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telecom

December 13, 2017

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

Regarding:	Notice of Exempt Modification – Swap of 3 Panel Antennas, Addition of 6 Remote Radios, Addition of 6 Combiners, and Addition of 1 Squid Surge Arrestor.
Property Address:	213 High Street (aka 97 High Street) Portland, CT 06480 (the "Property")
Applicant:	AT&T Mobility ("AT&T", Site # CT1066)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 80 foot self-support tower ("tower") at the above-referenced address, latitude 41.5807139, longitude -72.6238600. AT&T's facility consists of nine (9) wireless telecommunications antennas at 77 feet. The land and tower is owned by AT&T. Assessor's information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping (3) antennas, adding (6) remote radios, and adding (1) squid. The centerline height of said antennas is and will remain at 77 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 First Selectwoman of the Town of Portland, the Town's Building Official, and the Town's Zoning Administrator. A copy of this letter is also being sent to the tower and property owner New Cingular Wireless PCS LLC (AT&T).

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

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's antennas and associated lines will be installed at the 77 foot level of the 80 Foot Monopole tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3801 Email: kwhite@empiretelecomm.com

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4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural Analysis completed by GPD Engineering and Architecture Professional Corporation dated December 12, 2017).

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

Sincerely,

Kristen White
Site Acquisition Specialist
Empire Telecom
kwhite@empiretelecomm.com
978-284-3801

cc: Susan Bransfield, First Selectman of the Town of Portland (municipality)
Ashley Majorowski (Land Use Administrator)
Lincoln White, Building Official (Building Department Administrator)
New Cingular Wireless PCS LLC (AT&T) (land owner & tower owner)

Portland, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
			97	HIGH ST

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
039-0084	00220000	1	1	HIGH ST	97	R15	Communication Towers	0.80

Owner Information:

Owner 1 Name: NEW CINGULAR WIRELESS PCS LLC
Owner 2 Name:
Street 1: 1025 LENOX PARK BLVD NE
Street 2:
City: ATLANTA
State: GA
Zip: 30319
Volume: 899
Page: 207

Property Images:

Picture:

Sketch:

There is no sketch available.

Building Information:

Building Number: 1
Units: 1
Structure Type: TELEPHONE EQUIPMENT BLDG
Grade: C
Identical Units: 1
Year Built: 1961

Valuation:

Appraised Land:	$81,600.00
Appraised Bldg:	$88,100.00
Appraised Total:	$169,700.00
Total Assessment:	$118,790.00

Out-Buildings:

Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Condition:
FN1	FENCE CHAIN	3	1961	6	180	0	1	
TT4	TOWER CELLULAR	4	1990	1	80	0	8	

Building Interior/Exterior Information:

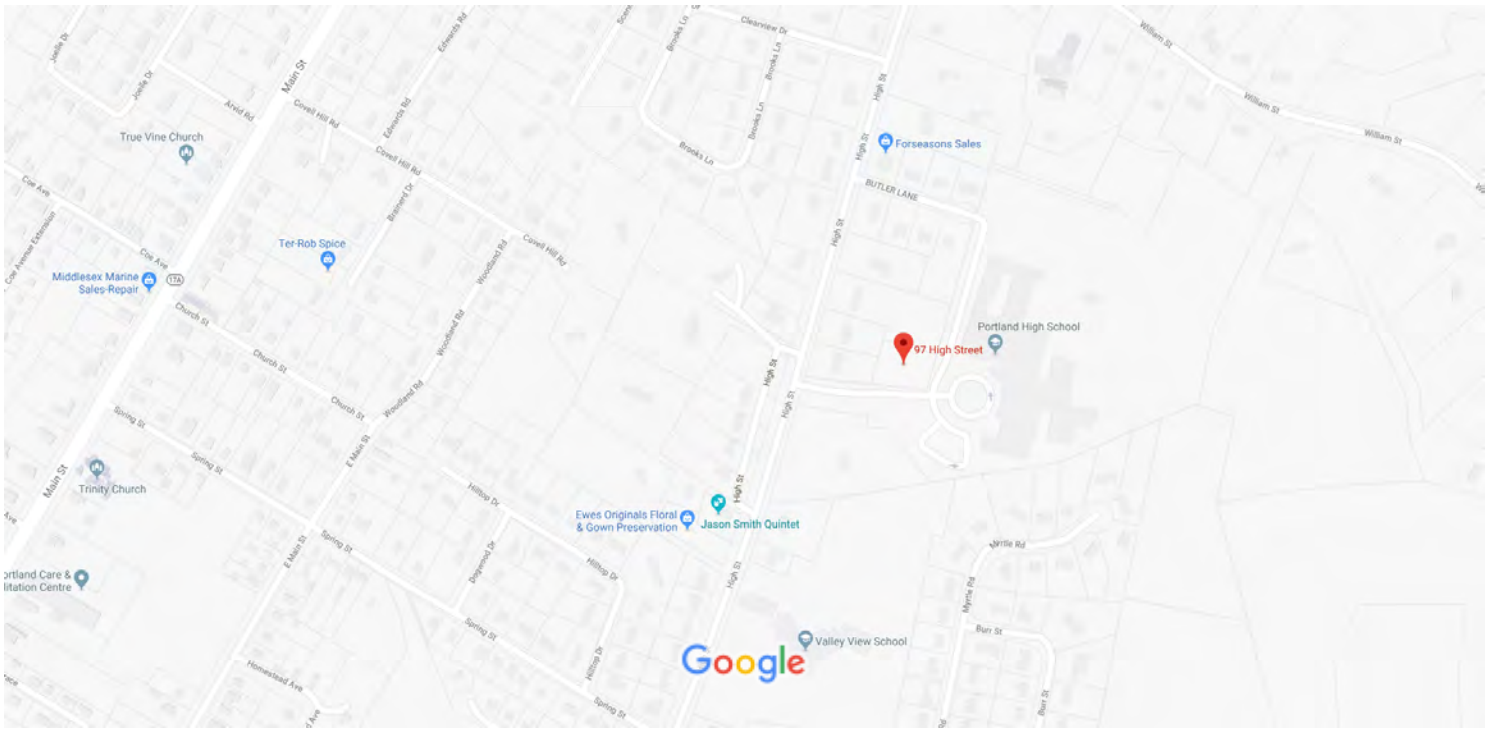
Floor From:	Floor To:	Area:	Use Type:	Exterior Walls:	Contruction Type:	Heating:	A/C:	Plumbing:	Functional Utility:
01	01	384	MULTI USE STORAGE	CONCRETE BLOCK	WOOD FRAME/JOIST/BEAM	NONE	NONE	NONE	4

and convenience for citizens of Portland, CT.
The providers of this database: Tyler CLT, Big Room Studios, and Portland, CT assume no liability for any error or omission in the information provided here.

Comments regarding this service should be directed to: assessor@portlandct.org

Thu. October 26, 2017 : 04:25 PM : 0.07s : 10mb

Google Maps 97 High St



Map data ©2017 Google 200 ft

97 High St

Portland, CT 06480

Empire Telecommunications
1150 1st Avenue, Suite 600
King of Prussia, PA 19406
(484) 804-4500

GPD Engineering and Architecture
Professional Corporation

Kevin Fraleigh
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-2191
kfraleigh@gpdgroup.com

GPD# 2018701.10
December 12, 2017

RIGOROUS STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**59359**
	Site FA:	**10035005**
	Site Name:	**PORTLAND**
	Client Site #:	**CT1066**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-G, 2012 IBC & 2016 CSBC** **130-mph Ultimate 3 second gust with 0" ice** **101-mph Nominal 3 second gust with 0" ice** **50-mph Nominal 3 second gust with 3/4" ice**
SITE DATA:		**213 High Street, Portland, CT 06480, Middlesex County** **Latitude 41° 34' 50.5704" N, Longitude 72° 37' 25.8954" W** **Market: NEW ENGLAND** **80' Self Support Tower**

Ms. Kristen White,

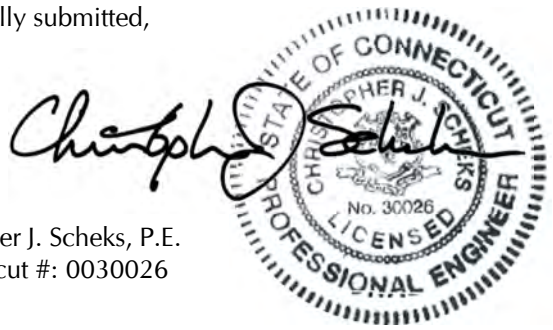
GPD is pleased to submit this Rigorous Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	91.3%	Pass
Foundation Ratio with Proposed Equipment:	49.2%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Empire Telecommunications. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to Empire Telecommunications. This report was commissioned by Ms. Kristen White of Empire Telecommunications.

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 TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Legs	74.5%	Pass
Diagonals	77.1%	Pass
Secondary Horizontals	91.3%	Pass
Top Girts	20.4%	Pass
Bolt Checks	36.1%	Pass
Anchor Rods	44.5%	Pass
Foundation	49.2%	Pass

ANALYSIS METHOD

tnxTower (Version 7.0.7.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
RF Data Sheet	AT&T RFDS Name: CT1066, updated 8/17/2017	Empire
Construction Drawings	Centek Job #: 17004.51, dated 10/4/2017	Empire
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Geotechnical Report	GPD Project #: 2017702.58, dated 3/6/2017	AT&T
Foundation Mapping	GPD Project #: 2017702.58, dated 3/6/2017	AT&T
Previous Structural Analysis	GPD Project #: 2017702.58, dated 3/17/2017	AT&T

ASSUMPTIONS

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

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
4. The soil parameters are as per data supplied or as assumed and stated in the calculations.
5. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
8. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
9. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
10. All existing loading has been modeled based on the previous structural analysis by GPD (Project #: 2017702.58, dated 3/17/2017), the provided RF Data Sheet, the construction drawings and site photos and is assumed to be accurate.
11. There were some discrepancies between the existing loading between the previous analysis and the RF Data Sheet, the existing loading was modeled based upon the provided RF Data Sheet.
12. Leg A is at an azimuth of 15° based on satellite imagery.
13. Foundation reinforcement information was not available. Therefore, it was assumed that the foundation reinforcement in place is equal to or in excess of the code specified minimum.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Rigorous Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	PORTLAND
Site Number	59359 (CT1066)
FA Number	10035005
Date of Analysis	12/12/2017
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	SST	
Tower Height (top of steel AGL)	80'	
Tower Manufacturer	n/a	
Tower Model	n/a	
Tower Design	n/a	
Foundation Design	n/a	
Geotech Report	GPD Project #: 2017702.58	3/6/2017
Foundation Mapping	GPD Project #: 2017702.58	3/6/2017
Tower Mapping	n/a	
Previous Structural Analysis	GPD Project #: 2017702.58	3/17/2017

Design Parameters	
Design Code Used	TIA-222-G, 2012 IBC & 2016 CSBC
Location of Tower (County, State)	Middlesex, CT
Nominal Wind Speed (mph)	101 (3-second gust)
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	II
Exposure Category (B, C, D)	C
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)	
Existing/Reserved + Future + Proposed Condition	
Tower (%)	91.3%
Anchor Rods (%)	44.5%
Foundation (%)	49.2%
Foundation Adequate?	YES

Steel Yield Strength (ksi)

Legs	36
Bracing	36
Bolts	A325
Anchor Rods	36

Note: Steel strengths have been assumed based on previous experience with similar towers.

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T Mobility	77	77	3	Panel	Kathrein	800-10121	30/150/270	3	Unknown	Ring w/ Sector Frames	15	Unknown	7/8"	Face C
AT&T Mobility	77	77	3	Panel	CCI	HPA-65R-BUU-H6	30/150/270			on the same mounts	3	Unknown	1-5/8"	Face C
AT&T Mobility	77	77	3	Panel	KMW	AM-X-CD-16-65-00T-RET	30/150/270			on the same mounts	2	DC Power	3/4"	Face C
AT&T Mobility	77	77	6	RET	Kathrein	860-10025				on the same mounts	1	Fiber Cable	1/2"	Face C
AT&T Mobility	77	77	6	TMA	CCI	DTMABP7819VG12A				on the same mounts				
AT&T Mobility	77	77	3	RRU	Ericsson	RRUS 11				on the same mounts				
AT&T Mobility	77	77	3	RRU	Ericsson	RRUS 32 B2				on the same mounts				
AT&T Mobility	77	77	1	Surge	Raycap	DC6-48-60-18-F				on the same mounts				

Note: (3) KMW panels and (3) CCI TMAs at 77' shall be removed prior to the installation of the proposed loading. All other existing/reserved equipment shall be reused.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T Mobility	77	77	3	Panel	Quintel	QS66510-6	30/150/270			on the existing mount	2	DC Power	3/4"	Face C
AT&T Mobility	77	77	6	Kaelus	Combiner	DBC0061F1V51-2				on the existing mount	1	Fiber Cable	1/2"	Face C
AT&T Mobility	77	77	3	Ericsson	RRU	RRUS-32				on the existing mount				
AT&T Mobility	77	77	3	Ericsson	RRU	RRUS-32 B66				on the existing mount				
AT&T Mobility	77	77	1	Raycap	DC Unit	DC6-48-60-18-F				on the existing mount				

Note: The proposed equipment shall be installed in addition to the remaining existing/reserved loading at the same elevation.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face

APPENDIX B

tnxTower Output File

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 80.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.38 ft at the top and 13.17 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Middlesex County, Connecticut.
Basic wind speed of 101 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Weight klf
Safety Line (3/8")	C	No	Ar (CaAa)	80.00 - 8.00	0.0000	0.25	1	1	0.3750	0.3750	0.000
Feedline Ladder (Af)	C	No	Af (CaAa)	77.00 - 8.00	0.0000	0	1	1	3.0000	3.0000	0.008
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	77.00 - 8.00	0.0000	0	15	5	0.7500	1.0900	0.000
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	77.00 - 8.00	0.0000	0.06	3	3	0.7500	1.9800	0.001
3/4" DC Power Line	C	No	Ar (CaAa)	77.00 - 8.00	0.0000	-0.04	4	4	0.7500	0.7500	0.000
1/2" Fiber Cable	C	No	Ar (CaAa)	77.00 - 8.00	0.0000	-0.06	2	2	0.5000	0.6300	0.000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
8' Lightning Rod	C	From Leg	0.00 0.000 4.000	0.000	80.00	No Ice 1/2" Ice 1" Ice	0.60 1.41 2.25	0.60 1.41 2.25	12.000 18.187 29.489
10' Diameter Tower Ring Mount	C	None		0.000	77.00	No Ice 1/2" Ice 1" Ice	7.00 8.80 10.60	7.00 8.80 10.60	298.000 325.500 353.000
10' Diameter Tower Ring Mount	C	None		0.000	75.00	No Ice 1/2" Ice	7.00 8.80	7.00 8.80	298.000 325.500

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1" Ice	10.60	10.60	353.000
10’ Diameter Tower Ring Mount	C	None		0.000	68.00	No Ice	7.00	7.00	298.000
						1/2" Ice	8.80	8.80	325.500
						1" Ice	10.60	10.60	353.000
MTS 10' Boom Gate	A	From Leg	2.00	0.000	77.00	No Ice	15.43	10.89	434.000
			0.000			1/2" Ice	20.15	15.23	614.248
			0.000			1" Ice	24.87	19.57	794.496
MTS 10' Boom Gate	B	From Face	2.00	0.000	77.00	No Ice	15.43	10.89	434.000
			0.000			1/2" Ice	20.15	15.23	614.248
			0.000			1" Ice	24.87	19.57	794.496
MTS 10' Boom Gate	C	From Face	2.00	0.000	77.00	No Ice	15.43	10.89	434.000
			0.000			1/2" Ice	20.15	15.23	614.248
			0.000			1" Ice	24.87	19.57	794.496
800 10121 w/ Mount Pipe	A	From Leg	4.00	15.000	77.00	No Ice	5.26	4.47	64.550
			0.000			1/2" Ice	5.64	5.13	110.681
			0.000			1" Ice	6.03	5.79	163.059
800 10121 w/ Mount Pipe	B	From Face	4.00	0.000	77.00	No Ice	5.26	4.47	64.550
			0.000			1/2" Ice	5.64	5.13	110.681
			0.000			1" Ice	6.03	5.79	163.059
800 10121 w/ Mount Pipe	C	From Face	4.00	30.000	77.00	No Ice	5.26	4.47	64.550
			0.000			1/2" Ice	5.64	5.13	110.681
			0.000			1" Ice	6.03	5.79	163.059
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00	15.000	77.00	No Ice	9.90	8.11	76.550
			0.000			1/2" Ice	10.47	9.30	158.030
			0.000			1" Ice	11.01	10.21	247.793
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Face	4.00	0.000	77.00	No Ice	9.90	8.11	76.550
			0.000			1/2" Ice	10.47	9.30	158.030
			0.000			1" Ice	11.01	10.21	247.793
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Face	4.00	30.000	77.00	No Ice	9.90	8.11	76.550
			0.000			1/2" Ice	10.47	9.30	158.030
			0.000			1" Ice	11.01	10.21	247.793
QS66510-6 w/ Mount Pipe	A	From Leg	4.00	15.000	77.00	No Ice	8.13	8.22	119.900
			0.000			1/2" Ice	8.59	9.19	192.986
			0.000			1" Ice	9.05	10.02	274.011
QS66510-6 w/ Mount Pipe	B	From Face	4.00	0.000	77.00	No Ice	8.13	8.22	119.900
			0.000			1/2" Ice	8.59	9.19	192.986
			0.000			1" Ice	9.05	10.02	274.011
QS66510-6 w/ Mount Pipe	C	From Face	4.00	30.000	77.00	No Ice	8.13	8.22	119.900
			0.000			1/2" Ice	8.59	9.19	192.986
			0.000			1" Ice	9.05	10.02	274.011
Pipe Mount 8'x2.375"	A	From Leg	4.00	15.000	77.00	No Ice	1.90	1.90	33.700
			0.000			1/2" Ice	2.73	2.73	48.040
			0.000			1" Ice	3.40	3.40	67.661
Pipe Mount 8'x2.375"	B	From Face	4.00	0.000	77.00	No Ice	1.90	1.90	33.700
			0.000			1/2" Ice	2.73	2.73	48.040
			0.000			1" Ice	3.40	3.40	67.661
Pipe Mount 8'x2.375"	C	From Face	4.00	30.000	77.00	No Ice	1.90	1.90	33.700
			0.000			1/2" Ice	2.73	2.73	48.040
			0.000			1" Ice	3.40	3.40	67.661
(2) 860 10025	A	From Leg	4.00	0.000	77.00	No Ice	0.14	0.12	1.160
			0.000			1/2" Ice	0.19	0.17	2.650
			0.000			1" Ice	0.25	0.23	5.060
(2) 860 10025	B	From Face	4.00	0.000	77.00	No Ice	0.14	0.12	1.160
			0.000			1/2" Ice	0.19	0.17	2.650
			0.000			1" Ice	0.25	0.23	5.060
(2) 860 10025	C	From Face	4.00	0.000	77.00	No Ice	0.14	0.12	1.160
			0.000			1/2" Ice	0.19	0.17	2.650

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.000			1" Ice	0.25	0.23	5.060
DTMABP7819VG12A	A	From Leg	4.00	0.000	77.00	No Ice	0.98	0.34	19.180
			0.000			1/2" Ice	1.10	0.42	26.485
			0.000			1" Ice	1.23	0.51	35.633
DTMABP7819VG12A	B	From Face	4.00	0.000	77.00	No Ice	0.98	0.34	19.180
			0.000			1/2" Ice	1.10	0.42	26.485
			0.000			1" Ice	1.23	0.51	35.633
DTMABP7819VG12A	C	From Face	4.00	0.000	77.00	No Ice	0.98	0.34	19.180
			0.000			1/2" Ice	1.10	0.42	26.485
			0.000			1" Ice	1.23	0.51	35.633
(2) DBC0061F1V51-2	A	From Leg	4.00	15.000	77.00	No Ice	0.43	0.41	25.500
			0.000			1/2" Ice	0.51	0.50	30.777
			0.000			1" Ice	0.61	0.59	37.587
(2) DBC0061F1V51-2	B	From Face	4.00	0.000	77.00	No Ice	0.43	0.41	25.500
			0.000			1/2" Ice	0.51	0.50	30.777
			0.000			1" Ice	0.61	0.59	37.587
(2) DBC0061F1V51-2	C	From Face	4.00	30.000	77.00	No Ice	0.43	0.41	25.500
			0.000			1/2" Ice	0.51	0.50	30.777
			0.000			1" Ice	0.61	0.59	37.587
RRUS 11	A	From Leg	4.00	0.000	77.00	No Ice	2.78	1.19	50.700
			0.000			1/2" Ice	2.99	1.33	71.500
			0.000			1" Ice	3.21	1.49	95.335
RRUS 11	B	From Face	4.00	0.000	77.00	No Ice	2.78	1.19	50.700
			0.000			1/2" Ice	2.99	1.33	71.500
			0.000			1" Ice	3.21	1.49	95.335
RRUS 11	C	From Face	4.00	0.000	77.00	No Ice	2.78	1.19	50.700
			0.000			1/2" Ice	2.99	1.33	71.500
			0.000			1" Ice	3.21	1.49	95.335
RRUS 32 B2	A	From Leg	4.00	0.000	77.00	No Ice	2.73	1.67	52.900
			0.000			1/2" Ice	2.95	1.86	73.957
			0.000			1" Ice	3.18	2.05	98.206
RRUS 32 B2	B	From Face	4.00	0.000	77.00	No Ice	2.73	1.67	52.900
			0.000			1/2" Ice	2.95	1.86	73.957
			0.000			1" Ice	3.18	2.05	98.206
RRUS 32 B2	C	From Face	4.00	0.000	77.00	No Ice	2.73	1.67	52.900
			0.000			1/2" Ice	2.95	1.86	73.957
			0.000			1" Ice	3.18	2.05	98.206
RRUS 32	A	From Leg	4.00	15.000	77.00	No Ice	3.31	2.42	77.000
			0.000			1/2" Ice	3.56	2.64	104.928
			0.000			1" Ice	3.81	2.86	136.466
RRUS 32	B	From Face	4.00	0.000	77.00	No Ice	3.31	2.42	77.000
			0.000			1/2" Ice	3.56	2.64	104.928
			0.000			1" Ice	3.81	2.86	136.466
RRUS 32	C	From Face	4.00	30.000	77.00	No Ice	3.31	2.42	77.000
			0.000			1/2" Ice	3.56	2.64	104.928
			0.000			1" Ice	3.81	2.86	136.466
RRUS 32 B66	A	From Leg	4.00	15.000	77.00	No Ice	2.74	1.67	53.000
			0.000			1/2" Ice	2.96	1.86	74.114
			0.000			1" Ice	3.19	2.05	98.424
RRUS 32 B66	B	From Face	4.00	0.000	77.00	No Ice	2.74	1.67	53.000
			0.000			1/2" Ice	2.96	1.86	74.114
			0.000			1" Ice	3.19	2.05	98.424
RRUS 32 B66	C	From Face	4.00	30.000	77.00	No Ice	2.74	1.67	53.000
			0.000			1/2" Ice	2.96	1.86	74.114
			0.000			1" Ice	3.19	2.05	98.424
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	2.00	0.000	77.00	No Ice	0.92	0.92	18.900
			0.000			1/2" Ice	1.46	1.46	36.615

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.000			1" Ice	1.64	1.64	56.825
DC6-48-60-18-8F Surge Suppression Unit	B	From Leg	2.00 0.000 0.000	0.000	77.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	18.900 36.615 56.825
Catwalk	B	From Leg	0.00 0.000 0.000	0.000	51.00	No Ice 1/2" Ice 1" Ice	27.50 39.50 51.50	27.50 39.50 51.50	1587.000 2182.000 2777.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.00	8' Lightning Rod	40	0.4660	0.046	0.016	234893
77.00	10' Diameter Tower Ring Mount	40	0.4359	0.045	0.015	234893
75.00	10' Diameter Tower Ring Mount	40	0.4159	0.045	0.014	234893
68.00	10' Diameter Tower Ring Mount	40	0.3479	0.043	0.012	99818
51.00	Catwalk	40	0.2066	0.032	0.007	106573

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	80	Leg	A325N	0.6250	12	1312.060	24360.000	0.054 ✔	1	Bearing
		Diagonal	A325N	0.6250	2	1837.060	7187.700	0.256 ✔	1	Member Block Shear
		Horizontal	A325N	0.6250	2	874.220	11622.700	0.075 ✔	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	2	497.873	23245.301	0.021 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	2	127.100	6168.160	0.021 ✔	1	Member Block Shear
T2	66	Leg	A325N	0.6250	12	3250.580	24360.000	0.133 ✔	1	Bearing
		Diagonal	A325N	0.6250	2	1550.780	7187.700	0.216 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	1	261.984	7830.000	0.033 ✔	1	Member Bearing
T3	54	Leg	A325N	0.6250	12	7045.350	24850.500	0.284 ✔	1	Bolt DS
		Diagonal	A325N	0.6250	2	1876.840	7187.700	0.261 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	2	120.714	7187.700	0.017 ✔	1	Member Block Shear
T4	24	Diagonal	A325N	0.6250	2	2314.440	7697.460	0.301 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	2	301.492	7187.700	0.042 ✔	1	Member Block Shear
T5	14.75	Diagonal	A325N	0.6250	2	2782.240	7697.460	0.361 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Secondary Horizontal	A325N	0.6250	1	831.428	3194.530	0.260 ✔	1	Member Block Shear

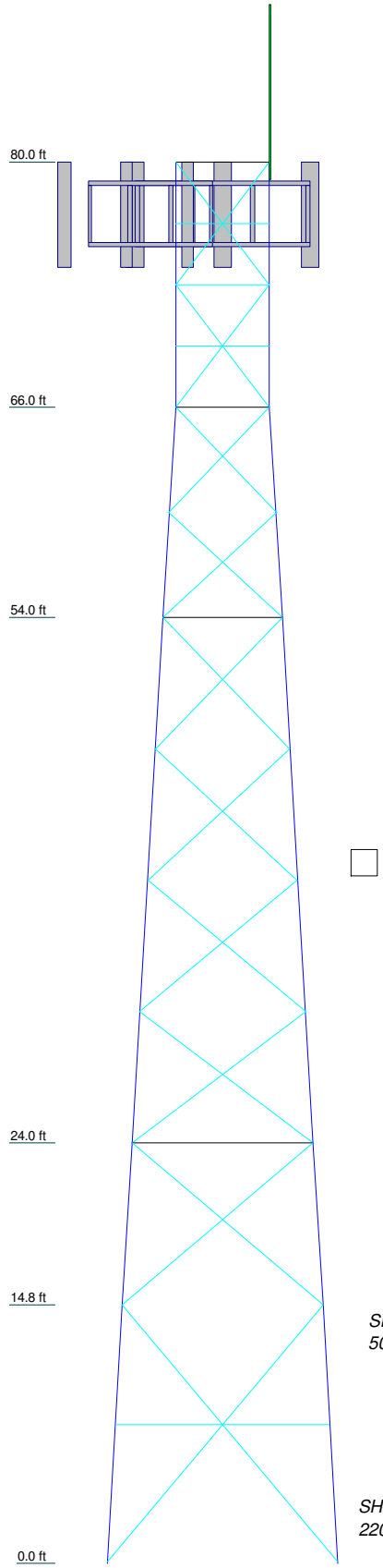
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	80 - 66	Leg	L4x4x3/8	3	-7872.390	79761.797	9.9	Pass
T2	66 - 54	Leg	L4x4x3/8	60	-19503.500	59484.199	32.8	Pass
T3	54 - 24	Leg	L5x5x7/16	80	-42272.102	87162.000	48.5	Pass
T4	24 - 14.75	Leg	L5x5x7/16	120	-50098.602	69246.000	72.3	Pass
T5	14.75 - 0	Leg	L5x5x7/16	136	-62258.199	83563.797	74.5	Pass
T1	80 - 66	Diagonal	L2 1/2x2x3/16	17	-4380.000	13446.900	32.6	Pass
T2	66 - 54	Diagonal	L2 1/2x2x3/16	74	-3205.170	13232.400	24.2	Pass
T3	54 - 24	Diagonal	L2 1/2x2x3/16	90	-3707.320	7348.230	50.5	Pass
T4	24 - 14.75	Diagonal	L3x3x3/16	129	-4333.360	13225.700	32.8	Pass
T5	14.75 - 0	Diagonal	L3x3x3/16	142	-6006.740	7787.350	77.1	Pass
T1	80 - 66	Horizontal	L3 1/2x3 1/2x1/4	43	-1752.300	39066.500	4.5	Pass
T1	80 - 66	Secondary Horizontal	2L4x4x1/4x3/8	35	995.745	114351.000	0.9	Pass
T5	14.75 - 0	Secondary Horizontal	L1 1/2x1 1/2x1/8	147	-831.428	910.763	91.3	Pass
T1	80 - 66	Top Girt	L2x2x3/16	7	254.201	18733.900	1.4	Pass
T2	66 - 54	Top Girt	L3x3x3/16	23	261.984	30968.301	0.8	Pass
T3	54 - 24	Top Girt	L2 1/2x2 1/2x3/16	81	-253.370	10922.700	2.3	Pass
T4	24 - 14.75	Top Girt	L2 1/2x2x3/16	123	-837.711	4114.760	20.4	Pass

Summary	ELC:	Existing + Proposed
Leg (T5)	74.5	Pass
Diagonal (T5)	77.1	Pass
Horizontal (T1)	4.5	Pass
Secondary Horizontal (T5)	91.3	Pass
Top Girt (T4)	20.4	Pass
Bolt Checks	36.1	Pass
Rating =	**91.3**	**Pass**

APPENDIX C

Tower Elevation Drawing



Section	T1	T2	T3	T4	T5
Legs	L4x4x3/8		L5x5x7/16		
Leg Grade			A36		
Diagonals			L2 1/2x2x3/16		L3x3x3/16
Diagonal Grade			A36		
Top Girts	L2x2x3/16	L3x3x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2x3/16	N.A.
Horizontals	L3 1/2x3 1/2x1/4	N.A.			
Sec. Horizontals	2L4x4x1/4x3/8	N.A.	N.A.		L1 1/2x1 1/2x1/8
Face Width (ft)	5.375		6.79167	10.3333	11.4253
# Panels @ (ft)	4 @ 3.5	2 @ 6	4 @ 7.5	1 @ 9.25	1 @ 14.6667
Weight (lb)	1517.0	925.2	2802.8	1066.3	1471.0

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
8' Lightning Rod	80	(2) DBC0061F1V51-2	77
10' Diameter Tower Ring Mount	77	(2) DBC0061F1V51-2	77
MTS 10' Boom Gate	77	(2) DBC0061F1V51-2	77
MTS 10' Boom Gate	77	RRUS 11	77
MTS 10' Boom Gate	77	RRUS 11	77
800 10121 w/ Mount Pipe	77	RRUS 11	77
800 10121 w/ Mount Pipe	77	RRUS 32 B2	77
800 10121 w/ Mount Pipe	77	RRUS 32 B2	77
HPA-65R-BUU-H6 w/ Mount Pipe	77	RRUS 32 B2	77
HPA-65R-BUU-H6 w/ Mount Pipe	77	RRUS 32	77
HPA-65R-BUU-H6 w/ Mount Pipe	77	RRUS 32	77
QS66510-6 w/ Mount Pipe	77	RRUS 32	77
QS66510-6 w/ Mount Pipe	77	RRUS 32 B66	77
QS66510-6 w/ Mount Pipe	77	RRUS 32 B66	77
Pipe Mount 8'x2.375"	77	RRUS 32 B66	77
Pipe Mount 8'x2.375"	77	DC6-48-60-18-8F Surge Suppression Unit	77
Pipe Mount 8'x2.375"	77		
(2) 860 10025	77	DC6-48-60-18-8F Surge Suppression Unit	77
(2) 860 10025	77		
(2) 860 10025	77	10' Diameter Tower Ring Mount	75
DTMABP7819VG12A	77	10' Diameter Tower Ring Mount	68
DTMABP7819VG12A	77	Catwalk	51
DTMABP7819VG12A	77		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

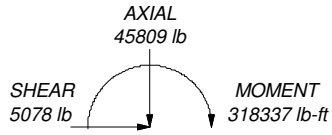
TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 91.3%

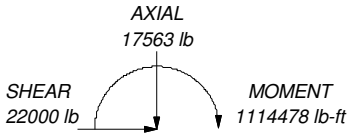
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 61712 lb
SHEAR: 9193 lb

UPLIFT: -54412 lb
SHEAR: 8466 lb



TORQUE 5392 lb-ft
50 mph WIND - 0.7500 in ICE



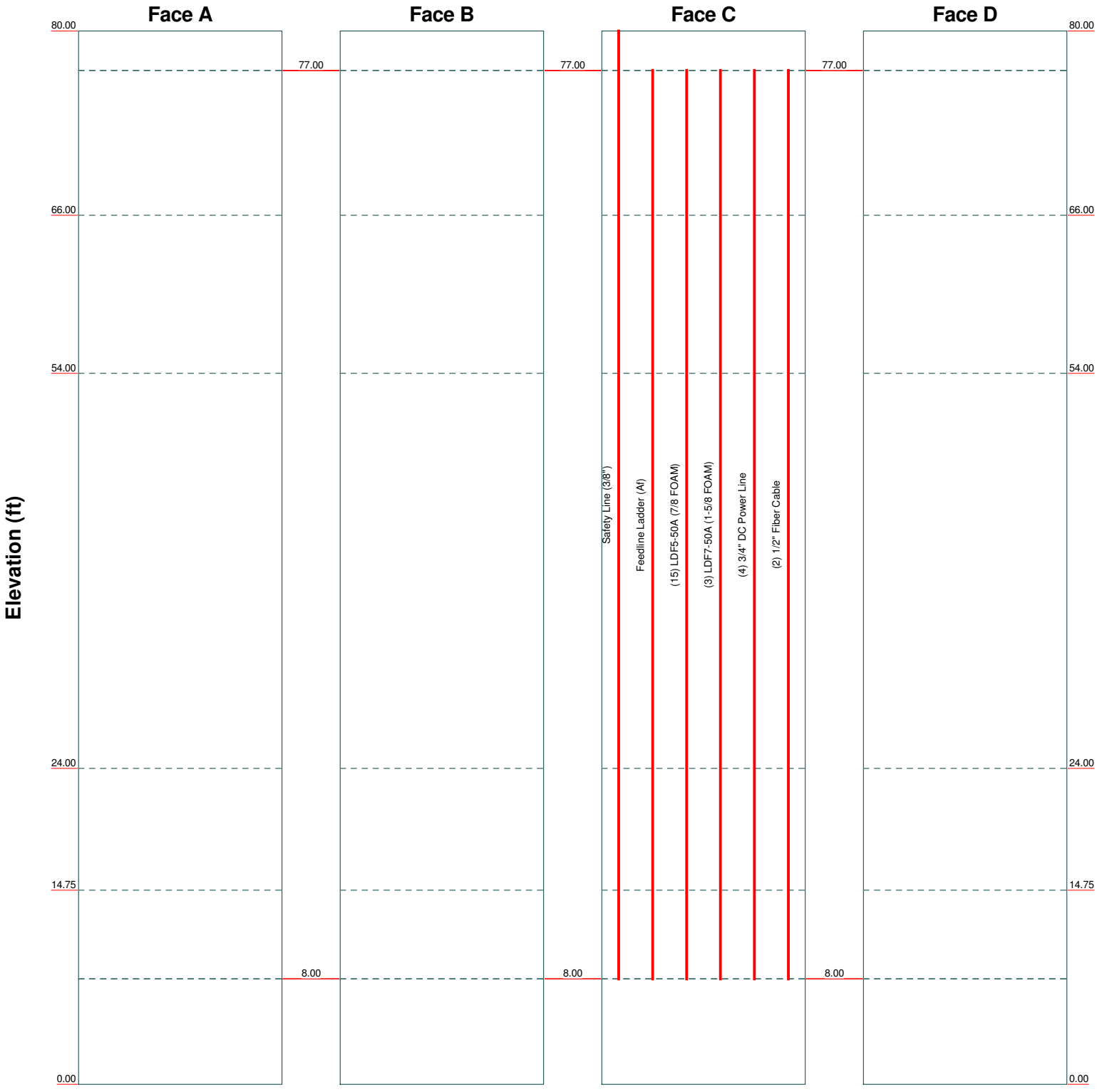
TORQUE 21161 lb-ft
REACTIONS - 101 mph WIND

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (555) 555-1234
FAX: (555) 555-1235

Job: 59359 (CT1066) PORTLAND			
Project: 2018701.10			
Client: Empire Telecom	Drawn by: dbays		App'd:
Code: TIA-222-G	Date: 12/12/17		Scale: NTS
Path: \\AKRN05.gpdco.com\TELECOM\ATandT\59359\02.2018701.10 Empire SA\SA Report\TNX\59359 tnx.eri			Dwg No. E-1

Feed Line Distribution Chart
0' - 80'

Round | Flat | App In Face | App Out Face | Truss Leg



GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (555) 555-1234
FAX: (555) 555-1235

Job: 59359 (CT1066) PORTLAND			
Project: 2018701.10			
Client: Empire Telecom	Drawn by: dbays	App'd:	
Code: TIA-222-G	Date: 12/12/17	Scale: NTS	
Path: \\AKRN05.gpdco.com\TELECOM\ATandT\59359\02.2018701.10 Empire SA\SA Report\TNX\59359 tnx.eri		Dwg No. E-7	

Feed Line Plan

Round Flat App In Face App Out Face

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (555) 555-1234
FAX: (555) 555-1235

Job:	59359 (CT1066) PORTLAND		
Project:	2018701.10		
Client: Empire Telecom		Drawn by: dbays	App'd:
Code: TIA-222-G		Date: 12/12/17	Scale: NTS
Path: \\AKRN05.gpdco.com\TELECOM\ATandT\59359\02.2018701.10 Empire SA\SA Report\TNX\59359 tnx.er			Dwg No. E-7

APPENDIX D

Anchor Rod Analysis

Self-Support Anchor Rod Analysis
59359 (CT1066) PORTLAND
2018701.10

General Info	
Code	TIA-222-G
Modified Anchor Rods	No
Clear Distance > d_b	No
Leg Eccentricity	No
Max Capacity	1.05

Tower Reactions		
Detail Type =	d	
Eta Factor, η =	0.50	
Down Load, P_u =	61.70	kips
Down Load Shear, V_u =	9.20	kips
Uplift, P_u =	54.40	kips
Uplift Shear, V_u =	8.50	kips

Anchor Rods		
Number of Anchor Rods, N =	4	
Anchor Rod Grade =	A36	
Anchor Rod Diameter, d_d =	1.25	in
Bolt Circle, BC =		in
Yield, F_y =	36	ksi
Tensile, F_{ub} =	58	ksi

Anchor Rod Results		
$(P_u + V_u/\eta)$	20.0	kips
$\phi*R_{nt} = \phi*F_{ub}*A_n$ =	45.0	kips
Anchor Rod Stress Ratio =	44.5%	OK

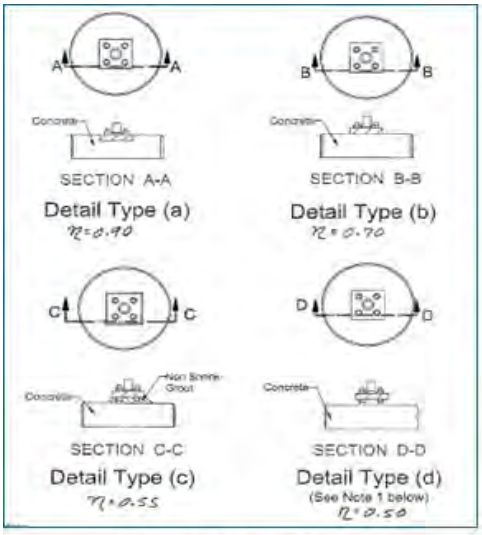


Figure 4-4 of TIA-222-G

APPENDIX E

Foundation Analysis

SST Unit Base Foundation

Site #:	59359 (CT1066)
Site Name:	Portland
App. Number:	2018701.10

TIA-222 Revision: G

Tower Centroid Offset?:	☐
Block Foundation?:	☐

Superstructure Analysis Reactions		
Global Moment, **M**:	1114.5	ft-kips
Global Axial, **P**:	17.56	kips
Global Shear, **V**:	22	kips
Leg Compression, $\mathbf{P_{comp}}$:	61.7	kips
Leg Comp. Shear, $\mathbf{V_{u\_comp}}$:	9.2	kips
Leg Uplift, $\mathbf{P_{uplift}}$:	54.4	kips
Leg Uplift. Shear, $\mathbf{V_{u\_uplift}}$:	8.5	kips
Tower Height, **H**:	80	ft
Base Face Width, **BW**:	13.167	ft
BP Dist. Above Fdn, $\mathbf{bp_{dist}}$:	3	in

Foundation Analysis Checks	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	172.49	22.00	**12.8%**	**Pass**
Bearing Pressure (ksf)	23.04	2.68	**11.6%**	**Pass**
*Overturning (kip*ft)*	2589.68	1274.00	**49.2%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	216.30	46.00	**21.3%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	163.73	42.50	**26.0%**	**Pass**
Pier Compression (kip)	1334.73	65.30	**4.9%**	**Pass**
*Pad Flexure (kip*ft)*	522.74	217.63	**41.6%**	**Pass**
Pad Shear - 1-way (kips)	349.38	64.27	**18.4%**	**Pass**
Pad Shear - 2-way (ksi)	0.16	0.03	**16.7%**	**Pass**

Soil Rating:	**49.2%**
Structural Rating:	**41.6%**

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	2.0	ft
Ext. Above Grade, **E**:	0.50	ft
Pier Rebar Size, **Sc**:	6	
Pier Rebar Quantity, **mc**:	12	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	8	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, $\mathbf{cc_{pier}}$:	3	in

Pad Properties		
Depth, **D**:	6.50	ft
Pad Width, **W**:	18.00	ft
Pad Thickness, **T**:	2.00	ft
Pad Rebar Size (Bottom), **Sp**:	7	
Pad Rebar Quantity (Bottom), **mp**:	10	
Pad Clear Cover, $\mathbf{cc_{pad}}$:	3	in

Material Properties		
Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Net Bearing, Qnet:	30.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, $\mathbf{N_{blows}}$:		
Base Friction, μ:	0.6	
Neglected Depth, **N**:	2.5	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	None	ft

<-- Toggle between Gross and Net

Version 2.6.4

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1066

Portland
213 High Street
Portland, CT 6480

October 26, 2017

Centerline Communications Project Number: 950006-078

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**12.59 %**

October 26, 2017

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

Emissions Analysis for Site: **CT1066 – Portland**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **213 High Street, Portland, 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 **213 High Street, Portland, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60
LTE	2100 MHz (AWS)	2	60
LTE	2300 MHz (WCS)	2	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 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	Kathrein 800-10121	77
A	2	CCI HPA-65R-BUU-H6	77
A	3	Quintel QS66510-6	77
B	1	Kathrein 800-10121	77
B	2	CCI HPA-65R-BUU-H6	77
B	3	Quintel QS66510-6	77
C	1	Kathrein 800-10121	77
C	2	CCI HPA-65R-BUU-H6	77
C	3	Quintel QS66510-6	77

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	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	4	120	2,471.44	2.22
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	5.43
Antenna A3	Quintel QS66510-6	2100 MHz (AWS) / 2300 MHz (WCS)	14.35 / 14.85	4	240	6,933.15	4.94
						Sector A Composite MPE%	**12.59**
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	4	120	2,471.44	2.22
Antenna B2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	5.43
Antenna B3	Quintel QS66510-6	2100 MHz (AWS) / 2300 MHz (WCS)	14.35 / 14.85	4	240	6,933.15	4.94
						Sector B Composite MPE%	**12.59**
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	4	120	2,471.44	2.22
Antenna C2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	5.43
Antenna C3	Quintel QS66510-6	2100 MHz (AWS) / 2300 MHz (WCS)	14.35 / 14.85	4	240	6,933.15	4.94
						Sector C Composite MPE%	**12.59**

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	**12.59 %**
No Additional Carriers on Site per CSC Active MPE Database	NA
Site Total MPE %:	**12.59 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	12.59 %
AT&T Sector B Total:	12.59 %
AT&T Sector C Total:	12.59 %
Site Total:	12.59 %

Table 5: Site MPE Summary

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

AT&T _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	418.91	77	5.98	850 MHz	567	1.05%
AT&T 1900 MHz (PCS) UMTS	2	816.81	77	11.65	1900 MHz (PCS)	1000	1.17%
AT&T 700 MHz LTE	2	940.05	77	13.41	700 MHz	467	2.87%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	77	25.55	1900 MHz (PCS)	1000	2.55%
AT&T 2100 MHz (AWS) LTE	2	1,633.62	77	23.30	2100 MHz (AWS)	1000	2.33%
AT&T 2300 MHz (WCS) LTE	2	1,832.95	77	26.14	2300 MHz (WCS)	1000	2.61%
						Total:	**12.59%**

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:	12.59 %
Sector B:	12.59 %
Sector C:	12.59 %
AT&T Maximum Total (per sector):	12.59 %
Site Total:	12.59 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.59 %** 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
CT1066 - LTE 3C/4C
PORTLAND
213 HIGH STREET
PORTLAND, CT 06480

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

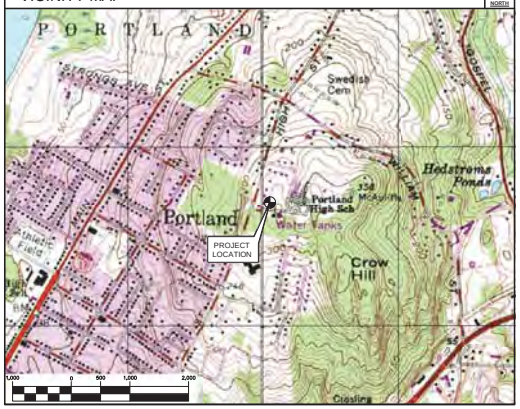
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT

TO: 213 HIGH STREET, PORTLAND, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	1.20 MI
5.	MERGE ONTO CT-9 S TOWWARD MIDDLETOWN/OLD SAYBROOK via EXIT 22S ON THE LEFT	5.50 MI
6.	TURN RIGHT ONTO HWY 17 N/ST JOHNS SQUARE (SIGNS FOR ROUTE 66 E/PORTLAND/WILLIMANTIC)	0.20 MI
7.	TURN RIGHT ONTO MAIN ST	0.90 MI
8.	TURN RIGHT ONTO MARLBOROUGH ST	0.50 MI
9.	TURN LEFT ONTO HIGH ST	0.90 MI

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. REMOVE AND REPLACE POS. 3 GSM ANTENNA FOR (3) NEW LTE TWELVE-PORT ANTENNA, (1) PER SECTOR.
   - B. REMOVE AND REPLACE (6) DIPLEXERS/TRIPLEXERS WITH (6) NEW LOW BAND COMBINERS WITHIN EQUIPMENT SHELTER.
   - C. INSTALL (3) NEW LTE RRUS-32'S MOUNTED TO PROPOSED ANTENNA PIPE MAST.
   - D. INSTALL (3) NEW LTE RRUS-32 B66'S BEHIND ANTENNA POSITION 1.
   - E. INSTALL (1) NEW SURGE ARRESTOR.
   - F. REMOVE AND REPLACE EXISTING DUS41 FOR A NEW 5216 UNIT WITHIN EXISTING LTE RACK.
   - G. INSTALL (1) NEW XMU UNIT WITHIN THE LTE RACK.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT1066
AT&T SITE NAME:	PORTLAND
SITE ADDRESS:	213 HIGH STREET PORTLAND, CT 06480
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-34'-50.57" N LONGITUDE: 72°-37'-25.90" W GROUND ELEVATION: ±345' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS AND ELEVATION	0
C-2	LTE 3C/4C EQUIPMENT DETAILS	0
C-3	MOUNT MODIFICATIONS	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	10/19/17	JTD	CAS	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

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

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

PORTLAND

CT1066 - LTE 3C/4C

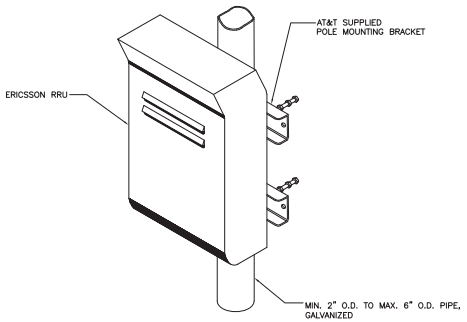
213 HIGH STREET
PORTLAND, CT 06480

DATE: 10/04/17
SCALE: AS NOTED
JOB NO. 17004.51

TITLE SHEET

T-1

Sheet No. 1 of 8

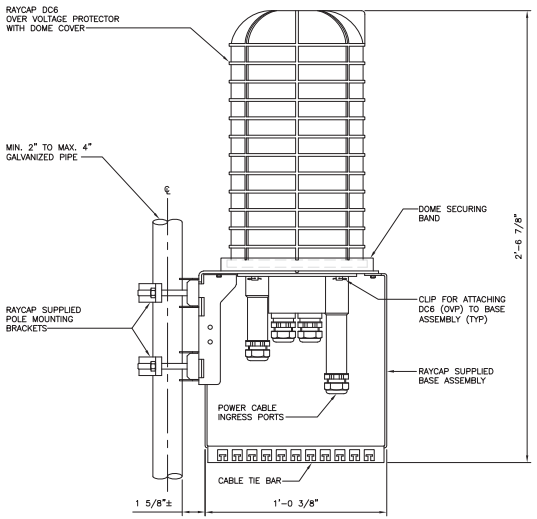


ISOMETRIC VIEW

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.

1 / N-1 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: NTS



ELEVATION

NOTES:

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

2 / N-1 **RAYCAP DC6 MOUNTING DETAIL**
SCALE: 3" = 1'-0"

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): 101 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

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

STRUCTURAL STEEL

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

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

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

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:

   A. SHERWIN WILLIAMS POLANE-B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.

2. COAXIAL CABLES:

   A. ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

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

CLEANING:

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

APPLICATION:

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

COMPLETED WORK:

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

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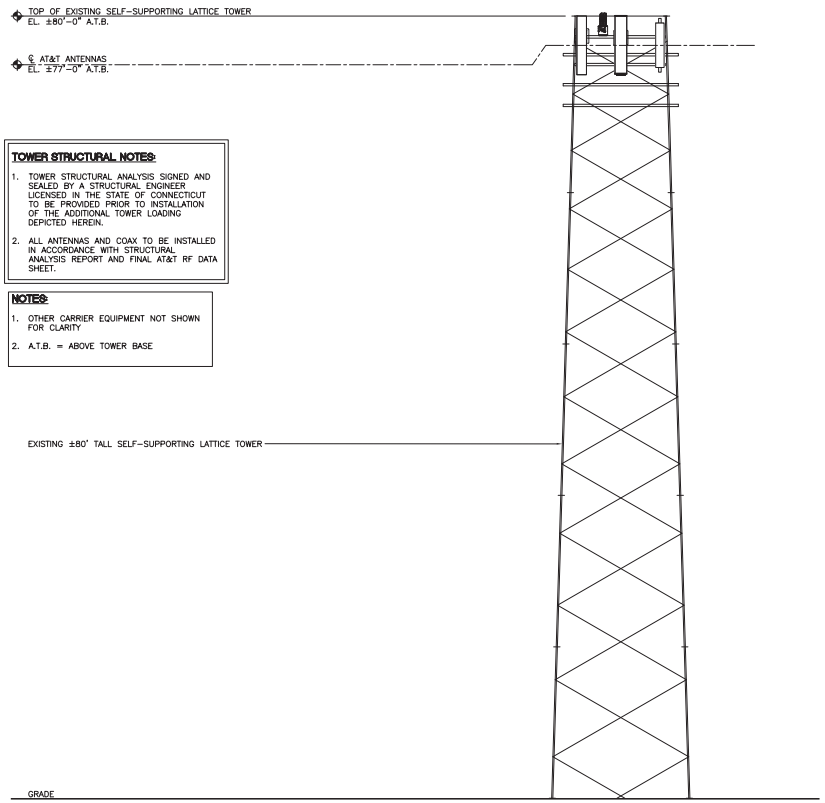
NOTES AND SPECIFICATIONS

N-1
Sheet No. 2 of 8



TOWER STRUCTURAL NOTES:

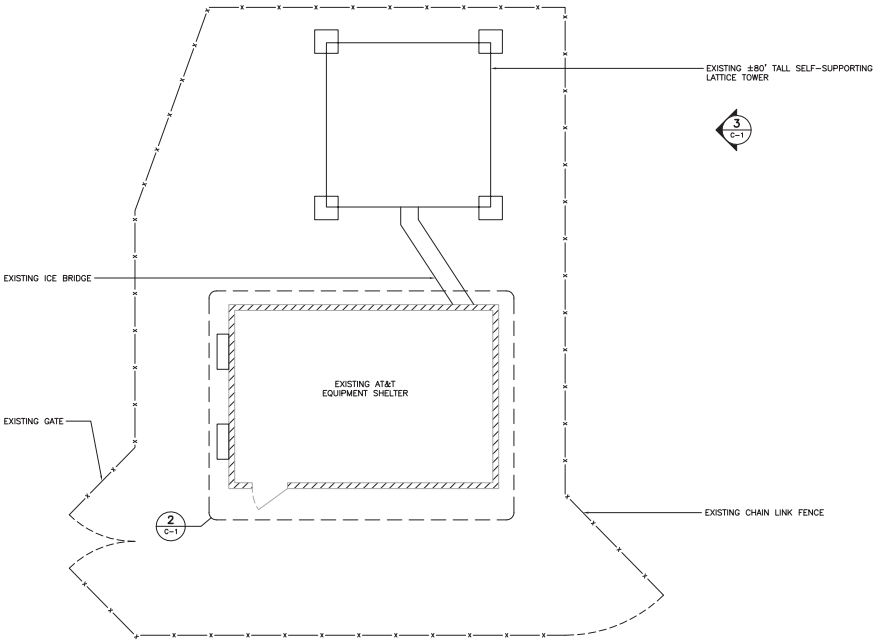
1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS REPORT AND FINAL AT&T RF DATA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

NOTES:

1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.T.B. = ABOVE TOWER BASE

3 / C-1 **EAST ELEVATION**
SCALE: 1" = 6'-0"

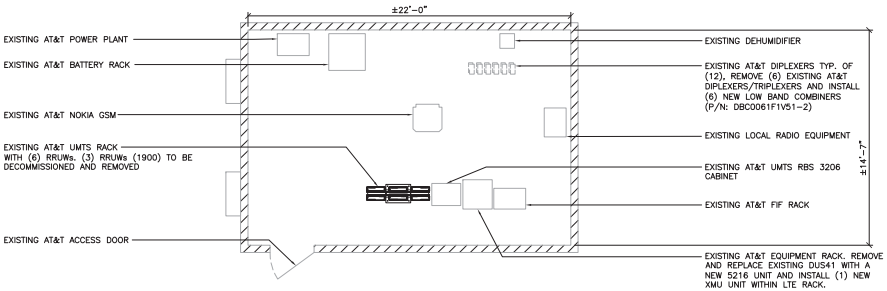
GRAPHIC SCALE
6 0 3 6 12 24
(IN FEET)
1 inch = 6 ft.



1 / C-1 **COMPOUND PLAN**
SCALE: 1" = 5'-0"

APPROX. NORTH

GRAPHIC SCALE
5 0 2.5 5 10 20
(IN FEET)
1 inch = 5 ft.



2 / C-1 **EQUIPMENT ROOM FLOOR PLAN**
SCALE: 1/4" = 1'-0"

APPROX. NORTH

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

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PLANS & ELEVATION

C-1

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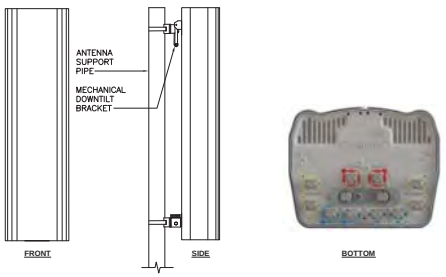
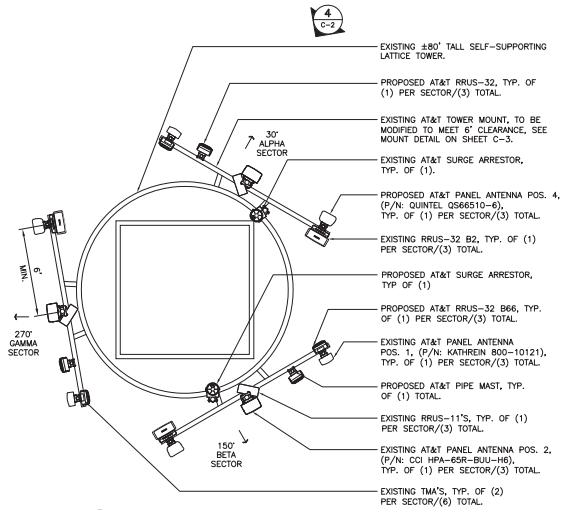
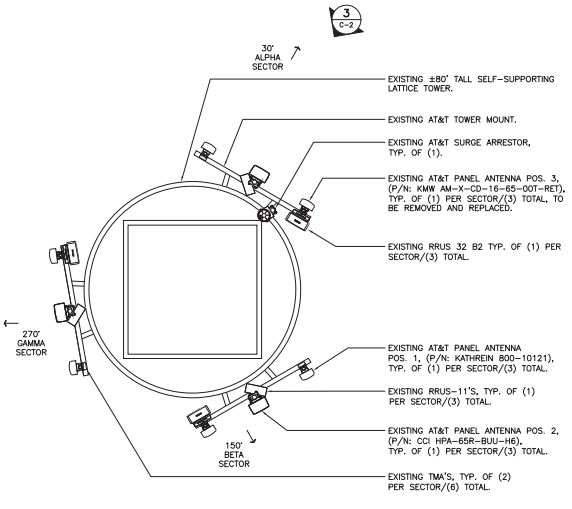


ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: QUINTEL MODEL: QS66510-6	72"L x 12"W x 9.6"D	98 LBS.

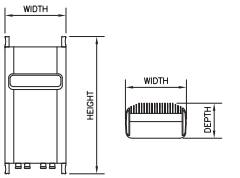
5 C-2 **PROPOSED ANTENNA DETAIL**
SCALE: 1/2" = 1'-0"



2 C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/4" = 1'-0"
APPROXIMATE NORTH



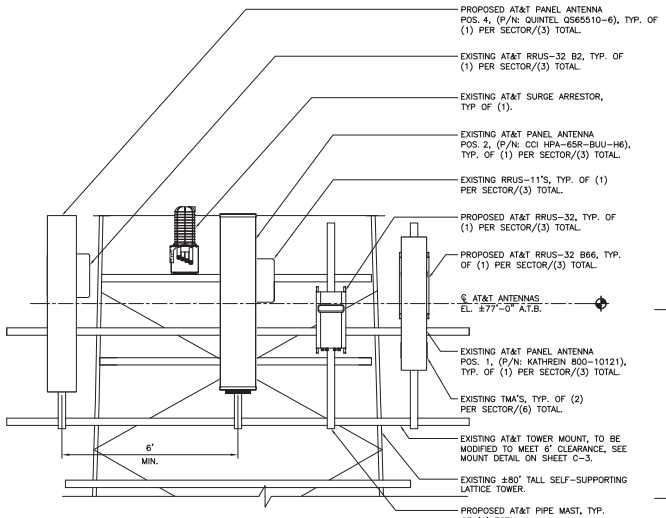
1 C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/4" = 1'-0"
APPROXIMATE NORTH



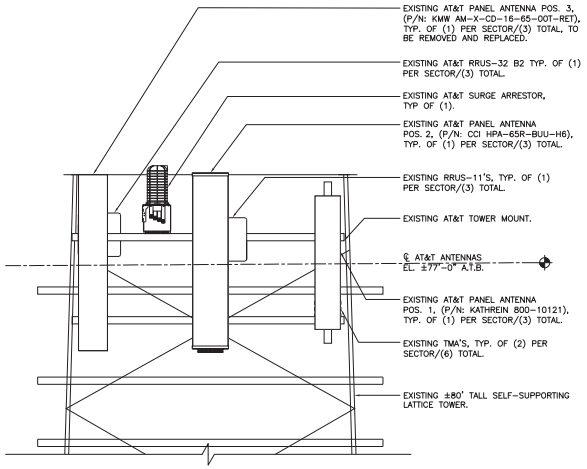
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 32	27.17"L x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS 32 B66	27.17"L x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

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

6 C-2 **ERICSSON REMOTE RADIO UNITS**
SCALE: 1" = 1'-0"



4 C-2 **PROPOSED ANTENNA ELEVATION**
SCALE: 1/2" = 1'-0"



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

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LTE 3C/4C EQUIPMENT DETAILS

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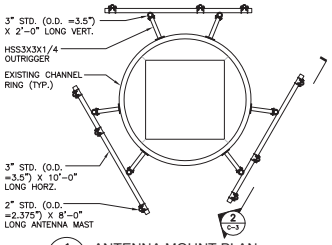
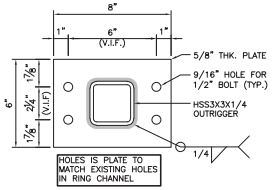


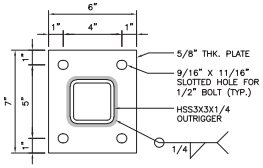
1 C-3 ANTENNA MOUNT PLAN

SCALE: 1/4" = 1'-0"



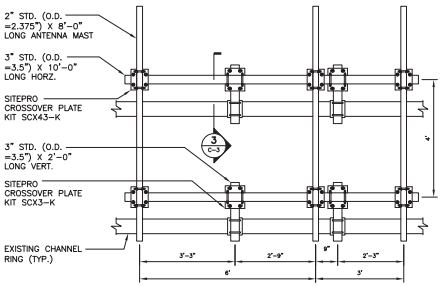
4 C-3 PLATE DETAILS

SCALE: 3" = 1'-0"



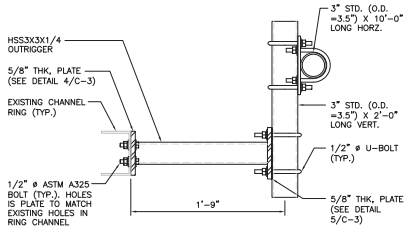
5 C-3 PLATE DETAILS

SCALE: 3" = 1'-0"



2 C-3 ANTENNA MOUNT ELEVATION

SCALE: 1/2" = 1'-0"



3 C-3 OUTRIGGER DETAIL

SCALE: 1-1/2" = 1'-0"

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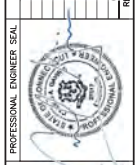

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MOUNT MODIFICATION

C-3

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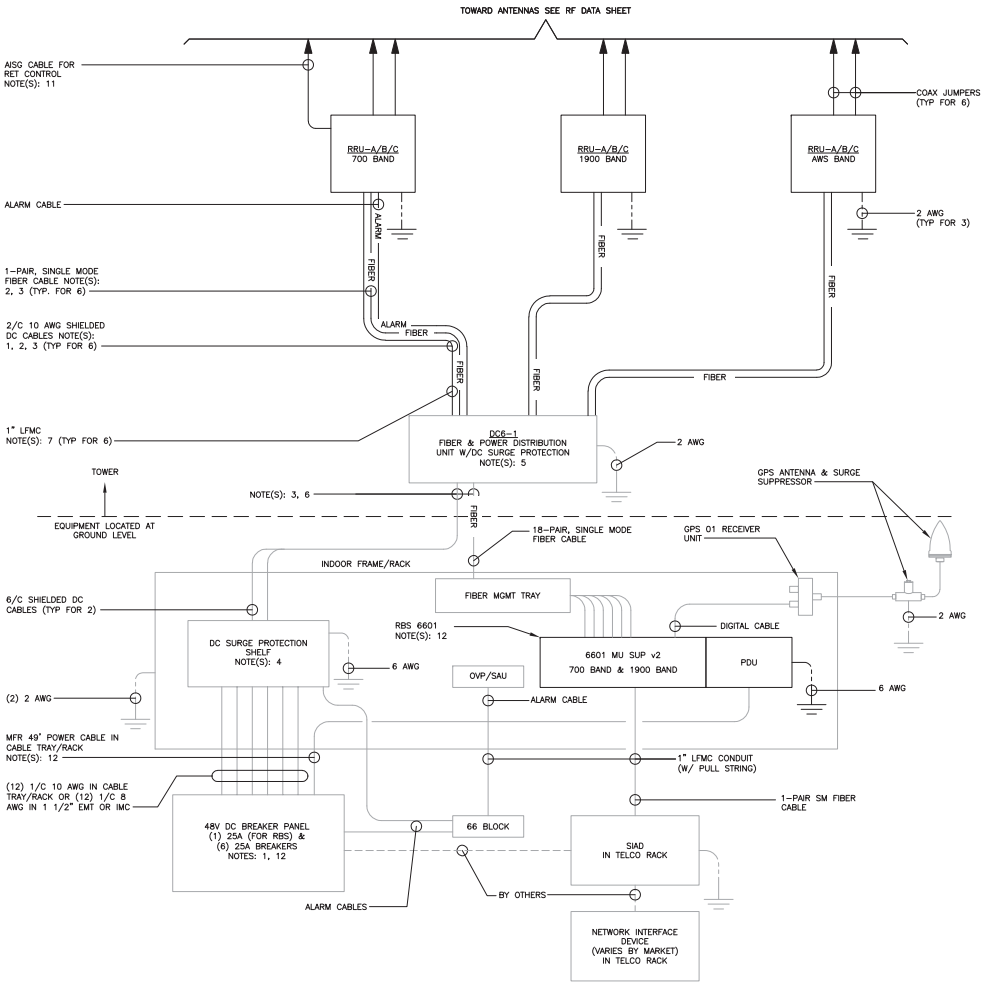

1 / E-1 **LTE SCHEMATIC DIAGRAM**

NOT TO SCALE

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.

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. #6 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.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	10/19/17	JTD	CAS	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

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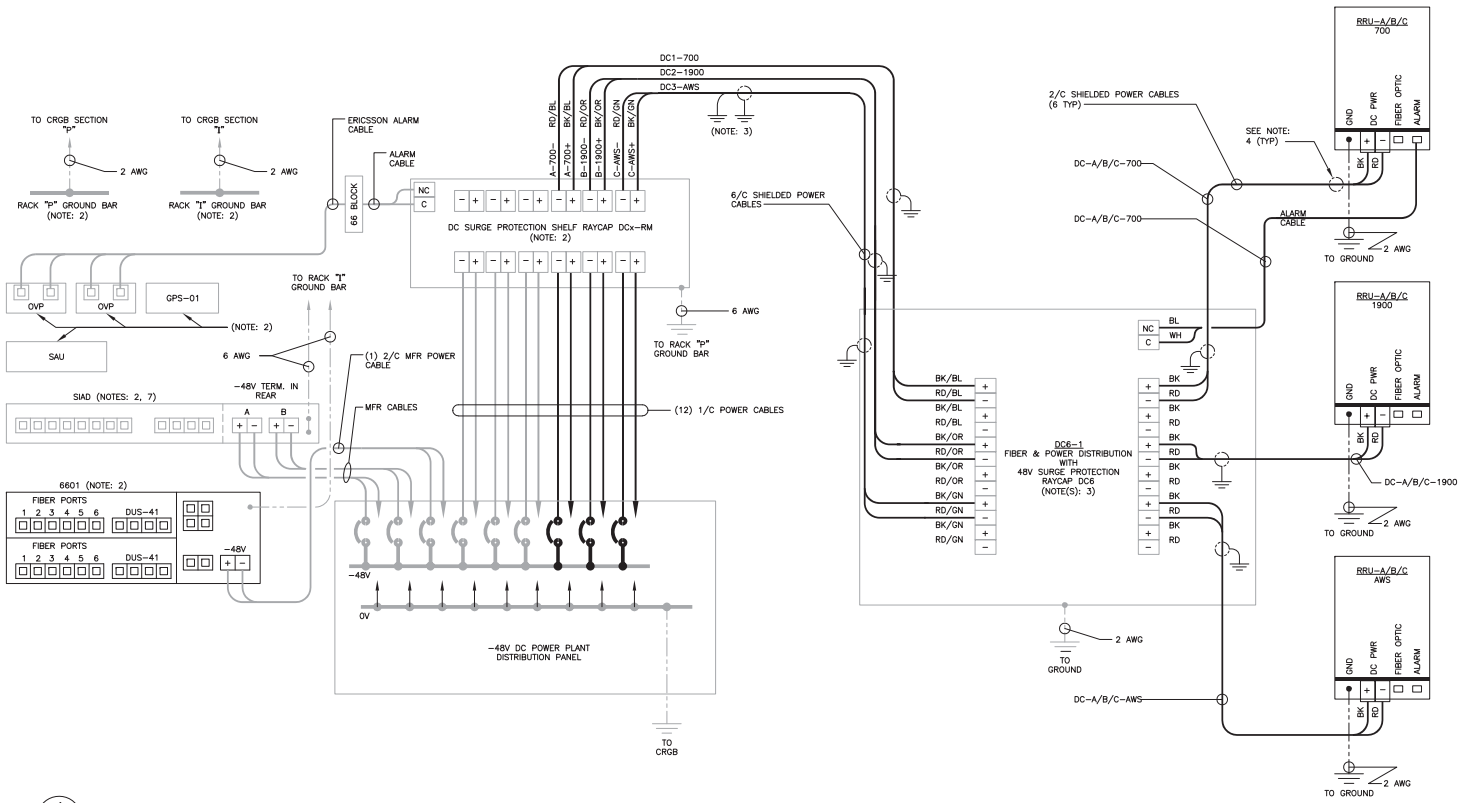
PORTLAND
CT1066 - LTE 3C/4C
213 HIGH STREET
PORTLAND, CT 06480

DATE: 10/04/17
SCALE: AS NOTED
JOB NO. 17004.51

LTE SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 6 of 8



1 / E-2 LTE WIRING DIAGRAM

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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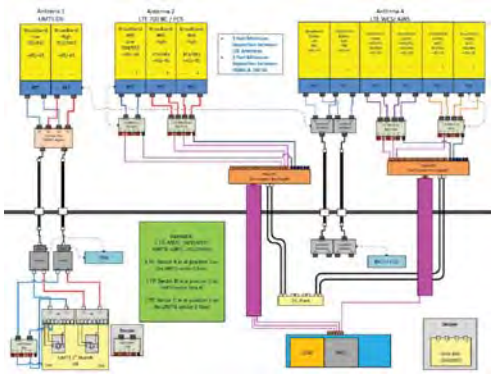
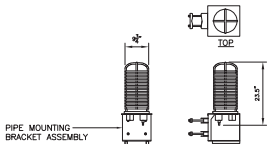
LTE WIRING DIAGRAM

E-2

Sheet No. 7 of 8



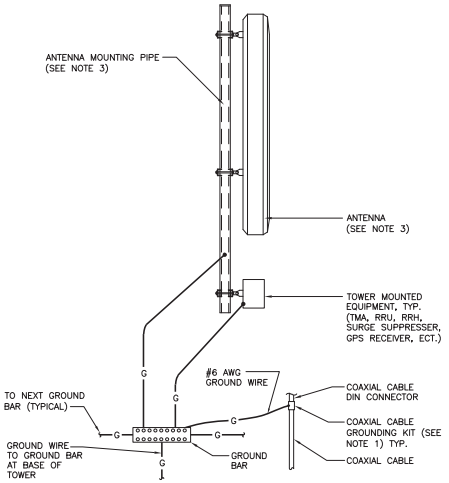
3 / E-3 **RF PLUMBING DIAGRAM**
NOT TO SCALE



SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-18-8F	(1) PER SITE	TOWER, ADJACENT TO AT&T ANTENNAS AND RRUs.	20 LBS. (WITHOUT MOUNT)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATIONS.

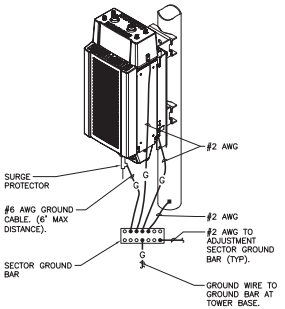
2 / E-3 **SURGE ARRESTOR DETAIL**
SCALE: NTS



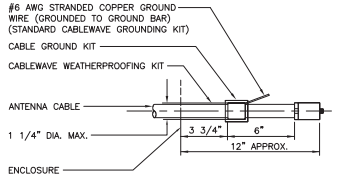
NOTES:
1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

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

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



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



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

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

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TYPICAL ELECTRICAL DETAILS

E-3
Sheet No. 8 of 8

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:

Susan S. Bransfield
PO Box 71
Portland, CT 06480-0071

9590 9402 1864 6104 9649 15

2. Article Number *(Transfer from service label)*

7015 1730 0001 6487 3672

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

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* T Willmor — C. Date of Delivery 12-18-17

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

3. Service Type
- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ 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:

Ashley Majorowski
33 East Main St. 1st FL
Portland, CT 06480

9590 9402 1864 6104 9648 92

2. Article Number *(Transfer from service label)*

7015 1730 0001 6487 36[illegible]

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

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☑ Agent ☐ Addressee

B. Received by *(Printed Name)* [signature] — C. Date of Delivery 12/18/17

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

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

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:

Lincoln Whik
33 East Main St.
1st FL
Portland, CT 06480

9590 9402 1864 6104 9649 08

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* [signature] — C. Date of Delivery 12/18/17

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

3. Service Type
- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☑ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise