013	\$86,100	\$160,330	\$246,430

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Date: **November 08, 2017**

Charles McGuirt  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277  
704.405.6607

Paul J Ford and Company  
250 E. Broad Street Suite 600  
Columbus, OH 43215  
jsmith@pjfweb.com  
614.221.6679

**Subject: Structural Analysis Report**

**Carrier Designation:**

**AT&T Mobility Co-Locate**

**Carrier Site Number:**

CT5861

**Carrier Site Name:**

10070976

**Crown Castle Designation:**

**Crown Castle BU Number:**

876391

**Crown Castle Site Name:**

COLUMBIA / DEOJAY

**Crown Castle JDE Job Number:**

470117

**Crown Castle Work Order Number:**

1485180

**Crown Castle Application Number:**

414706 Rev. 5

**Engineering Firm Designation:**

**Paul J Ford and Company Project Number:** 37517-0133.003.7805

**Site Data:**

**14 Thompson Hill Rd, COLUMBIA, Tolland County, CT**

**Latitude 41° 43' 3.44", Longitude -72° 17' 59.09"**

**180 Foot - Monopole Tower**

Dear Charles McGuirt,

Paul J Ford and Company is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1104448, in accordance with application 414706, revision 5.

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

LC7: Existing + Reserved + Proposed Equipment

**Sufficient Capacity**

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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

Structural analysis prepared by:

Respectfully submitted by:

Jared Smith, E.I.  
Structural Designer

tnxTower Report - version 7.0.5.1



Date: November 08, 2017

Charles McGuirt  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277  
704.405.6607

Paul J Ford and Company  
250 E. Broad Street Suite 600  
Columbus, OH 43215  
jsmith@pjfweb.com  
614.221.6679

**Subject: Structural Analysis Report**

**Carrier Designation:** AT&T Mobility Co-Locate  
**Carrier Site Number:** CT5861  
**Carrier Site Name:** 10070976

**Crown Castle Designation:** Crown Castle BU Number: 876391  
**Crown Castle Site Name:** COLUMBIA / DEOJAY  
**Crown Castle JDE Job Number:** 470117  
**Crown Castle Work Order Number:** 1485180  
**Crown Castle Application Number:** 414706 Rev. 5

**Engineering Firm Designation:** Paul J Ford and Company Project Number: 37517-0133.003.7805

**Site Data:** 14 Thompson Hill Rd, COLUMBIA, Tolland County, CT  
 Latitude 41° 43' 3.44", Longitude -72° 17' 59.09"  
 180 Foot - Monopole Tower

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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Structural analysis prepared by:

Respectfully submitted by:

Jared Smith, E.I.  
Structural Designer

tnxTower Report - version 7.0.5.1



11-9-17

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## 1) INTRODUCTION

This tower is a 180 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in November of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

## 2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
141.0	141.0	3	ericsson	RRUS 11	-	-	-
140.0	140.0	3	ericsson	RRUS 32	1 2	3/8 7/16	-
		1	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 4478 B14			
		3	kmw communications	EPBQ-654L8H6-L2 w/ Mount Pipe			
		12	powerwave technologies	7020.00			
		2	raycap	DC6-48-60-18-8F			

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
180.0	181.0	3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe	6	5/16	2
		3	rfs celwave	FD9R6004/1C-3L			
	180.0	1	tower mounts	Platform Mount [LP 601-1]	6	1-5/8	1
161.0	161.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	7	1-5/8	1
		3	ericsson	Ericsson Air 21 B4A B12P-B8P 4FT w/ Mount Pipe			
		3	ericsson	KRY 112 144/2			
		3	ericsson	RRUS 11 B12			
		1	tower mounts	Platform Mount [LP 305-1]			
147.0	150.0	3	alcatel lucent	RRH2X60-AWS	14 1	1-5/8 1/2	1
		3	alcatel lucent	RRH2X60-PCS			
		6	andrew	HBXX-6517DS-A2M w/ Mount Pipe			
		6	andrew	LNx-6514DS-A1M w/ Mount Pipe			
		1	lucent	KS24019-L112A			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/1C-3L			
	147.0	1	tower mounts	Platform Mount [LP 712-1]			
141.0	141.0	3	ericsson	RRUS 11 B12	-	-	3
		1	tower mounts	Pipe Mount [PM 601-3]	-	-	1
140.0	140.0	1	raycap	DC6-48-60-18-8F	-	-	3
		3	ericsson	RRUS 12 B2			
		3	powerwave technologies	1001940			
		3	ericsson	RRUS A2			
		3	powerwave technologies	LGP13519			
		1	tower mounts	Platform Mount [LP 303-1]			
		3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	1 12 2 1	3/8 1-5/8 7/16 2	1
		2	ericsson	RRUS 32 B2			
		3	powerwave technologies	1001983			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP 17201			
	6	powerwave technologies	LGP21901				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
83.0	84.0	2	kathrein	OG-860/1920/GPS-A	2	1-1/4	1
	83.0	2	tower mounts	Side Arm Mount [SO 701-1]			
	-	-	-	-	2	1/2	2
78.0	79.0	1	kathrein	OG-860/1920/GPS-A	1	1/2	1
	78.0	1	tower mounts	Side Arm Mount [SO 701-1]			

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

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Goodkind & O'Dea, Incs., CT33XC519, 06/08/99	1613526	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 6151, 12/20/99	1613632	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 6151, 12/20/1999	1614546	CCISITES
4-TOWER MANUFACTURER DESIGN CALCULATIONS	EEI, 99-1429, 11/22/1999	1440653	CCISITES

#### 3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

**4) ANALYSIS RESULTS**

**Table 4 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	180 - 131.75	Pole	TP31.39x21x0.25	1	-12.91	1686.69	50.4	Pass
L2	131.75 - 86.71	Pole	TP40.46x29.921x0.375	2	-23.11	3408.11	69.0	Pass
L3	86.71 - 43.16	Pole	TP48.96x38.5229x0.4375	3	-37.62	4767.07	74.7	Pass
L4	43.16 - 0	Pole	TP57.25x46.668x0.5	4	-59.79	6465.70	74.0	Pass
							Summary	
						Pole (L3)	74.7	Pass
						Rating =	74.7	Pass

**Table 5 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	79.8	Pass
1	Base Plate	0	87.2	Pass
1	Base Foundation Steel	0	90.9	Pass
1	Base Foundation Soil Interaction	0	88.4	Pass

<b>Structure Rating (max from all components) =</b>	<b>90.9%</b>
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

# Radio Frequency Emissions Analysis Report

AT&T Existing Facility

**Site ID: CT5861**

FA#: 10070976

Columbia North  
14 Thompson Hill Road  
Columbia, CT 06237

**June 6, 2018**

**Centerline Communications Project Number: 950006-123**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>8.48 %</b>



June 6, 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: **CT5861 – Columbia North**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **14 Thompson Hill Road, Columbia, 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 **14 Thompson Hill Road, Columbia, 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
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	40
LTE	700 MHz (Band 14)	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) 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	140
A	2	CCI HPA-65R-BUU-H6	140
A	3	KMW EPBQ-654L8H6-L2	140
A	4	Powerwave 7770 (Dormant)	140
B	1	Powerwave 7770	140
B	2	CCI HPA-65R-BUU-H6	140
B	3	KMW EPBQ-654L8H6-L2	140
B	4	Powerwave 7770 (Dormant)	140
C	1	Powerwave 7770	140
C	2	CCI HPA-65R-BUU-H6	140
C	3	KMW EPBQ-654L8H6-L2	140
C	4	Powerwave 7770 (Dormant)	140

*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	11.4	2	60	828.23	0.29
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	1.49
Antenna A3	KMW EPBQ-654L8H6-L2	700 MHz / 2300 MHz (WCS)	12.35 / 15.35	8	280	6,861.87	2.00
Antenna A4	Powerwave 7770	UNUSED	NA	0	0	0.00	0.00
Sector A Composite MPE%							<b>3.79</b>
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.29
Antenna B2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	1.49
Antenna B3	KMW EPBQ-654L8H6-L2	700 MHz / 2300 MHz (WCS)	12.35 / 15.35	8	280	6,861.87	2.00
Antenna B4	Powerwave 7770	UNUSED	NA	0	0	0.00	0.00
Sector B Composite MPE%							<b>3.79</b>
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.29
Antenna C2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	1.49
Antenna C3	KMW EPBQ-654L8H6-L2	700 MHz / 2300 MHz (WCS)	12.35 / 15.35	8	280	6,861.87	2.00
Antenna C4	Powerwave 7770	UNUSED	NA	0	0	0.00	0.00
Sector C Composite MPE%							<b>3.79</b>

*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 (Per Sector)	3.79 %
Sprint	0.60 %
Verizon Wireless	2.61 %
T-Mobile	1.48 %
<b>Site Total MPE %:</b>	<b>8.48 %</b>

*Table 4: All Carrier MPE Contributions*

AT&T Sector A Total:	3.79 %
AT&T Sector B Total:	3.79 %
AT&T Sector C Total:	3.79 %
Site Total:	8.48 %

*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- Antenna 1	2	414.12	140	1.66	850 MHz	567	0.29%
AT&T 700 MHz LTE- Antenna 2	2	626.70	140	2.51	700 MHz	467	0.54%
AT&T 1900 MHz (PCS) LTE- Antenna 23	4	1,194.15	140	9.56	1900 MHz (PCS)	1000	0.96%
AT&T 700 MHz LTE (Band 14) - Antenna 3	4	687.16	140	5.50	700 MHz	467	1.18%
AT&T 2300 MHz (WCS) LTE- Antenna 3	4	1,028.30	140	8.24	2300 MHz (WCS)	1000	0.82%
						<b>Total:</b>	<b>3.79%</b>

*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:	3.79 %
Sector B:	3.79 %
Sector C:	3.79 %
AT&T Maximum Total (per sector):	3.79 %
Site Total:	8.48 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **8.48 %** 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.



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**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 EIA/TIA 222 G-05 (ANTENNA MOUNTS); 95-105 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- BASIC WIND SPEED (OTHER STRUCTURE): 101 MPH (NOMINAL DESIGN WIND SPEED) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT SUPPLEMENT AND AMENDMENTS.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

**GENERAL NOTES:**

- ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
- 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.
- 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.
- DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
- THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
- 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.
- 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.
- 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.
- 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
- 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.
- 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.
- 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.
- NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
- REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

**STRUCTURAL STEEL**

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

- STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
  - STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
  - STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
  - STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
  - PIPE---ASTM A53 (FY = 35 KSI)
  - CONNECTION BOLTS---ASTM A325-N
  - U-BOLTS---ASTM A36
  - ANCHOR RODS---ASTM F 1554
  - WELDING ELECTRODE---ASTM E 70XX
- 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.
  - STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
  - PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
  - FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
  - INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
  - AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
  - 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.
  - ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP)" ON IRON AND STEEL HARDWARE".
  - 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.
  - CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
  - 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.
  - LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
  - SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
  - MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
  - FABRICATE BEAMS WITH MILL CAMBER UP.
  - 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.
  - COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
  - INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
  - 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**

**PAINING SCHEDULE:**

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

**EXAMINATION AND PREPARATION:**

- 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.
- 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.
- TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
- PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
- CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
- IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
- 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.
- 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.
- 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.
- 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).
- COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

**CLEANING:**

- COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.
- APPLICATION:**
- APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
  - DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
  - APPLY EACH COAT TO UNIFORM FINISH.
  - APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
  - SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
  - VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
  - ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

**COMPLETED WORK:**

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

**ANTENNA SCHEDULE**

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA Ø HEIGHT	AZIMUTH	(E/P) TMA/DIPLXER/TRIPLEXER (QTY)	(E/P) RRU (QTY)	FEEDER	(E/P) RAYCAP (QTY)
A1	EXISTING	UMTS 850	7770	55X11X5	±140'	80°	(E) POWERWAVE / LGP 21901 (2)   (E) POWERWAVE / LGP 17201 (FULL DUAL BAND) (2)	(2) 1-5/8" COAX		
A2	EXISTING	LTE 700/1900/1900	HPA-65R-BUU-H6	72.0X14.8X9.0	±140'	80°		(E) RRUS-11 (1), (P) RRUS-32 B2 (1)	FIBER AND DC POWER	(E) RAYCAP DC6-48-60-18-8C (1)
A3	PROPOSED	LTE 700/WCS	EPBQ-654L8H6-L2	73X21X6.3	±140'	80°		(P) RRUS-32 B2 (1), (P) B14 4478 (1)	FIBER AND DC POWER	(P) RAYCAP DC6-48-60-18-8C (1)
A4	EXISTING	GSM (DECOM)	7770	55X11X5	±140'	80°	(E) POWERWAVE / LGP 21901 (4)		FIBER AND DC POWER	
B1	EXISTING	UMTS 850	7770	55X11X5	±140'	140°	(E) POWERWAVE / LGP 21901 (2)   (E) POWERWAVE / LGP 17201 (FULL DUAL BAND) (2)	(2) 1-5/8" COAX		
B2	EXISTING	LTE 700/1900/1900	HPA-65R-BUU-H6	72.0X14.8X9.0	±140'	140°		(E) RRUS-11 (1), (P) RRUS-32 B2 (1)	FIBER AND DC POWER	
B3	PROPOSED	LTE 700/WCS	EPBQ-654L8H6-L2	73X21X6.3	±140'	140°		(P) RRUS-32 B2 (1), (P) B14 4478 (1)	FIBER AND DC POWER	
B4	EXISTING	GSM (DECOM)	7770	55X11X5	±140'	140°	(E) POWERWAVE / LGP 21901 (4)		FIBER AND DC POWER	
C1	EXISTING	UMTS 850	7770	55X11X5	±140'	310°	(E) POWERWAVE / LGP 21901 (2)   (E) POWERWAVE / LGP 17201 (FULL DUAL BAND) (2)	(2) 1-5/8" COAX		
C2	EXISTING	LTE 700/1900/1900	HPA-65R-BUU-H6	72.0X14.8X9.0	±140'	310°		(E) RRUS-11 (1), (P) RRUS-32 B2 (1)	FIBER AND DC POWER	
C3	PROPOSED	LTE 700/WCS	EPBQ-654L8H6-L2	73X21X6.3	±140'	310°		(P) RRUS-32 B2 (1), (P) B14 4478 (1)	FIBER AND DC POWER	
C4	EXISTING	GSM (DECOM)	7770	55X11X5	±140'	310°	(E) POWERWAVE / LGP 21901 (4)		FIBER AND DC POWER	

RRU	SIZE (INCHES) (L x W x D)
RRUS-11	19.7 x 17 x 7.2
RRUS-32 B2	27.2 x 12.1 x 7
RRUS-32	27.2 x 12.1 x 7
B14 4478	14.9 x 13.1 x 7.3

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NOTES,  
SPECIFICATIONS &  
ANTENNA  
SCHEDULE

TOP OF EXISTING MONOPOLE  
EL. ±180'-0" A.G.L.

AT&T ANTENNAS  
EL. ±140'-0" A.G.L.

EXISTING ±180' TALL MONOPOLE

EXISTING AT&T CABLES ROUTED INSIDE MONOPOLE.

**TOWER STRUCTURAL NOTES:**

1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

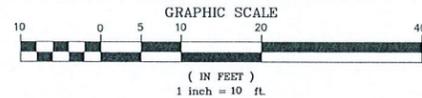
**NOTES:**

1. A.G.L. = ABOVE GRADE LEVEL

EXISTING CHAINLINK FENCE AT PERIMETER OF COMPOUND  
EXISTING AT&T COAX CABLE ICE BRIDGE  
EXISTING EQUIPMENT SHELTER (BY OTHERS)  
EXISTING AT&T EQUIPMENT CABINETS, TYP. ON CONC. SLAB-ON-GRADE

**3 EAST TOWER ELEVATION**

SCALE: 1" = 10'



EXISTING EQUIPMENT CABINETS,  
TYP. ON CONC. SLAB-ON-GRADE  
(BY OTHERS)

EXISTING ±180' TALL MONOPOLE

EXISTING COAX CABLE ICE BRIDGES,  
TYP. (BY OTHERS)

EXISTING EQUIPMENT SHELTERS,  
TYP. OF (2) (BY OTHERS)

EXISTING AT&T COAX CABLE ICE BRIDGE

EXISTING AT&T EQUIPMENT CABINETS,  
TYP. ON CONC. SLAB-ON-GRADE

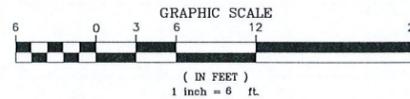
EXISTING CHAINLINK FENCE AT  
PERIMETER OF COMPOUND

EXISTING COMPOUND ACCESS GATE

EXISTING METER BANK

**1 COMPOUND PLAN**

SCALE: 1" = 6'



EXISTING AT&T COAX CABLE ICE BRIDGE  
EXISTING AT&T DIPLEXERS, TYP. OF (12) MOUNTED  
UNDER EXISTING COAX CABLE ICE BRIDGE  
EXISTING AT&T GPS ANTENNA MOUNTED  
TO EXISTING COAX CABLE ICE BRIDGE

EXISTING AT&T SURGE SUPPRESSOR  
MOUNTED TO EXISTING AT&T COAX  
CABLE ICE BRIDGE POST  
EXISTING AT&T DC5 BOX

EXISTING AT&T POWER PLANT ON CONC. SLAB-ON-GRADE

EXISTING AT&T TELCO/POWER H-FRAME

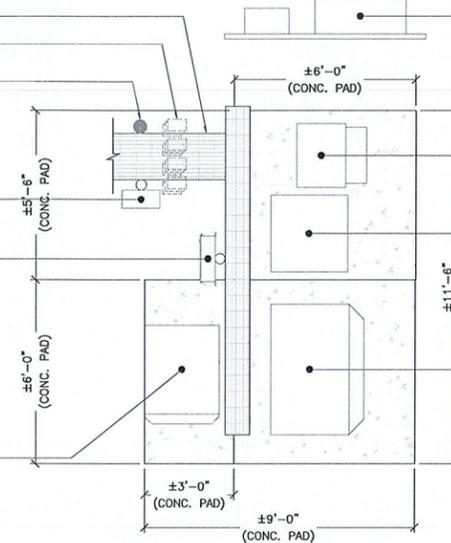
EXISTING AT&T DJS41 WITHIN EXISTING  
AT&T PURCELL CABINET ON CONC.  
SLAB-ON-GRADE. REMOVE AND REPLACE  
EXISTING DUL FOR A NEW 5216 WITHIN  
EXISTING PURCELL CABINET.

EXISTING AT&T GSM CABINET  
ON CONC. SLAB-ON-GRADE.  
TO BE DECOMMISSIONED AND REMOVED.

EXISTING AT&T UMTS CABINET  
ON CONC. SLAB-ON-GRADE.  
TO BE DECOMMISSIONED AND REMOVED.

**2 EQUIPMENT LAYOUT PLAN**

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



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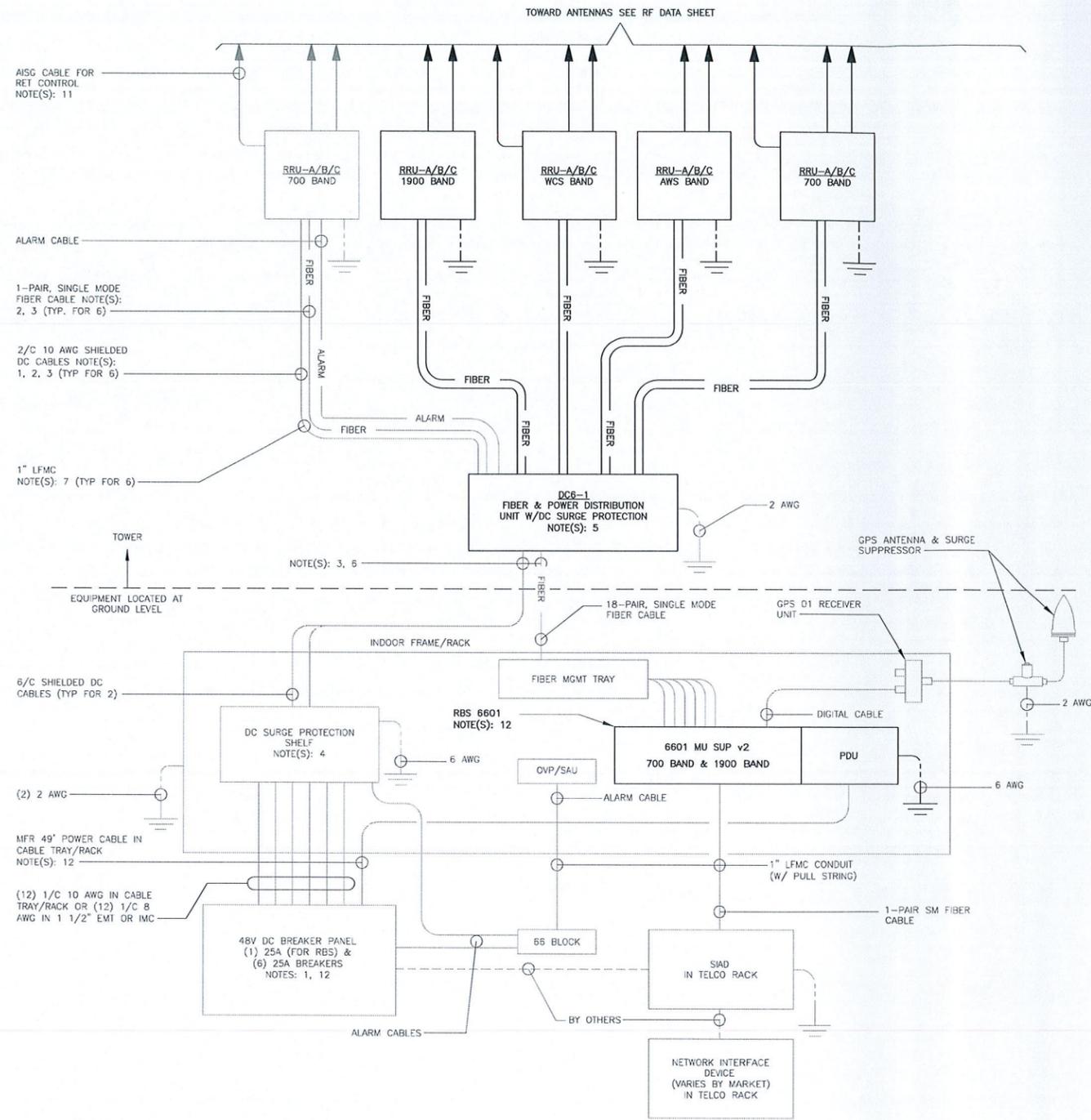
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PLANS AND ELEVATION

**C-1**  
Sheet No. 3 of 8







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

**LTE SCHEMATIC DIAGRAM NOTES:**

- 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.
- LEAVE COILED AND PROTECTED UNTIL TERMINATED.
- DC AND FIBER CABLES SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
- DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCX-48-60-RM.
- FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
- 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.
- CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
- 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.
- 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.
- FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
- RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
- 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.

**ELECTRICAL NOTES**

- 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.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- 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.
- 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.
- 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.
- PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- 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.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- 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.
- 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.
- 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.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- 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**

- 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:
    - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
    - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
    - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- 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.
- 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.
- CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

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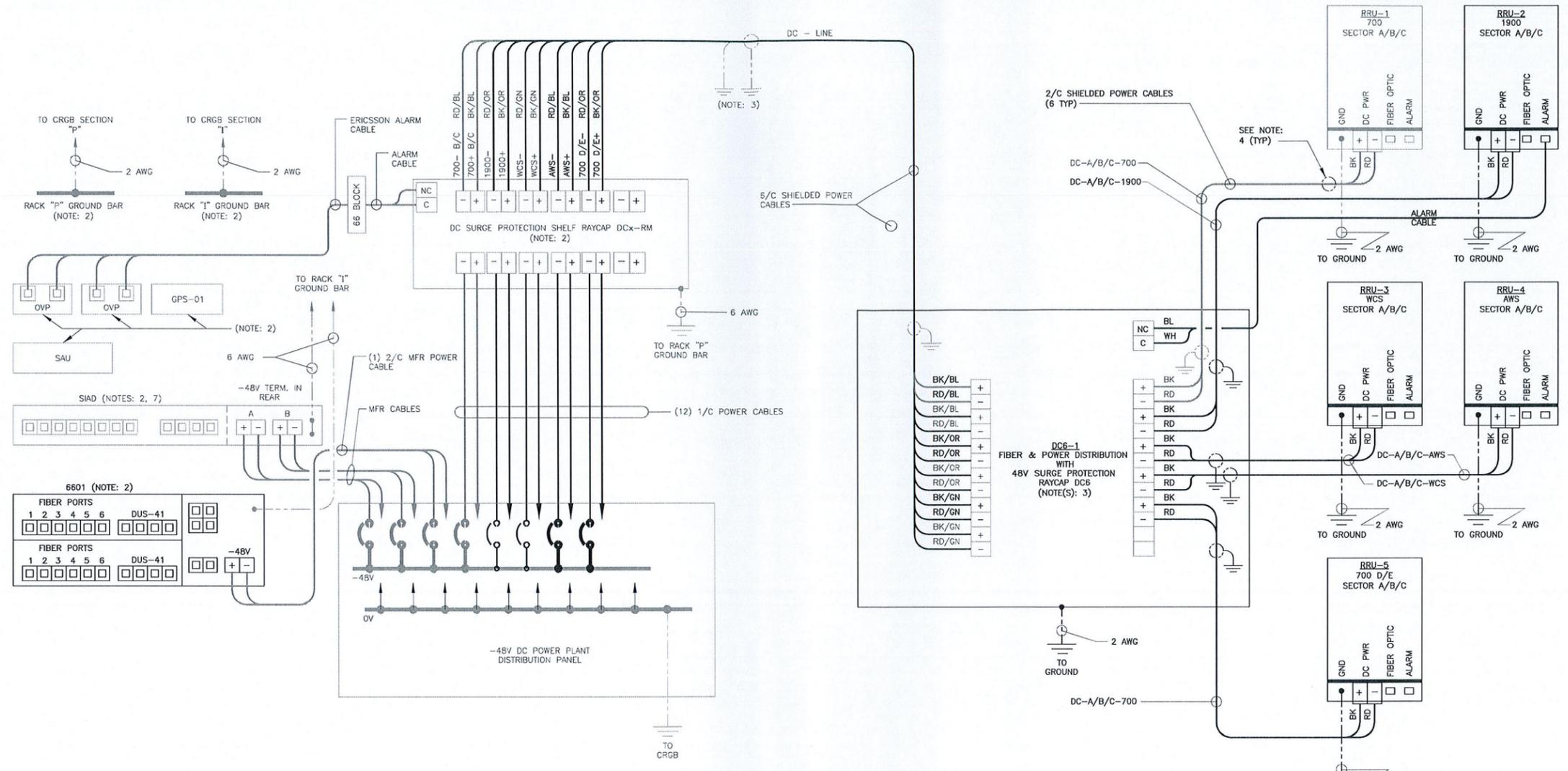


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TYPICAL ELECTRICAL DETAILS & NOTES



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

**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.

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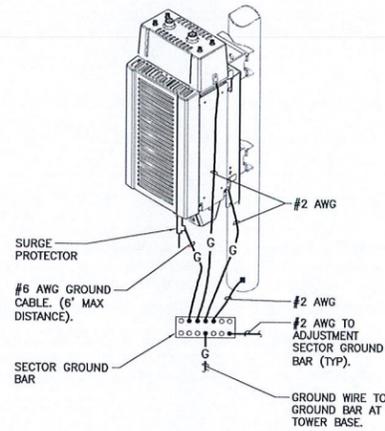
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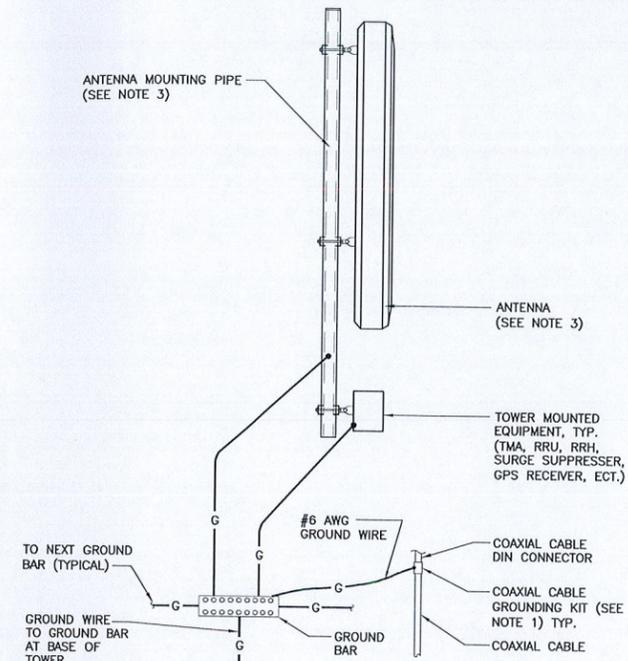
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TYPICAL ELECTRICAL DETAILS & NOTES

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



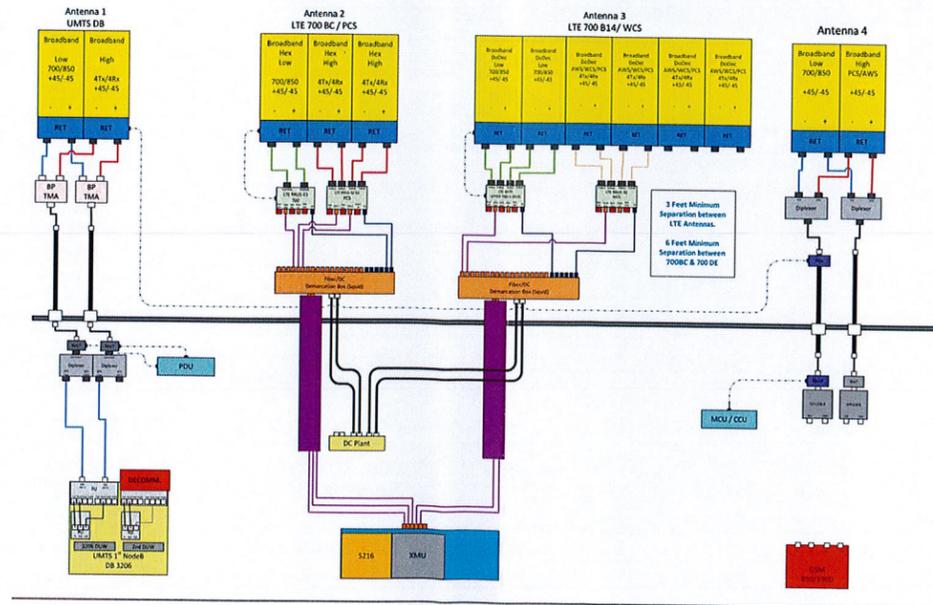
**2** RRU POLE MOUNT GROUNDING  
 E-3 NOT TO SCALE



**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 GROUNDING DETAIL  
 E-3 NOT TO SCALE



**3** RF PLUMBING DIAGRAM  
 E-3 NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS