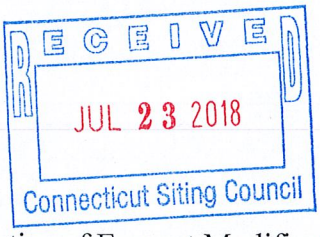
EMPIRE telecom

June 5th, 2018

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



Regarding:	Notice of Exempt Modification – Antenna Modification
Property Address:	201 Main St., Cromwell, CT 06416
AT&T Site:	CT5272

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 125-foot monopole at the above-referenced address, latitude 41° 35' 0.11", longitude -72° 38' 59.14". Said monopole is owned by Crown Castle and the underlying property owner is S&S Partners Inc.

AT&T desires to modify its existing telecommunications facility by swapping (3) antennas, adding (9) nine remote-radio heads ("RRHs") along with accessory lines and cabling. The centerline height of the existing antennas is and will remain at 117 feet.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to the Honorable Enzo Faienza, Mayor of the Town of Cromwell, Stuart B. Popper, as Director of Planning and Development of the Town of Cromwell, , S&S Partners, Inc., as property owner and Crown Castle, as the tower owner.

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

1. The planned modification will not result in an increase in the height of the existing structure. The added antennas and accessory equipment along with equipment to be swapped will be installed at the existing height of 117 feet on the 125-foot monopole.

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.

Jennifer Iliades • Empire Telecom USA, LLC • 16 Esquire Road, Billerica, MA 01862 • 978-284-0701 • jiliades@empiretelecomm.com

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 B&T Group, dated February 6th, 2018).

For the foregoing reasons, AT&T respectfully requests that the proposed remote-radio head 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 Manager

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

cc: Honorable Enzo Faienza, Mayor of the Town of Cromwell; Stuart B. Popper, as Director of Planning and Development in the Town of Cromwell; S&S Partners Inc., as Property Owner; Crown Castle, as Tower Owner

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pt (electronic) $0.00
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Postmark Here

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06/07/2018

an $13.90

Cromwell Town Hall
Stuart B. Popper,
Director of Planning & Development
41West Street,
Cromwell, CT 06416

N

0, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Postmark Here

$7.70

06/07/2018

an $13.90

S&S Partners, Inc.
P.O. Box 734
Old Lyme, CT 06371

N

, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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:

Cromwell Town Hall
Mayor's Office
41West Street,
Cromwell, CT 06416

9590 9402 3770 8032 0966 10

2. Article Number (Transfer from service label)
29E0 2E06 0000 0670 2702

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Lori Caracciola ☐ Agent ☐ Addres

B. Received by (Printed Name) Lori Caracciola
C. Date of Deliv 6-11-18

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
☐ ail
☐ ail Restricted Delivery
)

☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restric Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

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

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 88

2. Article Number (Transfer from service label)
7017 0190 0000 9032 0430

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Lindsay Bianco ☐ Agent ☐ Address

B. Received by (Printed Name) Lindsay Bianco
C. Date of Delive 6/11/18

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
☐ ail
☐ ail Restricted Delivery
)

☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restric Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation
☐ Signature Confirmation Restricted Delivery

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

Property Location: 201 MAIN STREET | MAP ID: 51/ 47/ 36/ / | Bldg Name: | State Use: 201

Vision ID: 126 | Account # 00015800 | Bldg #: 1 of 1 | Sec #: 1 of 1 | Card 1 of 1 | Print Date: 11/24/2015 14:20

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
S & S PARTNERS INC		5 Private Well	1(None	
PO BOX 734		6 Septic		
OLD LYME, CT 06371				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:		DV Lot #	
Prior Zoning	F	I&E Penalty	2011
Census Tr.	5703	BAA	06G;05G
Color		Callback	
100 Yr Flood	Yes	Prior Value	404830
DV Map #			
GIS ID:	00015800	*ASSOC PID#*	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
COM LAND	2-1	158,200	110,740
COM BLDG	2-2	393,390	275,370
COM OUTBL	2-5	26,730	18,720
	Total	578,320	404,830

6033
CROMWELL, CT

VISION

RECORD OF OWNERSHIP

	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
S & S PARTNERS INC	412/ 142	05/24/1989			0	

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2015	2-1	110,740	2014	2-1	110,740	2013	2-1	110,740
2015	2-2	275,370	2014	2-2	275,370	2013	2-2	275,370
2015	2-5	18,720	2014	2-5	18,720	2013	2-5	18,720
	Total:	404,830		*Total:*	404,830		*Total:*	404,830

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

(3)24X12 OHD & (1)24X14) OHD; CELL BLDG
& PLATFORM ON EXISTING TOWER;
COMMERCIAL DIESEL
NEW ENGLAND ASPHALT
120' POLE TOWER (38 RECEIVERS) ON
ACCOUNT #00015810

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	404,430
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	26,730
Appraised Land Value (Bldg)	158,200
Special Land Value	0
Total Appraised Parcel Value	578,320
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	578,320

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
23606	08/31/2015	OT	Other	20,000	09/28/2015	100		Structural Upgrade on M
23040	11/26/2014	HV	HVAC	4,000	11/26/2014	99		250,000 Hanging Furnace
23051	11/26/2014	PL	Plumbing	4,000	11/26/2014	99		Install gas line to Hanging
23033	11/19/2014	PR	Propane Tank	1,300	11/19/2014	99		2 - 120 Gal LP Tanks
20102	08/23/2011	PR	Propane Tank	100,000	09/12/2012	100	05/08/2012	30,000 gal tank
19218	08/02/2010	AC	Air Condition	3,500	03/16/2012	100		Ductless
19181	07/14/2010	EL	Electric	3,000	08/27/2010	101	08/27/2010	100amp sub-panel for rad

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
09/28/2015			MM	53	Permit- Drive By
09/12/2012			TWM	52	Permit- Miscellaneous
03/16/2012			TWM	53	Permit- Drive By
09/23/2011			AO	53	Permit- Drive By
11/19/2007			JQ	40	No change

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre ^Disc^	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing		S Adj Fact	Adj. Unit Price	Land Value
1	201	Commercial Improv	IND				43,560	SF	1.73	1.7500	H	1.0000	1.00	5000	1.00				1.00		131,880
420.	ercial I	201	201	NI			2.24	AC	11,750.00	000		Disc	H	1.00							

Total Card Land Units: 3.24 AC | Parcel Total Land Area: 3.24 AC | Total Land Value: 158,200

Property Location: 201 MAIN STREET | MAP ID: 51/ 47/ 36/ / | Bldg Name: | State Use: 201

Vision ID: 126 | Account # 00015800 | Bldg #: 1 of 1 | Sec #: 1 of 1 | Card 1 of 1 | Print Date: 11/24/2015 14:20

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	95		Garage/Office
Model	94		Commercial
Grade	09		C+
Stories	1		
Occupancy	2		
Exterior Wall 1	15		Concrete
Exterior Wall 2			
Roof Structure	08		Irregular
Roof Cover	02		Rolled Compos
Interior Wall 1	01		Minimum
Interior Wall 2			
Interior Floor 1	03		Concrete
Interior Floor 2			
Heating Fuel	02		Oil
Heating Type	04		Forced Air
AC Type	01		None
Bldg Use	201		Commercial Improv
Sprinkler Type	N		None
Sprinkler %			
Mezzanine Fin.			
Mezanine Unf.			
Heat/AC	00		None
Frame Type	03		Masonry
Baths/Plumbing	02		Average
Ceiling/Walls	04		Ceil and Min W
Rooms/Prtns	02		Average
Wall Height	16		
% Comn Wall			

CONSTRUCTION DETAIL (CONTINUED)

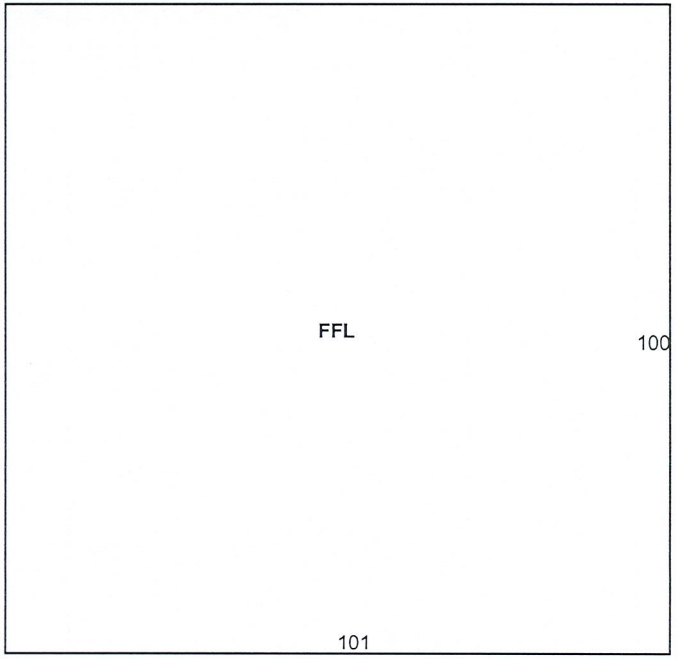
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
201	Commercial Improv	100

COST/MARKET VALUATION

Adj. Base Rate:	56.45
Net Other Adj:	16,000.00
AYB	1953
Dep Code	G
Remodel Rating	
Year Remodeled	
Dep %	31
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	69
Apprais Val	404,430
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



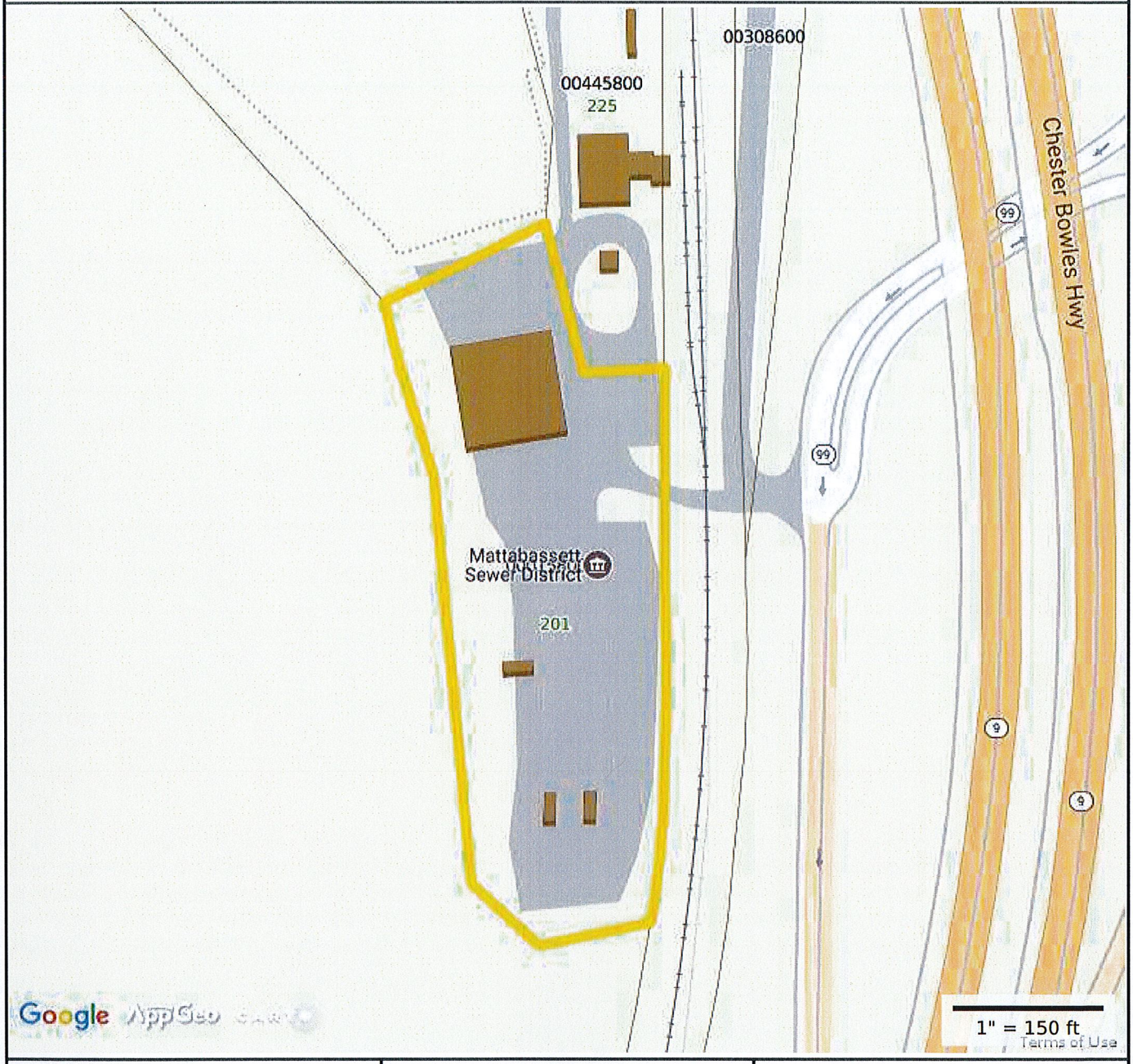
OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
PAV1	Paving Asph.			L	1,000	2.10	1953				50	1,050
FN6	Fence 6'			L	2,520	13.00	2002				50	16,380
LT2	Light 2			L	2	1,500.00	2011		0		100	3,000
LT3	Light 3			L	3	2,100.00	2011		0		100	6,300

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
FFL	First Floor	10,100	10,100			
	Ttl. Gross Liv/Lease Area:	10,100	10,100			

map



Property Information

Property ID	00015800
Location	201 MAIN STREET
Owner	S & S PARTNERS INC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

Parcels updated 06/2016
Properties updated daily

February 6th, 2018

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6580

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5272
	Carrier Site Name:	10070985
Crown Castle Designation:	**Crown Castle BU Number:**	876364
	Crown Castle Site Name:	Cromwell / First Line Emergenc
	Crown Castle JDE Job Number:	479777
	Crown Castle Work Order Number:	1520858
	Crown Castle Application Number:	422165 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	84470.016.01
Site Data:	**201 Main St., CROMWELL, Middlesex County, CT** **Latitude *41° 35' 0.11"*, Longitude *-72° 38' 59.14"*** **125 Foot - Monopole Tower**	

Dear Marianne Dunst,

B+T Group 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 1137238, in accordance with application 422165, revision 0.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing loading, respectively.

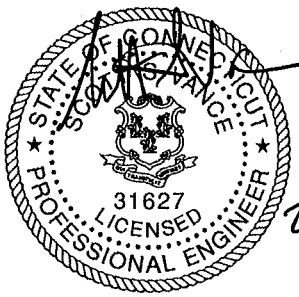
This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

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

We at *B+T Group* 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: Tharun Cheriyan, E.I.T.

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 2/10/2019



2/6/18

Scott S. Vance, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 125 ft. Monopole tower designed by Engineered Endeavors, Inc. in February of 2002. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. This tower has been modified multiple times and those modifications were incorporated into this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75-inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

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
115.0	117.0	3	Cci Antennas	HPA-65R-BUU-H6	2 1	3/4 3/8	--
		3	Ericsson	RRUS 32			
		3	Ericsson	RRUS 32 B2			
		3	Ericsson	RRUS 32 B66			
		2	Ericsson	RRUS 4478 B14			
		6	Kaelus	DBC0061F1V51-2			
		3	Kathrein	80010798			
		6	Powerwave Tech.	TT19-08BP111-001			
		1	Raycap	DC6-48-60-18-8F			

Table 2 - Existing 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
125.0	129.0	3	Argus Technologies	LLPX310R-V1	3 1 2 3 3	1-1/4 3/4 1/2 5/16 1/4	1
	127.0	3	Alcatel Lucent	TD-RRH8x20-25			
		3	Rfs Celwave	APXVSPP18-C-A20			
		3	Rfs Celwave	APXVTM14-C-120			
	125.0	2	Dragonwave	HORIZON COMPACT			
		3	Samsung Tele.	WIMAX DAP HEAD			
		1	--	Platform Mount [LP 714-1]			
	124.0	1	Andrew	VHLP2-11			
		1	Andrew	VHLP2-18			
123.0	123.0	3	Alcatel Lucent	TME-800MHz 2X50W RRH W/Filter	--	--	1
		3	Alcatel Lucent	TME-PCS 1900MHz 4x45W-65MHz			
		1	--	Side Arm Mount [SO 102-3]			
115.0	117.0	**6**	**Communication Components Inc.**	**DTMABP7819VG12A**	--	--	**2**
		6	**Kmw Comm.**	**AM-X-CD-16-65-00T-RET**			
		3	Ericsson	RRUS 11 B12	12	1-1/4	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		3	Kmw Comm.	AM-X-CD-16-65-00T-RET	2	3/4	
		1	Raycap	DC6-48-60-18-8F	1	3/8	
	115.0	1	--	Platform Mount [LP 304-1]			
105.0	107.0	3	Alcatel Lucent	RRH2X60-AWS	14	1-5/8	1
		3	Alcatel Lucent	RRH2X60-PCS			
		3	Alcatel Lucent	RRH2x60-700			
		6	Andrew	LNX-6514DS-A1M			
		6	Commscope	HBXX-6517DS-A2M			
		2	Rfs Celwave	DB-T1-6Z-8AB-0Z			
	105.0	1	--	Platform Mount [LP 1201-1]			
82.0	85.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	6	1-5/8	1
		3	Ericsson	ERICSSON AIR 21 B4A B2P	1	1-3/16	
	82.0	1	--	T-Arm Mount [TA 602-3]			

Notes:
1) Existing Equipment
2) **Equipment to Be Removed; Not Considered In This Analysis**

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125	125	6	Decibel	DB980H65	--	--
		3	Decibel	DB980H90		
		1	Generic	L.P.Platform		
115	115	6	Allgon	7250	--	--
		1	Generic	T-Arm		
105	105	12	Decibel	DB844	--	--
		1	Generic	L.P.Platform		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Co-Location Rev# 0	422165	CCI Sites
Tower Manufacturer Drawings	EEI, Job No.10554	2068958	CCI Sites
Tower Modification Drawings	Semaan Engineering Solutions, Date: 12/08/2004	2055765	CCI Sites
Post-Modification Inspection	VSI, Date: 10/11/2007	1956332	CCI Sites
Tower Modification Drawing	VSI, Date: 10/09/2007	2296089	CCI Sites
Post Modification Inspection	VSI, Date: 10/11/2007	2182292	CCI Sites
Tower Modification Drawing	B+T Group, Date: 07/11/2012	3373019	CCI Sites
Post Modification Inspection	B+T Group, Date: 12/07/2012	3394680	CCI Sites
Tower Modification Drawing	B+T Group, Date: 03/01/2013	3669962	CCI Sites

Document	Remarks	Reference	Source
Post Modification Inspection	TEP, Date: 09/10/2013	4009982	CCI Sites
Tower Modification Drawing	B+T Group, Date: 05/21/2015	5685167	CCI Sites
Post Modification Inspection	ETS, Date: 10/21/2015	5947318	CCI Sites
Foundation Drawings	EEI, Project No.6464	1613909	CCI Sites
Geotechnical Reports	Dr. Clarence Welti, P.E., Date: 08/02/1999	1532312	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 02/01/2018	CCI Sites

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.
4) Mount areas and weights are assumed based on photographs provided.
5) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	125 - 120	Pole	TP19.575x18.5x0.188	1	-3.343	850.034	13.4	Pass
L2	120 - 115	Pole	TP20.65x19.575x0.188	2	-3.631	884.154	23.1	Pass
L3	115 - 110	Pole	TP21.724x20.65x0.188	3	-7.082	916.908	41.3	Pass
L4	110 - 105	Pole	TP22.799x21.724x0.188	4	-7.505	948.296	55.1	Pass
L5	105 - 100	Pole	TP23.874x22.799x0.188	5	-11.545	978.318	77.3	Pass
L6	100 - 99.375	Pole	TP24.008x23.874x0.188	6	-11.632	981.975	79.6	Pass
L7	99.375 - 99.125	Pole	TP24.062x24.008x0.425	7	-11.685	2368.930	73.7	Pass
L8	99.125 - 94.458	Pole	TP25.065x24.062x0.413	8	-12.488	2398.060	89.0	Pass
L9	94.458 - 94.208	Pole	TP25.119x25.065x0.6	9	-12.554	3469.160	63.0	Pass
L10	94.208 - 89.208	Pole	TP26.194x25.119x0.575	10	-13.655	3473.740	74.1	Pass
L11	89.208 - 89	Pole	TP26.239x26.194x0.575	11	-13.709	3479.800	74.5	Pass
L12	89 - 85.04	Pole	TP27.09x26.239x0.663	12	-13.722	3997.110	64.9	Pass
L13	85.04 - 84.04	Pole	TP26.918x25.873x0.5	13	-15.493	3114.840	79.7	Pass
L14	84.04 - 79.04	Pole	TP27.981x26.918x0.488	14	-18.242	3160.550	89.4	Pass
L15	79.04 - 74.04	Pole	TP29.043x27.981x0.475	15	-19.446	3199.940	98.2	Pass
L16	74.04 - 73.583	Pole	TP29.14x29.043x0.475	16	-19.567	3210.810	99.0	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L17	73.583 - 73.333	Pole	TP29.193x29.14x0.613	17	-19.642	4128.070	78.4	Pass
L18	73.333 - 73	Pole	TP29.264x29.193x0.613	18	-19.735	4138.300	78.8	Pass
L19	73 - 72.75	Pole	TP29.317x29.264x0.375	19	-19.791	2559.350	88.3	Pass
L20	72.75 - 67.75	Pole	TP30.38x29.317x0.375	20	-20.915	2653.310	94.6	Pass
L21	67.75 - 63	Pole	TP31.389x30.38x0.369	21	-22.022	2697.410	99.9	Pass
L22	63 - 62.75	Pole	TP31.442x31.389x0.575	22	-22.120	4185.370	83.0	Pass
L23	62.75 - 57.75	Pole	TP32.505x31.442x0.563	23	-23.559	4236.990	88.0	Pass
L24	57.75 - 57.333	Pole	TP32.594x32.505x0.563	24	-23.692	4248.750	88.4	Pass
L25	57.333 - 57.083	Pole	TP32.647x32.594x0.45	25	-23.759	3416.570	86.3	Pass
L26	57.083 - 52.083	Pole	TP33.709x32.647x0.444	26	-25.082	3480.960	90.4	Pass
L27	52.083 - 47.083	Pole	TP34.772x33.709x0.438	27	-26.447	3542.200	94.1	Pass
L28	47.083 - 40.457	Pole	TP36.18x34.772x0.438	28	-26.863	3576.030	95.2	Pass
L29	40.457 - 39.457	Pole	TP35.889x34.6x0.5	29	-29.587	4172.560	88.6	Pass
L30	39.457 - 37.833	Pole	TP36.233x35.889x0.494	30	-30.073	4161.200	89.5	Pass
L31	37.833 - 37.583	Pole	TP36.286x36.233x0.494	31	-30.177	4167.370	89.6	Pass
L32	37.583 - 32.583	Pole	TP37.345x36.286x0.488	32	-31.716	4237.140	91.9	Pass
L33	32.583 - 27.583	Pole	TP38.405x37.345x0.481	33	-33.296	4303.760	94.0	Pass
L34	27.583 - 22.583	Pole	TP39.465x38.405x0.475	34	-34.903	4367.250	95.9	Pass
L35	22.583 - 17.583	Pole	TP40.524x39.465x0.475	35	-36.533	4485.930	97.5	Pass
L36	17.583 - 12.583	Pole	TP41.584x40.524x0.463	36	-38.190	4484.800	99.0	Pass
L37	12.583 - 12.25	Pole	TP41.654x41.584x0.463	37	-38.315	4492.490	99.1	Pass
L38	12.25 - 12	Pole	TP41.707x41.654x0.6	38	-38.424	5816.140	84.5	Pass
L39	12 - 7	Pole	TP42.767x41.707x0.588	39	-40.544	5843.490	86.1	Pass
L40	7 - 2	Pole	TP43.826x42.767x0.588	40	-42.698	5990.280	87.5	Pass
L41	2 - 0	Pole	TP44.25x43.826x0.575	41	-43.569	5921.980	88.1	Pass
							Summary	
						Pole (L37)	85.9	Pass
						Reinforcement	99.9	Pass
						Rating =	99.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component		Elevation	% Capacity	Pass / Fail
1	Anchor Rods		Base	88.1	Pass
1	Base Plate		Base	86.2	Pass
1	Base Foundation	Structure	Base	51.0	Pass
		Soil	Base	77.7	Pass

Structure Rating (max from all components) =	99.9%

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

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the final load configuration. No modifications are required at this time.

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5272
FA#: 10070985

Cromwell SE
201 Main Street
Cromwell, CT 06416

March 12, 2018

Centerline Communications Project Number: 950006-101

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**13.33 %**

March 12, 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: **CT5272 – Cromwell SE**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **201 Main Street, Cromwell, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 **201 Main Street, Cromwell, 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	1	30
UMTS	1900 MHz (PCS)	1	30
LTE	700 MHz (Band 14)	4	40
LTE	2300 MHz (WCS)	4	30
LTE	2100 MHz (AWS)	4	30
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	40

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	KMW AM-X-CD-16-65-00T-RET	117
A	2	Kathrein 800-10798	117
A	3	CCI HPA-65R-BUU-H6	117
B	1	KMW AM-X-CD-16-65-00T-RET	117
B	2	Kathrein 800-10798	117
B	3	CCI HPA-65R-BUU-H6	117
C	1	KMW AM-X-CD-16-65-00T-RET	117
C	2	Kathrein 800-10798	117
C	3	CCI HPA-65R-BUU-H6	117

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	KMW AM-X-CD-16-65-00T-RET	850 MHz / 1900 MHz (PCS)	13.85 / 15.25	2	60	1,732.88	0.67
Antenna A2	Kathrein 800-10798	700 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	13.05 / 15.15 / 14.75	8	280	6,984.66	3.11
Antenna A3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	2.18
						Sector A Composite MPE%	**5.96**
Antenna B1	KMW AM-X-CD-16-65-00T-RET	850 MHz / 1900 MHz (PCS)	13.85 / 15.25	2	60	1,732.88	0.67
Antenna B2	Kathrein 800-10798	700 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	13.05 / 15.15 / 14.75	8	280	6,984.66	3.11
Antenna B3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	2.18
						Sector B Composite MPE%	**5.96**
Antenna C1	KMW AM-X-CD-16-65-00T-RET	850 MHz / 1900 MHz (PCS)	13.85 / 15.25	2	60	1,732.88	0.67
Antenna C2	Kathrein 800-10798	700 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	13.05 / 15.15 / 14.75	8	280	6,984.66	3.11
Antenna C3	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	6	240	6,030.01	2.18
						Sector C Composite MPE%	**5.96**

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	**5.96 %**
Sprint	1.02 %
Clearwire	0.14 %
MetroPCS	2.20 %
Verizon Wireless	3.05 %
Nextel	0.96 %
Site Total MPE %:	**13.33 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.96 %
AT&T Sector B Total:	5.96 %
AT&T Sector C Total:	5.96 %
Site Total:	13.33 %

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 (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS (Antenna 1)	1	727.98	117	2.12	850 MHz	567	0.37%
AT&T 1900 MHz (PCS) UMTS (Antenna 1)	1	1,004.90	117	2.93	1900 MHz (PCS)	1000	0.29%
AT&T 700 MHz LTE - Band 14 (Antenna 2)	4	807.35	117	9.42	700 MHz	467	2.02%
AT&T 2300 MHz (WCS) LTE (Antenna 2)	2	982.02	117	5.73	2300 MHz (WCS)	1000	0.57%
AT&T 2100 MHz (AWS) LTE (Antenna 2)	2	895.61	117	5.23	2100 MHz (AWS)	1000	0.52%
AT&T 700 MHz LTE (Antenna 3)	2	626.70	117	3.66	700 MHz	467	0.78%
AT&T 1900 MHz (PCS) LTE (Antenna 3)	4	1,194.15	117	13.94	1900 MHz (PCS)	1000	1.39%
						Total:	5.96%

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:	5.96 %
Sector B:	5.96 %
Sector C:	5.96 %
AT&T Maximum Total (per sector):	5.96 %
Site Total:	13.33 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.33 %** 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.

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

WIRELESS COMMUNICATIONS FACILITY
CT5272 - LTE 3C-WCS/4C-AWS/5C-700 UPPER D FirstNet
CROMWELL SE
CROWN CASTLE BU NO.: 876364
201 MAIN STREET
CROMWELL, CT 06416

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

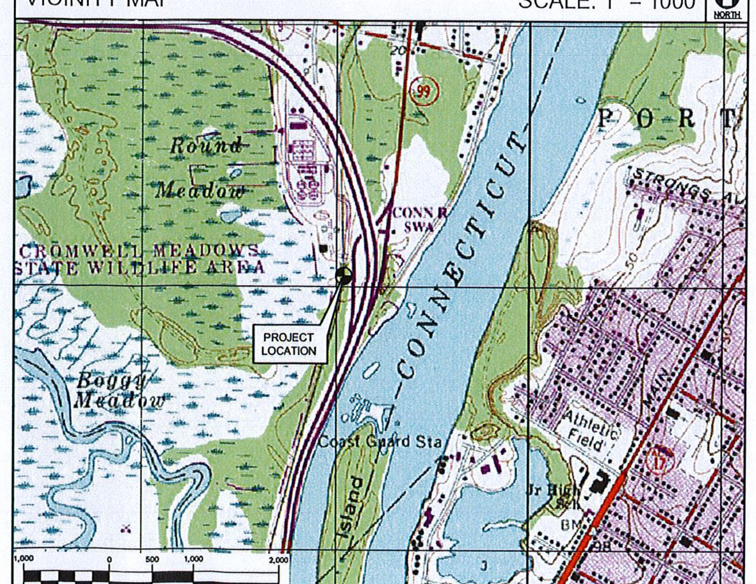
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT

TO: 201 MAIN STREET, CROMWELL, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.3 MI
2.	TURN RIGHT ONTO CAPITAL BLVD	0.2 MI
3.	TURN RIGHT ONTO HENKEL WAY	0.2 MI
4.	TURN LEFT ONTO BROOK ST	0.9 MI
5.	TURN RIGHT ONTO CT-99 S	4.4 MI
6.	201 MAIN STREET, CROMWELL, CT 06416	

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. <u>AT ANTENNA SECTORS</u>:

- INSTALL (3) NEW RRUS-32.
- INSTALL (3) NEW RRUS-32 B66.
- INSTALL (1) NEW DC SQUID ARRESTOR.
- INSTALL (3) SWIVEL RRU MOUNTS TO ACCOMMODATE ADDITIONAL RRUS.
- INSTALL (3) NEW LOW-BAND COMBINERS.
- REMOVE AND REPLACE EXISTING POSITION 3 ANTENNA AND INSTALL (3) NEW 12-PORT ANTENNAS, (1) PER SECTOR AT POSITION 2 TO ACCOMMODATE REQUIRED ANTENNA SEPARATIONS.
- INSTALL (1) ADDITIONAL DC SQUID ARRESTOR.

B. <u>WORK AT AT&T GROUND EQUIPMENT:</u>

- REMOVE AND REPLACE EXISTING DUL DUS AND UPGRADE FOR A PROPOSED 5216 UNIT WITHIN EXISTING PURCELL CABINET.
- INSTALL (1) ADDITIONAL XMU UNIT WITHIN EXISTING PURCELL CABINET.
- INSTALL A EQUIPMENT RACK WITH (2) ERICSSON 700 RRUS-4478 B14 UNITS, WITH (8) SURGE ARRESTORS.
- DECOMMISSION & REMOVE EXISTING GSM EQUIPMENT CABINET.
- REMOVE AND REPLACE (6) EXISTING DIPLEXERS FOR (3) NEW LOWBAND COMBINERS.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5272
AT&T SITE NAME:	CROMWELL SE
SITE ADDRESS:	CROWN CASTLE BU NO.: 876364 201 MAIN STREET CROMWELL, CT 06416
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T FA LOCATION CODE:	10070985
AT&T PACE ID NUMBERS:	1. MRCTB027361 2. MRCTB027368 3. MRCTB027363
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-34'-59.85" N LONGITUDE: 72°-38'-58.92" W GROUND ELEVATION: ±85' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

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 3C/4C/5C ANTENNA LAYOUTS	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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	05/31/18	DMD	CAG	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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DATE:	03/12/18
SCALE:	AS NOTED
JOB NO.	18000.03

TITLE SHEET

T-1

Sheet No. 1 of 8

NOTES AND SPECIFICATIONS

DESIGN BASIS:

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

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 100-120 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

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

STRUCTURAL STEEL

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

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

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

PAINT NOTES

PAINTING SCHEDULE:

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

EXAMINATION AND PREPARATION:

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

CLEANING:

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

APPLICATION:

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

COMPLETED WORK:

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

PROPOSED ANTENNA AND APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) TMA/DIPLEXER/TRIPLEXER (QTY)	(E/P) RRU (QTY)	FEEDER	(E/P) RAYCAP (QTY)
A1	EXISTING	UMTS 850/1900	KMW (AM-X-CD-16-65-00T-RET)	72.0 x 11.8 x 5.9	117'	20°	(E-TMA) PWAV TT19-08BP111-001 (1), (E-DIPLEX) CCI DTMABP7819VG12A (2)		1-1/4"ø COAX (QTY OF 2)	(P) RAYCAP DC6-48-60-18-8F (4)
A2										(E) RAYCAP DC6-48-60-18-8F (1)
A3	PROPOSED	LTE 700/WCS/AWS	KATHREIN (80010798)	78.5 x 14.8 x 6.7	117'	20°	(P-DIPLEX) KAELUS DBC0061F1V51-2 (2)	(P) B14 4478 (1), (P) RRUS-32 B66 (1), (P) RRUS-32 (1)	1-1/4"ø COAX (QTY OF 2)	(P) ANDREW APTDC-BDFDM-DB (2)
A4	EXISTING	LTE 700/1900	CCI (HPA-65R-BUU-H6)	72.0 x 14.8 x 9.0	117'	20°		(E) RRUS-11 (1), (E) RRUS-32 B2 (1)	FIBER AND DC POWER	
B1	EXISTING	UMTS 850/1900	KMW (AM-X-CD-16-65-00T-RET)	72.0 x 11.8 x 5.9	117'	150°	(E-TMA) PWAV TT19-08BP111-001 (1), (E-DIPLEX) CCI DTMABP7819VG12A (2)		1-1/4"ø COAX (QTY OF 2)	
B2										
B3	PROPOSED	LTE 700/WCS/AWS	KATHREIN (80010798)	78.5 x 14.8 x 6.7	117'	150°	(P-DIPLEX) KAELUS DBC0061F1V51-2 (2)	(P) B14 4478 (1), (P) RRUS-32 B66 (1), (P) RRUS-32 (1)	1-1/4"ø COAX (QTY OF 2)	(P) ANDREW APTDC-BDFDM-DB (2)
B4	EXISTING	LTE 700/1900	CCI (HPA-65R-BUU-H6)	72.0 x 14.8 x 9.0	117'	150°		(E) RRUS-11 (1), (E) RRUS-32 B2 (1)	FIBER AND DC POWER	
C1	EXISTING	UMTS 850/1900	KMW (AM-X-CD-16-65-00T-RET)	72.0 x 11.8 x 5.9	117'	270°	(E-TMA) PWAV TT19-08BP111-001 (1), (E-DIPLEX) CCI DTMABP7819VG12A (2)		1-1/4"ø COAX (QTY OF 2)	
C2										
C3	PROPOSED	LTE 700/WCS/AWS	KATHREIN (80010798)	78.5 x 14.8 x 6.7	117'	270°	(P-DIPLEX) KAELUS DBC0061F1V51-2 (2)	(P) B14 4478 (1), (P) RRUS-32 B66 (1), (P) RRUS-32 (1)	1-1/4"ø COAX (QTY OF 2)	(P) ANDREW APTDC-BDFDM-DB (2)
C4	EXISTING	LTE 700/1900	CCI (HPA-65R-BUU-H6)	72.0 x 14.8 x 9.0	117'	270°		(E) RRUS-11 (1), (E) RRUS-32 B2 (1)	FIBER AND DC POWER	

RRU	SIZE (INCHES) (L x W x D)
RRUS-11	19.7 x 17 x 7.2
RRUS-32	27.2 x 12.1 x 7
RRUS-32 B2	27.2 x 12.1 x 7
RRUS-32 B66	27.2 x 12.1 x 7
B14-4478	14.9 x 13.1 x 7.3

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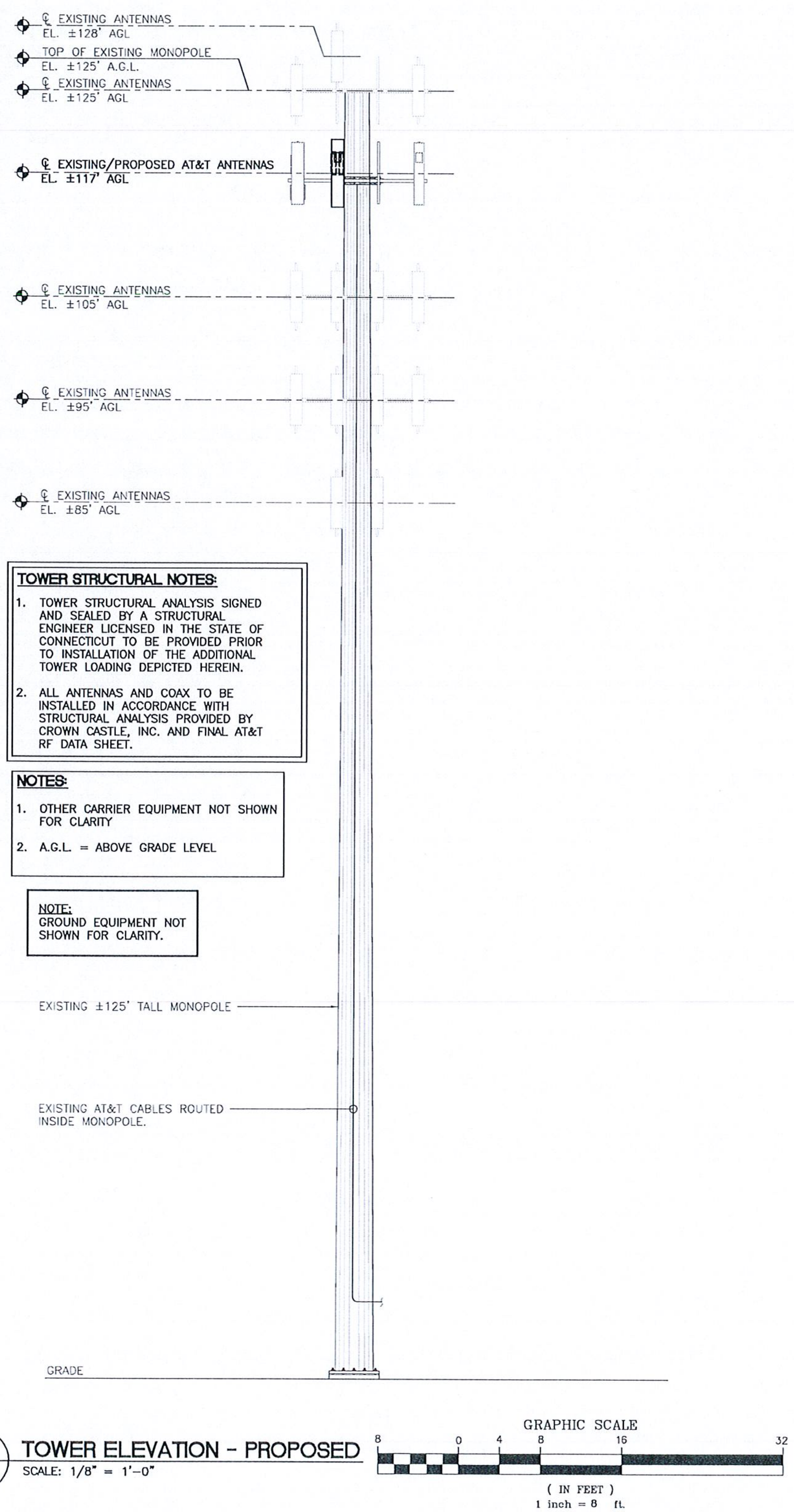
NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE

N-1



TOWER STRUCTURAL NOTES:

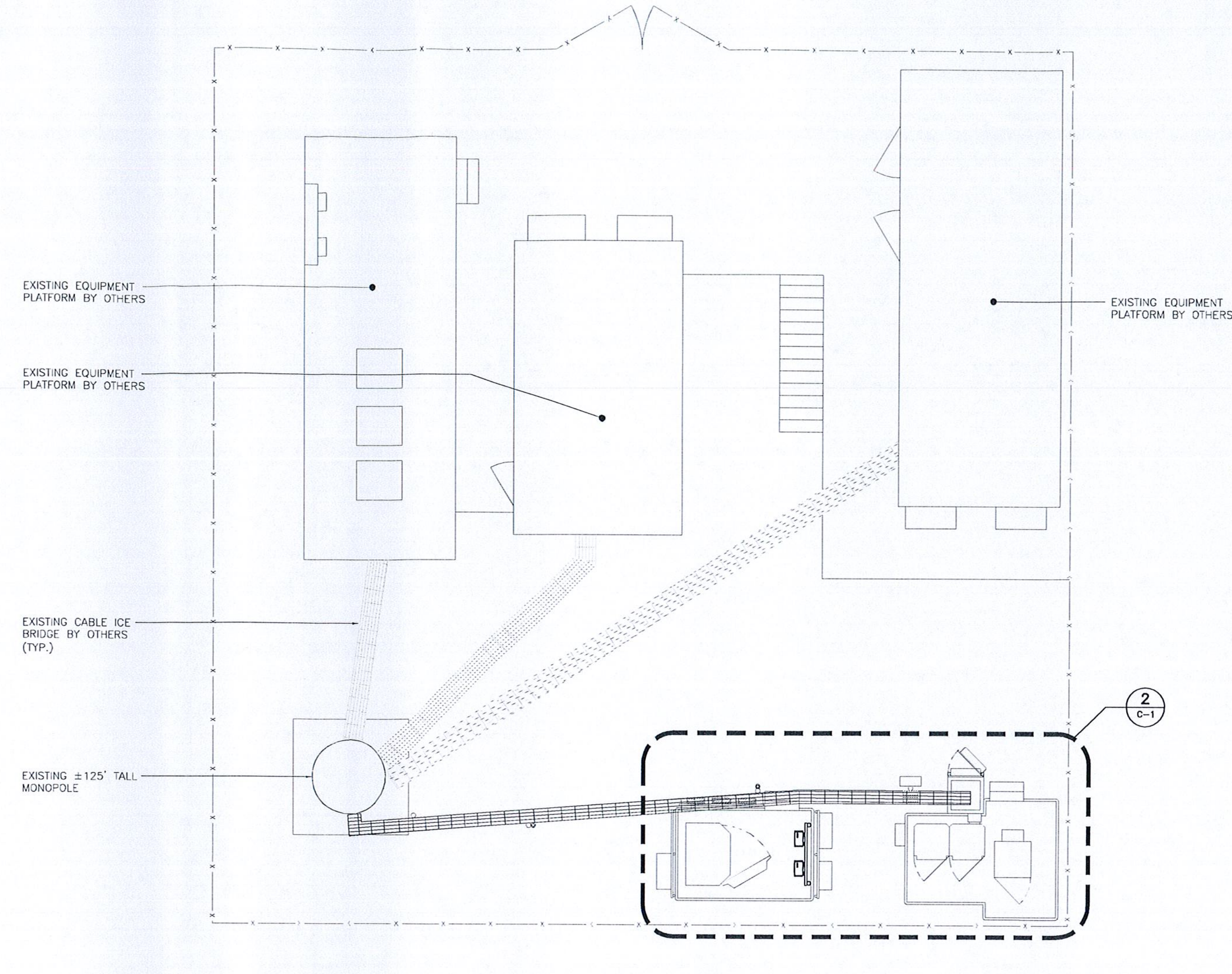
1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE,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

NOTES:

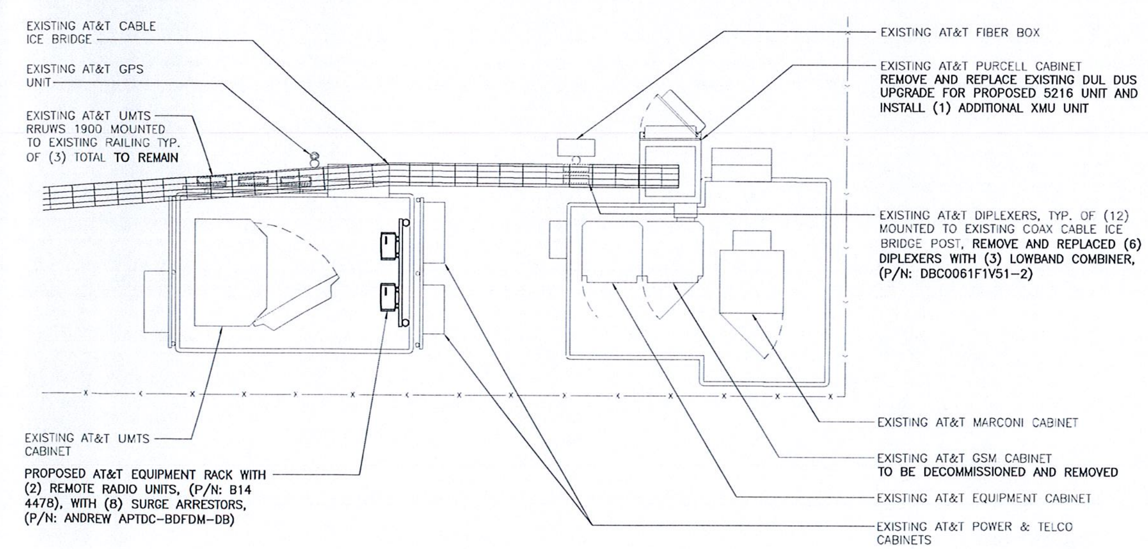
1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

NOTE: GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

3 / C-1 **TOWER ELEVATION - PROPOSED**
SCALE: 1/8" = 1'-0"



1 / C-1 **COMPOUND PLAN**
SCALE: 3/16" = 1'-0"
TRUE NORTH



2 / C-1 **PROPOSED EQUIPMENT LAYOUT PLAN**
SCALE: 1/2" = 1'-0"
TRUE NORTH

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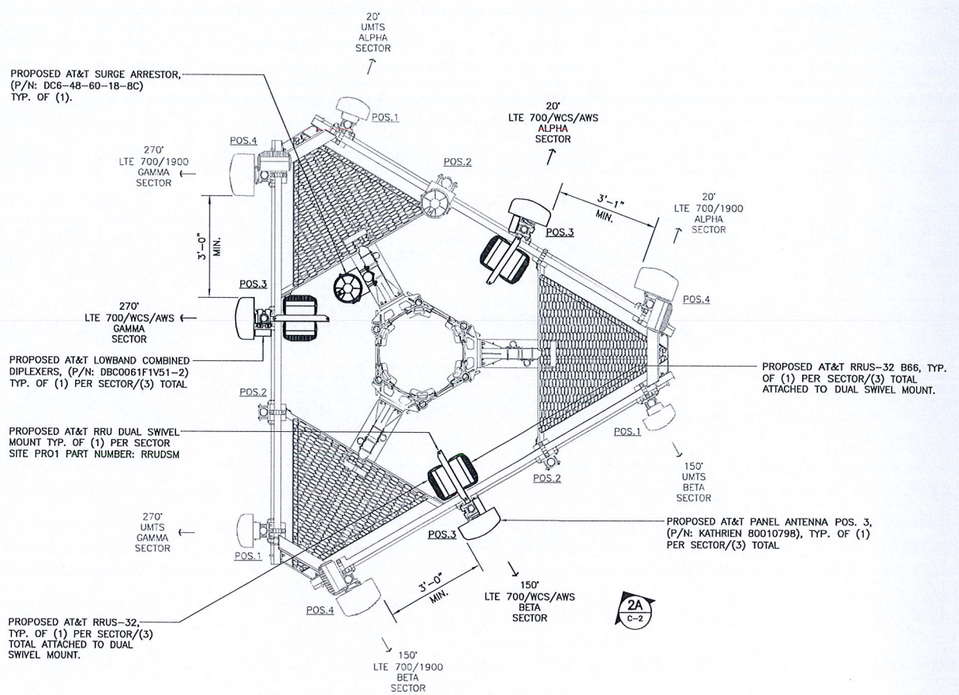
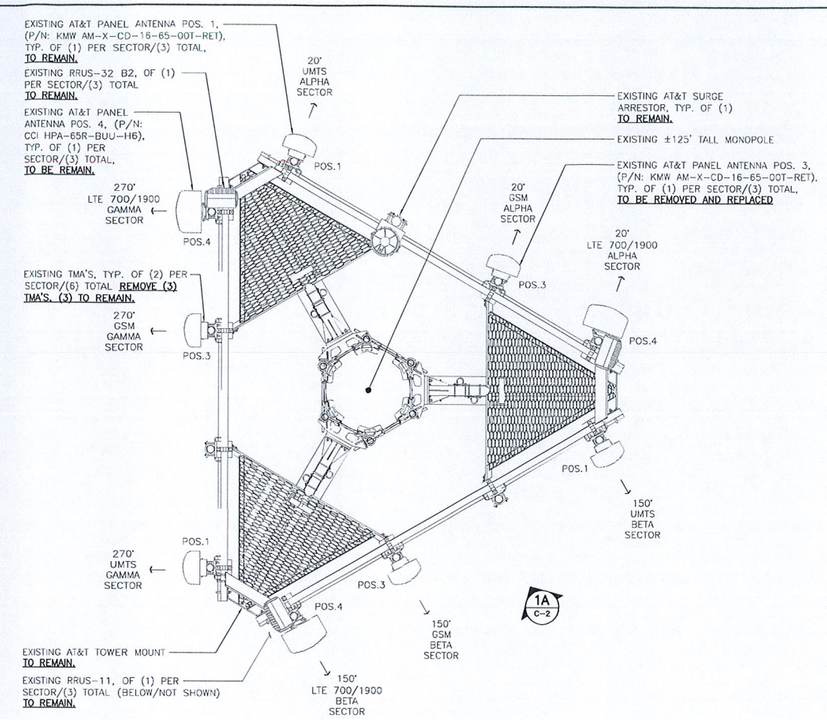
PLANS AND ELEVATION

C-1

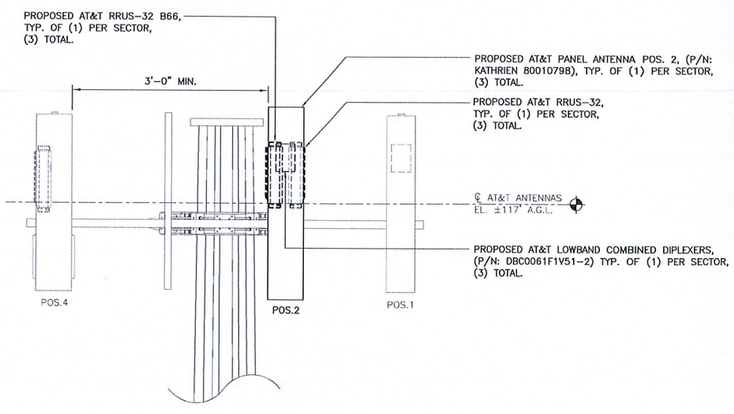
Sheet No. 3 of 8



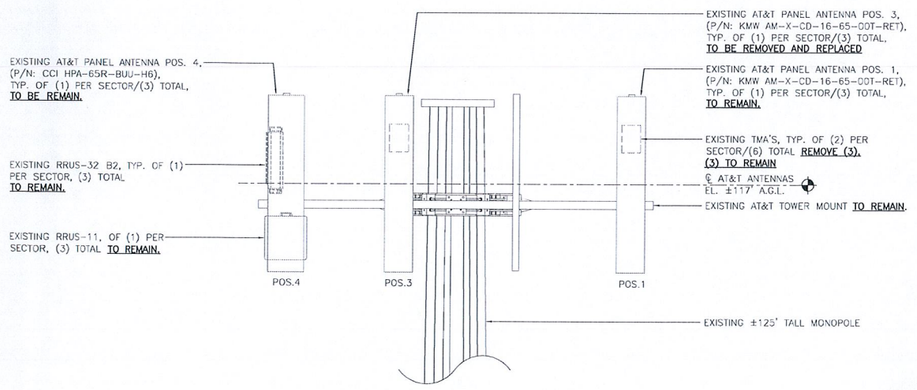
2 C-2 **PROPOSED ANTENNA PLAN** SCALE: 1/2" = 1'-0" NORTH



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



2A C-2 **PROPOSED ANTENNA ELEVATION (TYP)** SCALE: 1/2" = 1'-0"



1A C-2 **EXISTING ANTENNA ELEVATION (TYP)** SCALE: 1/2" = 1'-0"

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LTE 3C/4C/5C ANTENNA LAYOUT PLANS

C-2

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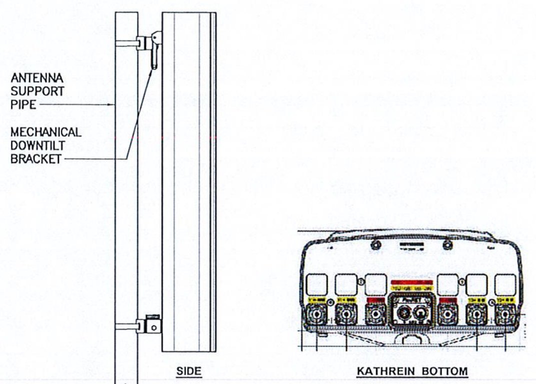


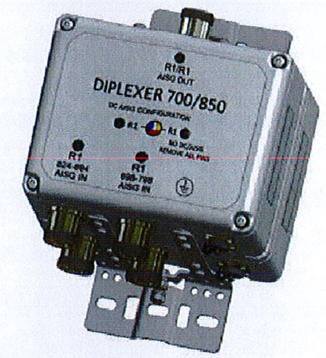
ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KATHRIEN MODEL: 80010798	78.5"L x 14.8"W x 6.7"D	81.4 LBS.

1 PROPOSED ANTENNA DETAIL
C-3 NOT TO SCALE

SURGE ARRESTOR		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ANDREW MODEL: APTDC-BDFDM-DB	3.46"H x 3.46"W x 1.65"D	1.32 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

2 ANDREW APTDC-BDFDM-DB DETAIL
C-3 NOT TO SCALE

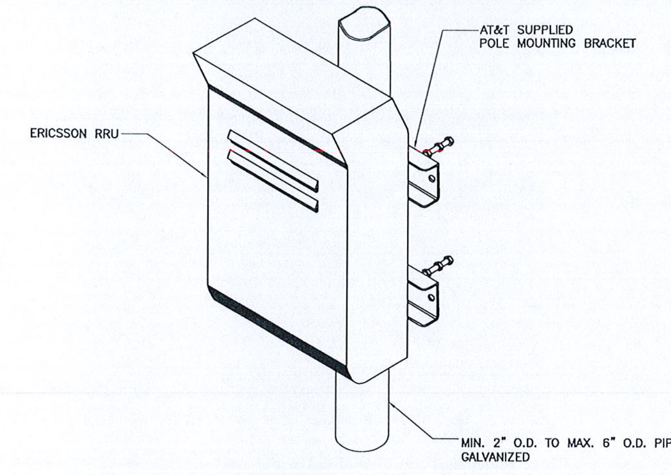


LOW BAND COMBINER

DIPLEXER 700/850		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KAELUS MODEL: DBC0061F1V51-2	8"H x 6.45"W x 6.2"D	18.3 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

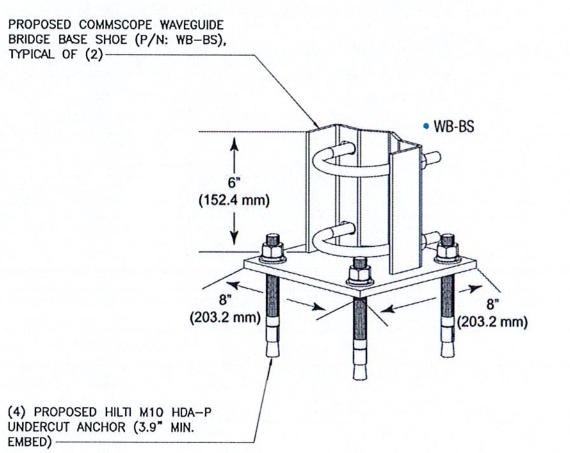
3 KAELUS DBC0061F1V51-2 DETAIL
C-3 NOT TO SCALE



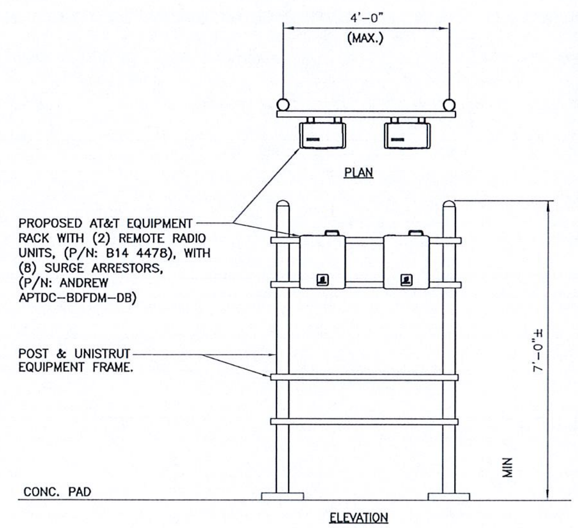
ISOMETRIC VIEW

NOTES:
1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

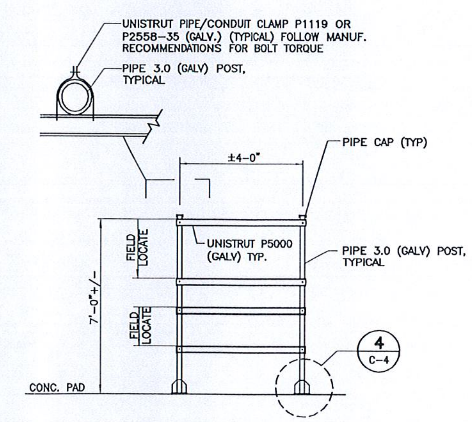
4 TYPICAL RRUS MOUNTING DETAILS
C-3 NOT TO SCALE



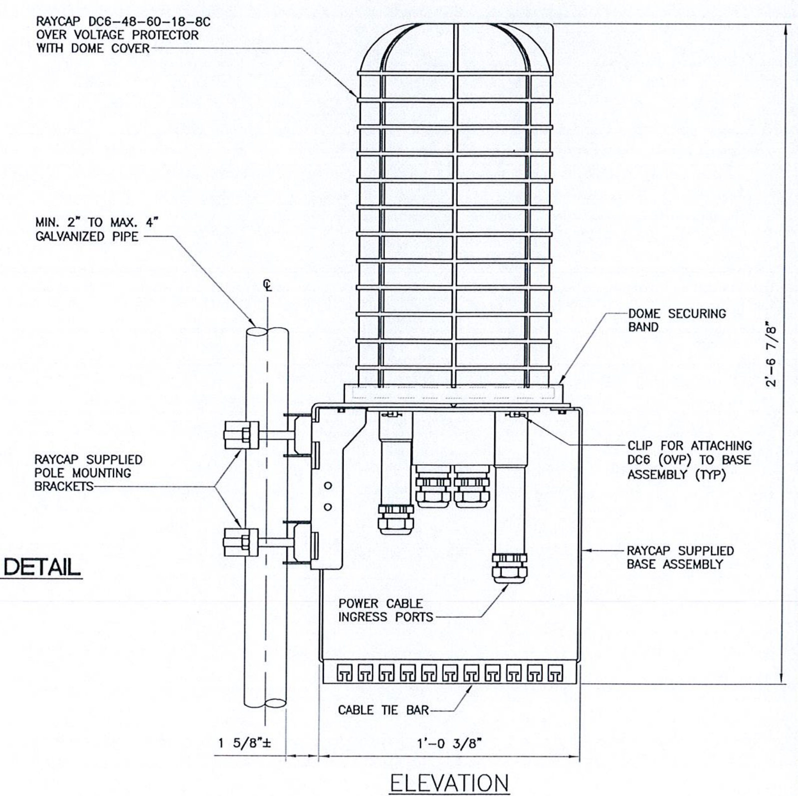
5 EQUIPMENT FRAME POST ATTACHMENT DETAIL
C-3 SCALE: NOT TO SCALE



6 PROPOSED EQUIPMENT RACK
C-3 SCALE: 1/2" = 1'-0"



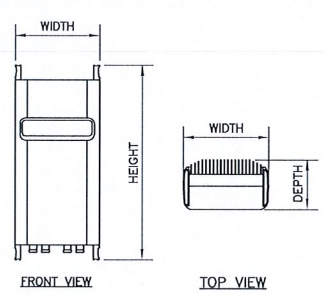
7 PROPOSED EQUIPMENT MOUNTING FRAME DETAIL
C-3 SCALE: NOT TO SCALE



ELEVATION

NOTES:
1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

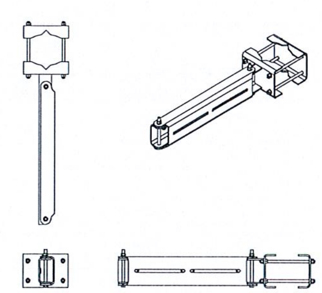
11 RAYCAP DC6 MOUNTING DETAIL
C-3 SCALE: 3" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B66	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS-32	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

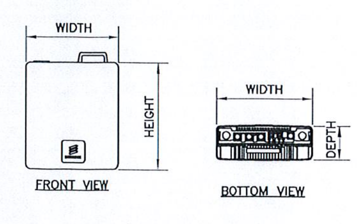
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

8 ERICSSON REMOTE RADIO UNIT DETAIL
C-3 NOT TO SCALE



RRU DUAL SWIVEL MOUNT		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRUDSM	27.75"L x 6.5"W x 4.7"D	39.4 LBS.

9 RRH DUAL SWIVEL MOUNT DETAIL
C-3 NOT TO SCALE



B14 4478

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: B14 4478	14.9"L x 13.1"W x 7.3"D	60 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

10 ERICSSON B14 4478 DETAIL
C-3 SCALE: 1" = 1'-0"

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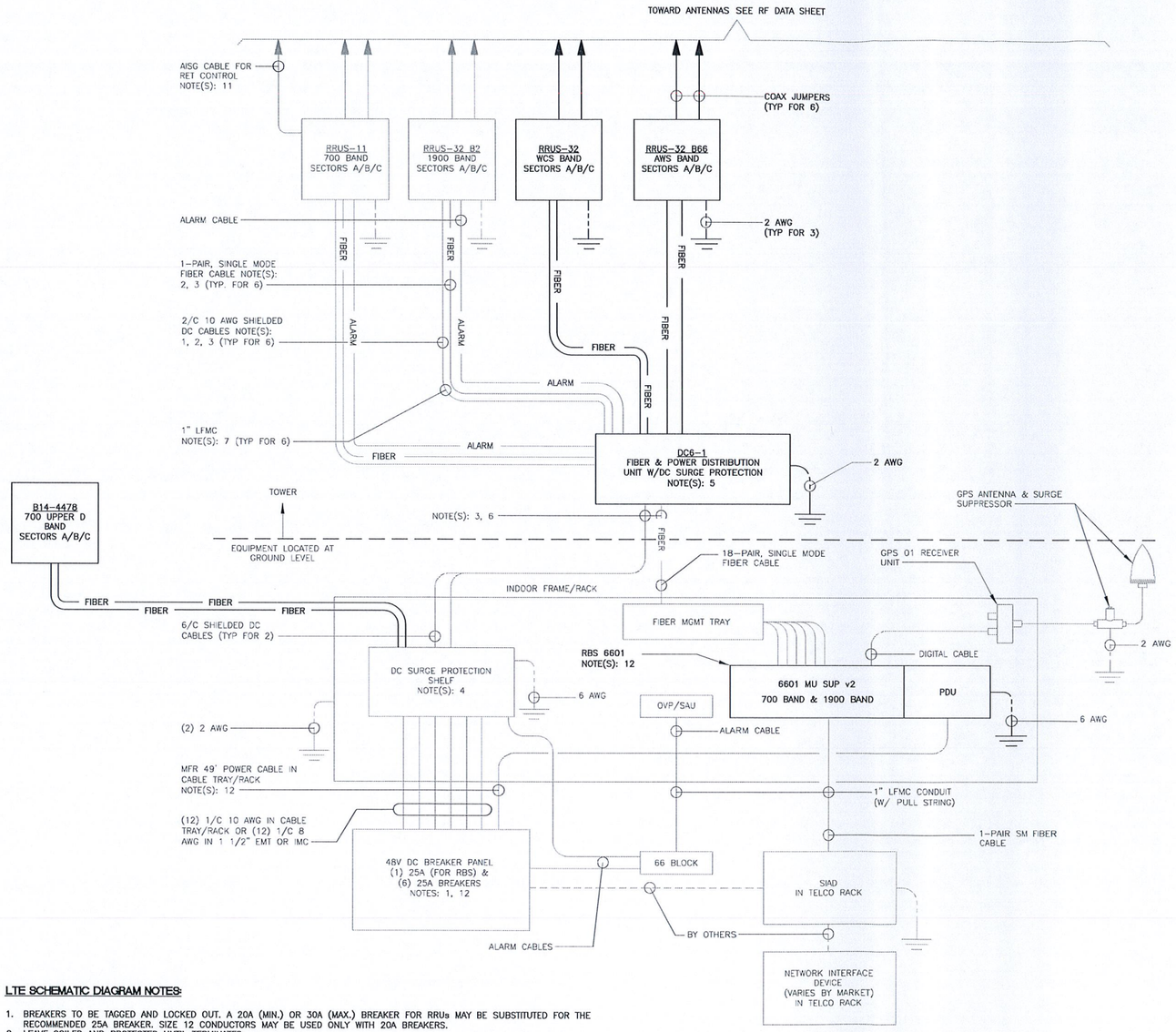
DETAILS

C-3



LTE SCHEMATIC DIAGRAM NOTES:

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

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

ELECTRICAL NOTES

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

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

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

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

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

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

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

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

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

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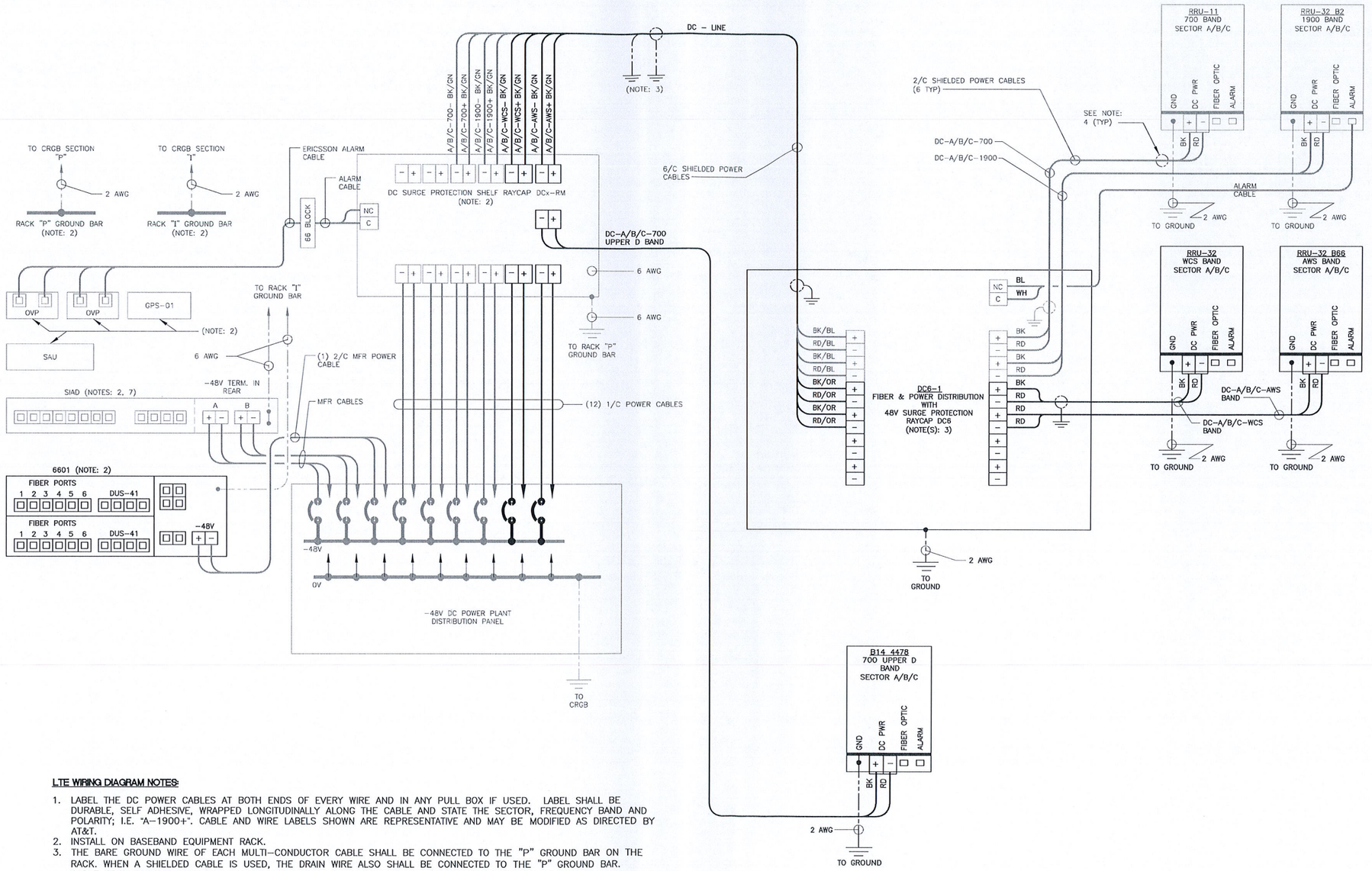
SCHEMATIC DIAGRAM AND NOTES

E-1
Sheet No. 5 of 8



LTE WIRING DIAGRAM NOTES:

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

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

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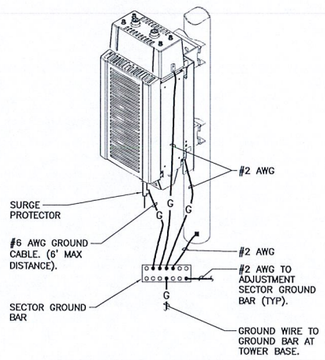
WIRING DIAGRAM

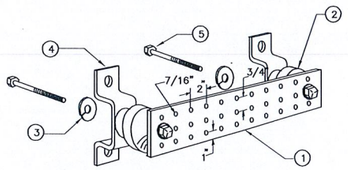
E-2

Sheet No. 7 of 8

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



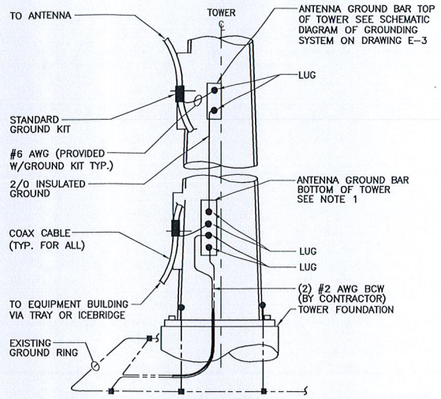
4 / E-3 **RRU POLE MOUNT GROUNDING**
NOT TO SCALE



LEGEND

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

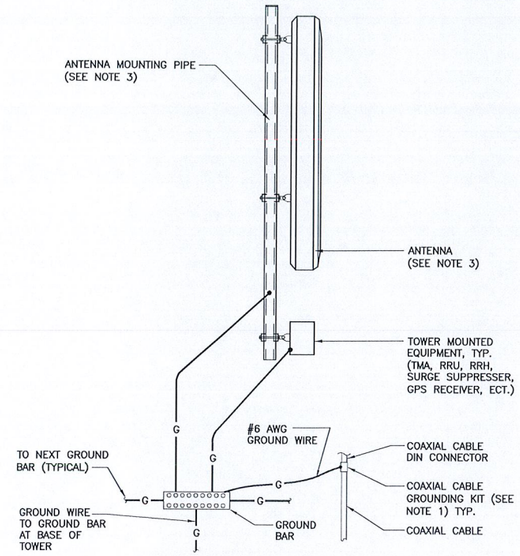
3 / E-3 **GROUND BAR DETAIL**
NOT TO SCALE



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.

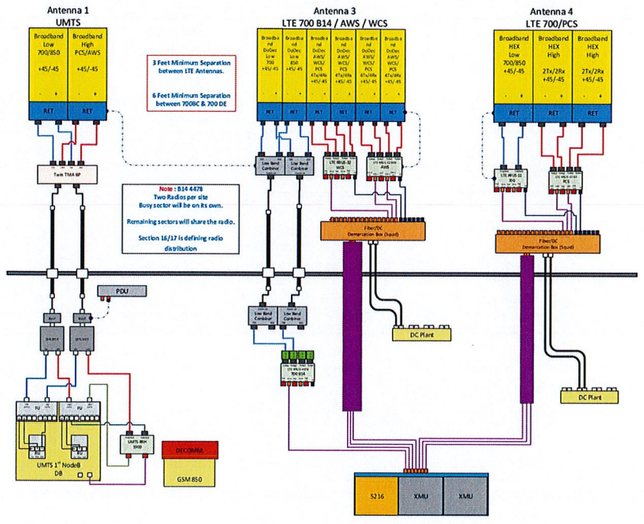
2 / E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



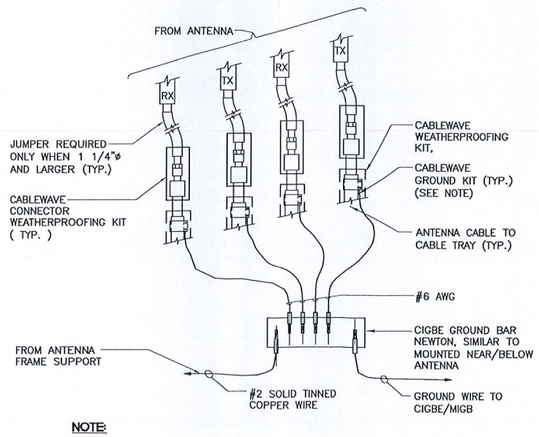
NOTES:

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 / E-3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE



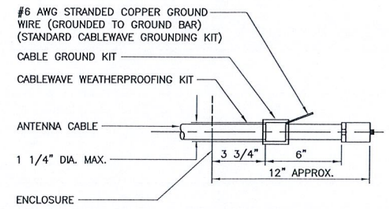
6 / E-3 **RF PLUMBING DIAGRAM**
NOT TO SCALE



NOTE:

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

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



NOTE:

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

5 / E-3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-3

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