

April 3, 2014

David Martin and
Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
1294 Pleasant Valley Road North, Groton, CT 06340
N 41° 23' 59"
W -72° 04' 42"
T-Mobile #: CT11311G

Dear Mr. Martin and Members of the Siting Council:

On behalf of T-Mobile, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 1294 Pleasant Valley Road North, Groton, CT 06340.

The 1294 Pleasant Valley Road North facility consists of a 150' Monopole owned and operated by SBA Infrastructure, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

As part of T-Mobile's modernization project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of \$625.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be

significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinets.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of T-Mobile, respectfully submits that he proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 508.251.0720 x 3804 with any questions you may have concerning this matter.

Thank you,



Kri Pelletier
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com



**T-Mobile
Equipment Modification**

1294 Pleasant Valley Road North, Groton, CT 06340
Site number CT11311G

Tower Owner: SBA Infrastructure, LLC

Equipment Configuration: Monopole

Current and/or approved:

- (3) RFS APX16DWV-16DWVS
- (6) Powerwave S20057A1 TMAs
- (12) 1-5/8" Feed Lines
- (1) 1/4" Feed Line

Planned Modifications:

- (3) Ericsson Air B2A B4P
- (3) Ericsson Air B4A B2P
- (3) Ericsson KRY 112 144 TMAs
- (12) 1-5/8" Feed Lines
- (1) 1-5/8" Fiber

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the T-Mobile facility are 0.629% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 26.999% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.629%
Verizon Wireless	17.950%
AT&T	8.420%
Total Site MPE %	26.999%

April 3, 2014

Mr. Mark R. Oefinger
Town Manager
Town of Groton
45 Fort Hill Road
Groton, CT 06340

RE: Telecommunications Facility @ 1294 Pleasant Valley Road North, Groton, CT 06340

Dear Mr. Oefinger,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,



Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11311G

Opta Paws Place

1294 Pleasant Valley Road North
Groton, CT 06340

April 2, 2014

EBI Project Number: 62141998

April 2, 2014

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Re: Emissions Values for Site: **CT11311G - Opta Paws Place**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 1294 Pleasant Valley Road North, Groton, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 1294 Pleasant Valley Road North, Groton, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM / UMTS channels (1935.000 MHz to 1945.000 MHz / 1983.000 MHz to 1984.000 MHz) were considered for each sector of the proposed installation.
- 2) 4 UMTS / LTE channels (2110.000 to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
- 3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. 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. This is rarely the case, and if so, is never continuous.
- 4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
- 5) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

- 6) The antenna mounting height centerline of the proposed antennas is **140 feet** above ground level (AGL)
- 7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11311G - Opta Paws Place
Site Address	1294 Pleasant Valley Road North, Groton, CT 06340
Site Type	Guyed Tower

Sector 1																	
Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	140	134	None	0	0	48.326044	0.967559	0.09676%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	140	134	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	140	134	None	0	0	24.163022	0.48378	0.04838%
1b	Ericsson	AIR21 B4A/B2P	Passive	AWS - 2100 MHz	UMTS	40	2	80	-3.95	140	134	None	0	0	32.217363	0.64504	0.06450%
															Sector total Power Density Value: 0.210%		
Sector 2																	
Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	140	134	None	0	0	48.326044	0.967559	0.09676%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	140	134	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	140	134	None	0	0	24.163022	0.48378	0.04838%
1b	Ericsson	AIR21 B4A/B2P	Passive	AWS - 2100 MHz	UMTS	40	2	80	-3.95	140	134	None	0	0	32.217363	0.64504	0.06450%
															Sector total Power Density Value: 0.210%		
Sector 3																	
Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	140	134	None	0	0	48.326044	0.967559	0.09676%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	140	134	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	140	134	None	0	0	24.163022	0.48378	0.04838%
1b	Ericsson	AIR21 B4A/B2P	Passive	AWS - 2100 MHz	UMTS	40	2	80	-3.95	140	134	None	0	0	32.217363	0.64504	0.06450%
															Sector total Power Density Value: 0.210%		

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.629%
Verizon Wireless	17.950%
AT&T	8.420%
Total Site MPE %	26.999%

Summary

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

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.629% (0.210% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **26.999%** of the allowable FCC established general public 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

EBI Consulting
21 B Street
Burlington, MA 01803



FDH Engineering, Inc., 6521 Meriden Drive Raleigh, NC 27616, Ph. 919.755.1012

**Structural Analysis for
SBA Network Services, Inc.**

149' Monopole

**SBA Site Name: New London
SBA Site ID: CT13075-A-01
T-Mobile Site ID: CT11311G**

FDH Project Number 1424NF1400

Analysis Results

Tower Components	66.5%	Sufficient
Foundation	78.2%	Sufficient

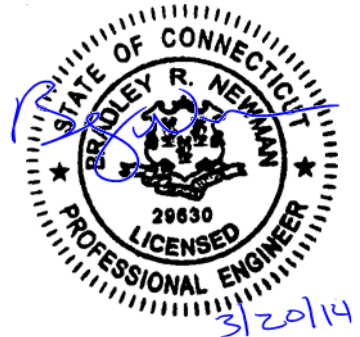
Prepared By:

Jeffrey B. Ray, EI
Project Engineer

Reviewed By:

Bradley R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

FDH Engineering, Inc.
6521 Meriden Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com



March 20, 2014

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 Connecticut Building Code

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Groton, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and *2005 Connecticut Building Code (CBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, foundation dimensions, and member sizes was obtained from:

- Sabre Communications Corporation (Job No. 08-07173) original tower design drawings dated July 26, 2007
- Sabre Communications Corporation (Job No. 08-01005) tower extension drawings dated January 7, 2008
- FDH, Inc. (Job No. 08-07140T) TIA Inspection Report dated September 9, 2008
- Gemini Geotechnical Associates, Inc. (Project No. 07079CT) Geotechnical Engineering Report dated July 20, 2007
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CBC* is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from T-Mobile in place at 140 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (See Sabre Communications Corporation Job No. 08-07173), the foundation should have the necessary capacity to support both the proposed and existing loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and *2005 CBC* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the monopole shaft.
2. The proposed TMAs should be installed directly behind the proposed panel antennas.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines ¹	Carrier	Mount Elevation (ft)	Mount Type
147	(3) Antel BXA-70063-6CF (3) Antel BXA-80063/4CF (3) Antel BXA-171063-12CF (3) Antel BXA-171085-8BF (3) ALU RRH2x40 AWS RRUs (3) ALU RRH2x40-07 RRUs (1) RFS DB-T1-6Z-8AB-0Z Distribution Box	(12) 1-5/8" (1) 1-5/8" Fiber	Verizon	147	(1) 12.5' Low Profile Platform
140	(3) RFS APX16DWV-16DWVS (6) Powerwave S20057A1 TMAs	(12) 1-5/8" (1) 1/4"	T-Mobile	138	(1) 12.5' Low Profile Platform
127	(3) Andrew SBNH-1D6565C (6) CCI HPA-65R-BUU-8H (3) Ericsson KRC 118 048/1 (21) Ericsson RRUS-11 RRUs (4) Raycap DC6-48-60-18-8F Surge Arrestors	(2) 3/8" RET (2) 1/2" Fiber (8) 3/4" DC	New Cingular	127	(1) Low Profile Platform (P/N: MC-PK14L-B)

1. Coax installed inside the pole's shaft unless noted otherwise.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
140	(3) Ericsson AIR B2A B4P (3) Ericsson AIR B4A B2P (3) Ericsson KRY 112 144 TMAs	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	138	(1) 12.5' Low Profile Platform

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	35 ksi & 65 ksi
Flange Plate	60 ksi
Flange Bolts	Fu = 120 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
L1	149 - 139	Pole	TP26.7x24.35x0.1875	16.2	Pass
	139	Flange Bolts	(8) 1" Ø w/ BC = 30"	15.8	Pass
	139	Flange Plate	34.25" Ø PL x 0.75" tk.	30.6	Pass
L2	139 - 96	Pole	TP36.44x26.7x0.25	62.8	Pass
L3	96 - 47.25	Pole	TP47.15x34.8641x0.375	66.5	Pass
L4	47.25 - 0	Pole	TP58.26x45.0221x0.4375	64.4	Pass
		Anchor Bolts	(20) 2.25" Ø w/ BC = 64.875"	58.8	Pass
		Base Plate	65.38" SQ PL x 2.75" thk	94.2	Pass

*Capacities include a 1/3 allowable stress increase for wind.

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (ANSI/TIA-222-G)
Axial	37 k	54 k
Shear	29 k	50 k
Moment	3,151 k-ft	5,443 k-ft

GENERAL COMMENTS

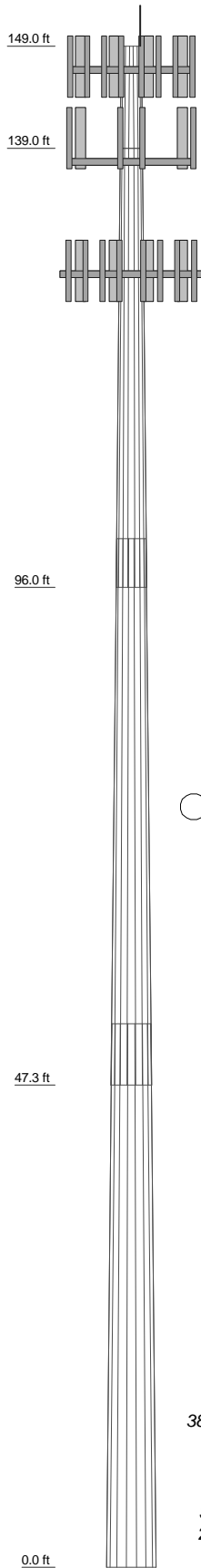
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	1	2	3	4
Length (ft)	10.00	43.00	53.50	53.25
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3750	0.4375
Socket Length (ft)		4.75	6.00	45.0221
Top Dia (in)	24.3500	26.7000	34.8641	58.2600
Bot Dia (in)	26.7000	36.4400	47.1500	12.9
Grade	A53-B-35	A53-B-35	A572-65	A572-65
Weight (K)	0.5	3.6	8.8	25.8



DESIGNED APPURTENANCE LOADING

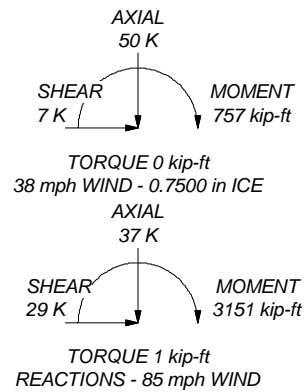
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	149	AIR 21 B4A/B2P w/Mount Pipe	138
BXA-70063-6CF w/ Mount Pipe	147	AIR 21 B4A/B2P w/Mount Pipe	138
BXA-70063-6CF w/ Mount Pipe	147	AIR 21 B4A/B2P w/Mount Pipe	138
BXA-70063-6CF w/ Mount Pipe	147	KRY 112 144/1	138
BXA-80063/4CF w/ Mount Pipe	147	KRY 112 144/1	138
BXA-80063/4CF w/ Mount Pipe	147	KRY 112 144/1	138
BXA-80063/4CF w/ Mount Pipe	147	(1) 12.5' Low Profile Platform	138
BXA-171063-12CF w/ Mount Pipe	147	SBNH-1D6565C w/ Mount Pipe	127
BXA-171063-12CF w/ Mount Pipe	147	SBNH-1D6565C w/ Mount Pipe	127
BXA-171063-12CF w/ Mount Pipe	147	SBNH-1D6565C w/ Mount Pipe	127
BXA-171085-8BF w/ Mount Pipe	147	(2) HPA-65R-BUU-8H w/ Mount Pipe	127
BXA-171085-8BF w/ Mount Pipe	147	(2) HPA-65R-BUU-8H w/ Mount Pipe	127
BXA-171085-8BF w/ Mount Pipe	147	(2) HPA-65R-BUU-8H w/ Mount Pipe	127
RRH2X40-AWS	147	KRC 118 048/1 w/ Mount Pipe	127
RRH2X40-AWS	147	KRC 118 048/1 w/ Mount Pipe	127
RRH2X40-AWS	147	KRC 118 048/1 w/ Mount Pipe	127
RRH2x40-07	147	(7) RRUS-11	127
RRH2x40-07	147	(7) RRUS-11	127
RRH2x40-07	147	(7) RRUS-11	127
DB-T1-6Z-8AB-0Z Distribution Box	147	DC6-48-60-18-8F Surge Arrestor	127
(1) 12.5' Low Profile Platform	147	DC6-48-60-18-8F Surge Arrestor	127
AIR 21 B2A/B4P w/Mount Pipe	138	(2) DC6-48-60-18-8F Surge Arrestor	127
AIR 21 B2A/B4P w/Mount Pipe	138	Low Profile Platform (P/N: MC-PK14L-B)	127
AIR 21 B2A/B4P w/Mount Pipe	138		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 66.5%



FDH Engineering, Inc.
 6521 Meriden Drive, Suite 107
 Raleigh, North Carolina
 Phone: 9197551012
 FAX: 9197551031

Job: **New London, CT13075-A-01**
 Project: **1424NF1400**
 Client: SBA Network Services, Inc. Drawn by: Jeffrey B. Ray App'd:
 Code: TIA/EIA-222-F Date: 03/20/14 Scale: NTS
 Path: Dwg No. E-1

PROJECT INFORMATION	
SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS T-MOBILE EQUIPMENT MODERNIZATION
SITE ADDRESS:	1294 PLEASANT VALLEY ROAD NORTH GROTON, CT 06340
LATITUDE:	41° 23' 59" N (GOOGLE EARTH)
LONGITUDE:	-72° 04' 42" W (GOOGLE EARTH)
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
ZONING JURISDICTION:	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
DESIGN GUIDELINE:	2C
TOWER OWNER:	SBA INFRASTRUCTURE, LLC
SBA SITE ID:	CT13075-A
SBA NAME:	NEW LONDON

CONFIGURATION
2C

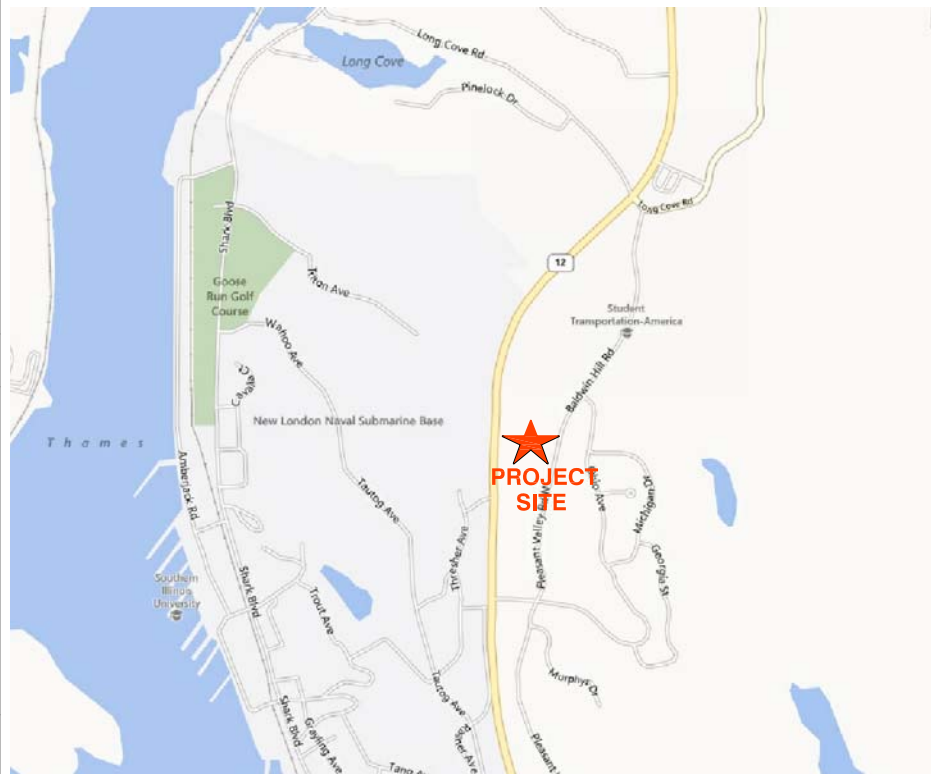
SITE NAME: CT311 / OPTA PAWS PLACE

1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340

SITE NUMBER: CT11311G

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LOCUS MAP



GENERAL NOTES

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE NORTHEAST, LLC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SIGNATURES

CONSTRUCTION	DATE	OPERATIONS	DATE
RF ENGINEERING	DATE	TOWER OWNER	DATE
ZONING / SITE ACQ.	DATE		



- SPECIAL STRUCTURAL NOTES:
- TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.
 - STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY ADVANCED ENGINEERING GROUP, P.C. ON BEHALF OF T-MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T-MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN OR BE RESPONSIBLE FOR SAME.



CALL



BEFORE YOU DIG

CALL TOLL FREE 811 OR 922-4455

UNDERGROUND SERVICE ALERT



SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752
PHONE: 508-251-0720

SITE NUMBER: CT11311G
SITE NAME: CT311/ OPTA PAWS PLACE
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

				T-MOBILE		
				TITLE SHEET		
1	03/25/14	FINAL	SO	SB	MRC	
0	03/20/14	CONSTRUCTION	SO	SB	MRC	
NO.	DATE	REVISIONS	BY	CHK	APP'D	
SCALE: AS SHOWN			DESIGNED BY: MRC		DRAWN BY: SO	
				JOB NUMBER	DRAWING NUMBER	REV
				CT11311G	T-1	1

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE LESEE/LICENSEE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

15. THE CONTRACTOR SHALL NOTIFY THE LESEE/LICENSEE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESEE/LICENSEE REPRESENTATIVE.

16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233 CALL BEFORE YOU DIG (CT): 1-800-922-4455

18. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.

19. ALL DIMENSIONS SHOWN THIS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH PROJECT OWNER PRIOR TO CONSTRUCTION.

20. NORTH ARROW SHOWN ON PLANS REFERS TO APPROXIMATE TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATING OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.

21. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

22. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.

23. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE PROJECT OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF PROJECT OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE EXHIBIT 3). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.

24. WHEN "PAINT TO MATCH" IS SPECIFIED FOR ANTENNA CONCEALMENT, PAINT PRODUCT FOR ANTENNA RADOME SHALL BE SHERWIN WILLIAMS COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PROJECT OWNER'S GUIDELINE'S.

25. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

26. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

27. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.

28. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR

29. GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES

30. DURING CONSTRUCTION. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS

31. FOR WIRELESS COMMUNICATIONS SYSTEMS. PROJECT OWNER'S IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. PROJECT OWNER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

32. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
BUILDING CODE: CONNECTICUT STATE BUILDING CODE 2005 EDITION AND AMENDMENTS
ELECTRICAL CODE: NEC 2011 AND AMENDMENTS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.

2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.

3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.

4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.

5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.

6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.

7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.

8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARICATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.

9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARICATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE AND GREENLEE CONDUIT MEASURING TAPE IN EACH INSTALLED TELCO CONDUIT.

10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.

11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

12. PPC SUPPLIED BY PROJECT OWNER.

13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".

14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.

16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.

17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.

18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.

19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

20. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.

21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ (E) MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.

22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.

23. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.



ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCIEVER STATION	(P)	PROPOSED/NEW	TBR	TO BE REMOVED
(E)	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		



SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752
PHONE: 508-251-0720

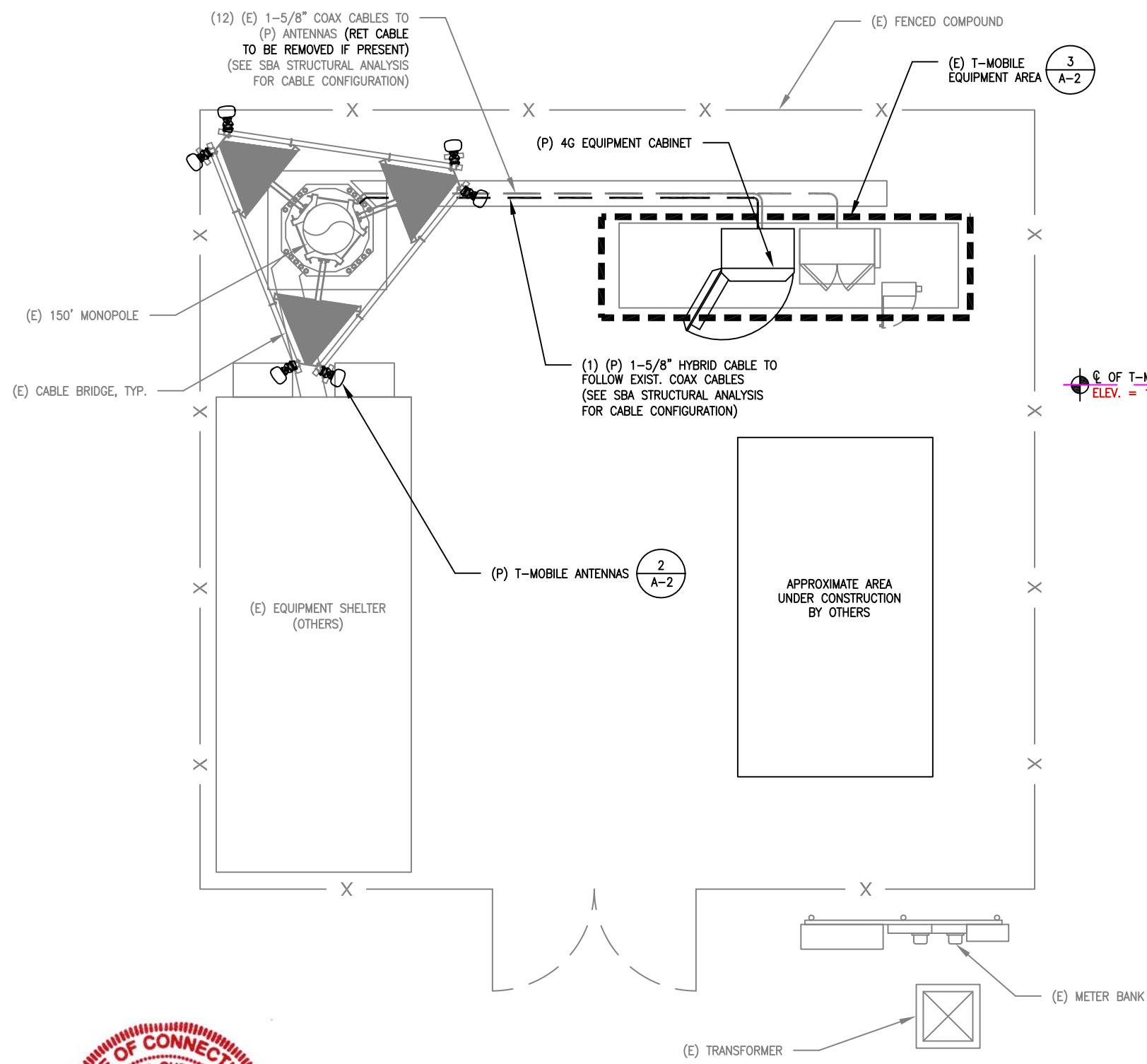
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GROTON, CT 06340

T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

									T-MOBILE		
									GENERAL NOTES		
NO.	DATE	REVISIONS	BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER				REV
1	03/25/14	FINAL	SO	SB	MRC	CT11311G	GN-1				1
0	03/20/14	CONSTRUCTION	SO	SB	MRC						
SCALE: AS SHOWN			DESIGNED BY: MRC			DRAWN BY: SO					



1
A-1
COMPOUND PLAN
SCALE: 1/8"=1'-0"
0' 4' 8' 16'



NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

2
A-1
EXISTING ELEVATION
SCALE: NTS

*NOTE:
ANTENNA ELEVATION BASED ON CLIENT-PROVIDED INFORMATION



ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development Surveying - Telecommunications
500 NORTH BROADWAY
EAST PROVIDENCE, RI 02914
PH: (401) 354-2403
FAX: (401) 633-6354

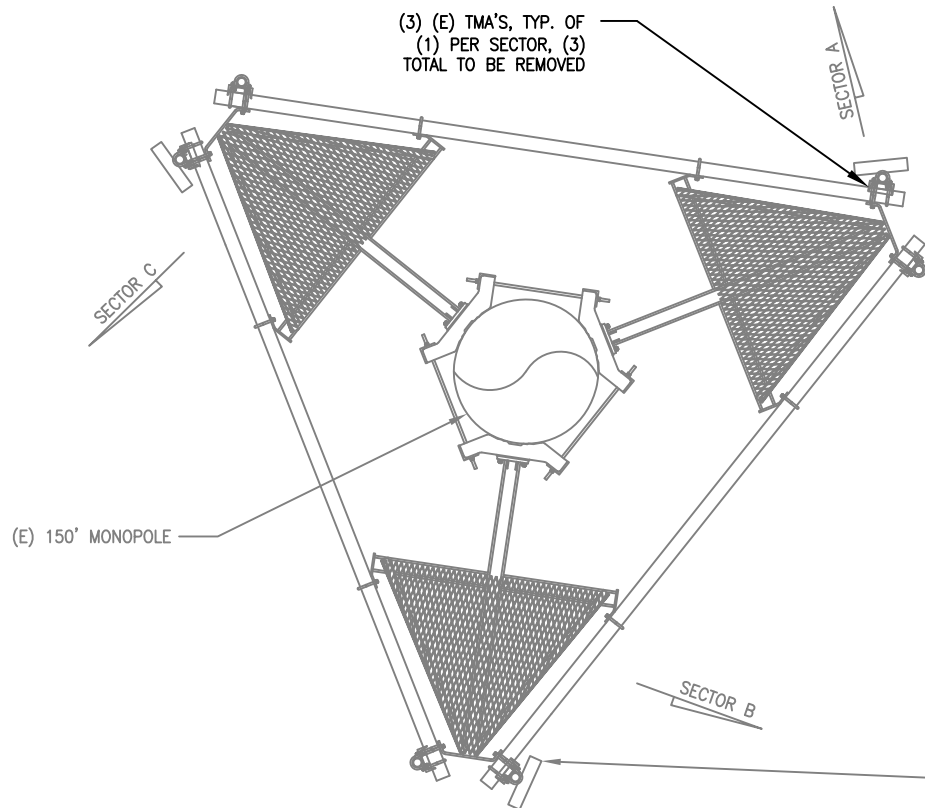
SBA
SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
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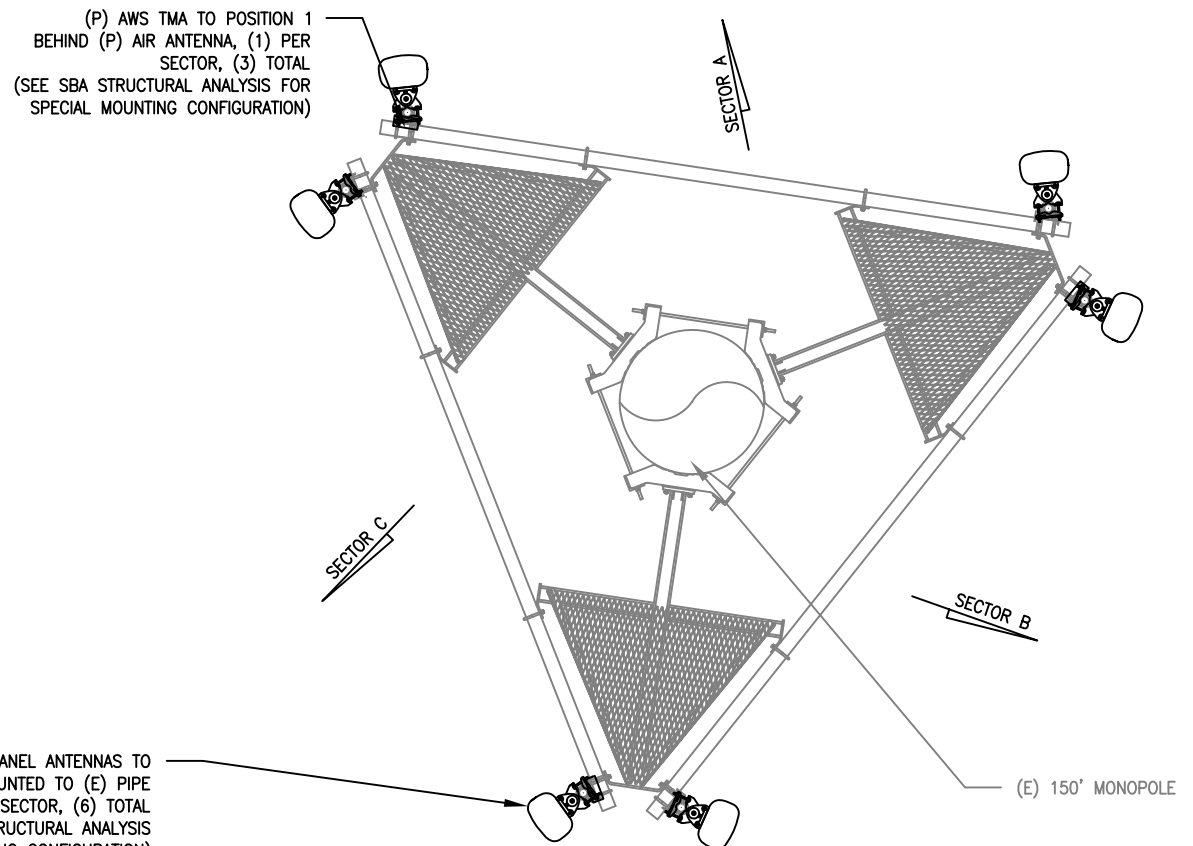
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T-MOBILE		
COMPOUND PLAN AND ELEVATION		
JOB NUMBER	DRAWING NUMBER	REV
CT11311G	A-1	1



EXISTING ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	RFS	APX16PV-16PVL	13x3.15x53
SECTOR B:	RFS	APX16PV-16PVL	13x3.15x53
SECTOR C:	RFS	APX16PV-16PVL	13x3.15x53

PROPOSED ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56
SECTOR B:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56
SECTOR C:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B4A/B2P	12x8x56



NOTE:
1. REFER TO FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

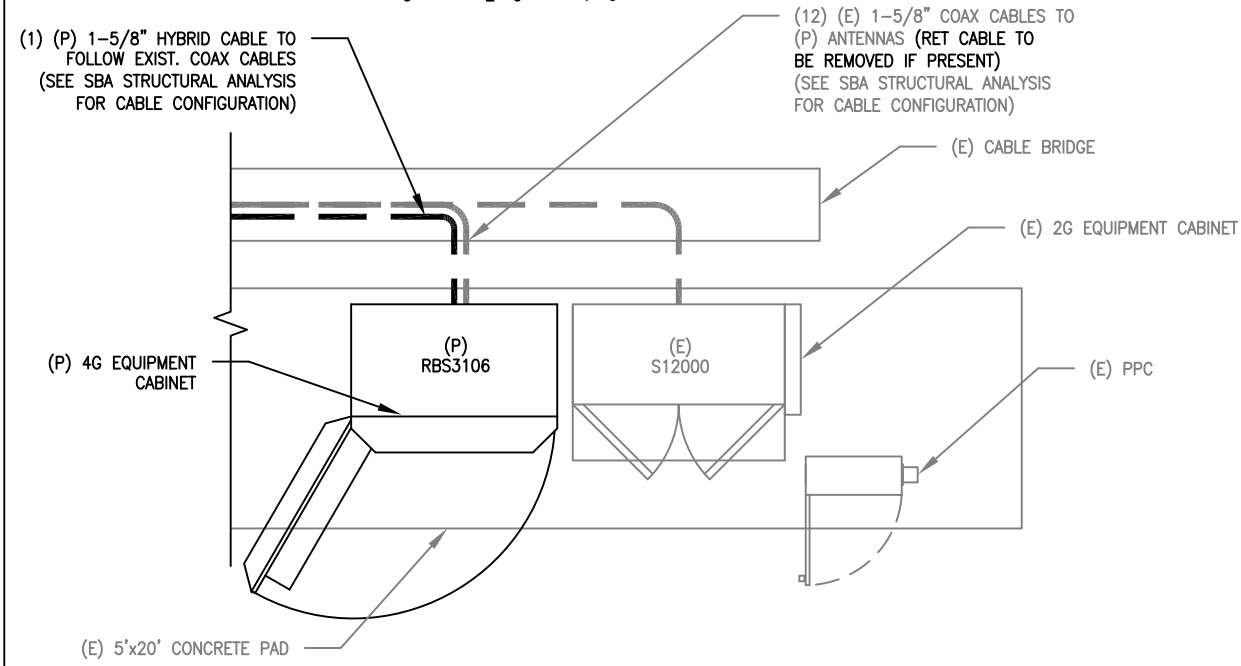
(E) T-MOBILE PANEL ANTENNAS TYP. OF (1) PER SECTOR, (3) TOTAL TO BE REMOVED

(P) T-MOBILE PANEL ANTENNAS TO BE MOUNTED TO (E) PIPE TYP. OF (2) PER SECTOR, (6) TOTAL (SEE SBA STRUCTURAL ANALYSIS FOR SPECIAL MOUNTING CONFIGURATION)

EXISTING ANTENNA PLAN
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0"

PROPOSED ANTENNA PLAN
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0"

*** SPECIAL INSTALLATION NOTE:**
PROPOSED ANTENNAS SHALL BE VERTICALLY CENTERED ON EXISTING PLATFORM RAIL. ADJUST ANTENNA MOUNTING PIPE AS REQUIRED.



EQUIPMENT PLAN
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0"



EXISTING EQUIPMENT AREA.
N.T.S.



NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/25/14	FINAL	SO	SB	MRC
0	03/20/14	CONSTRUCTION	SO	SB	MRC

SCALE: AS SHOWN DESIGNED BY: MRC DRAWN BY: SO

(3) (E) ANTENNAS TYP. OF (1) PER SECTOR, (3) TOTAL TO BE REMOVED

(3) (E) TMA'S. TYP. OF (1) PER SECTOR, (3) TOTAL TO BE REMOVED



1 EXISTING ANTENNA MOUNT TYP.
A-3 N.T.S.

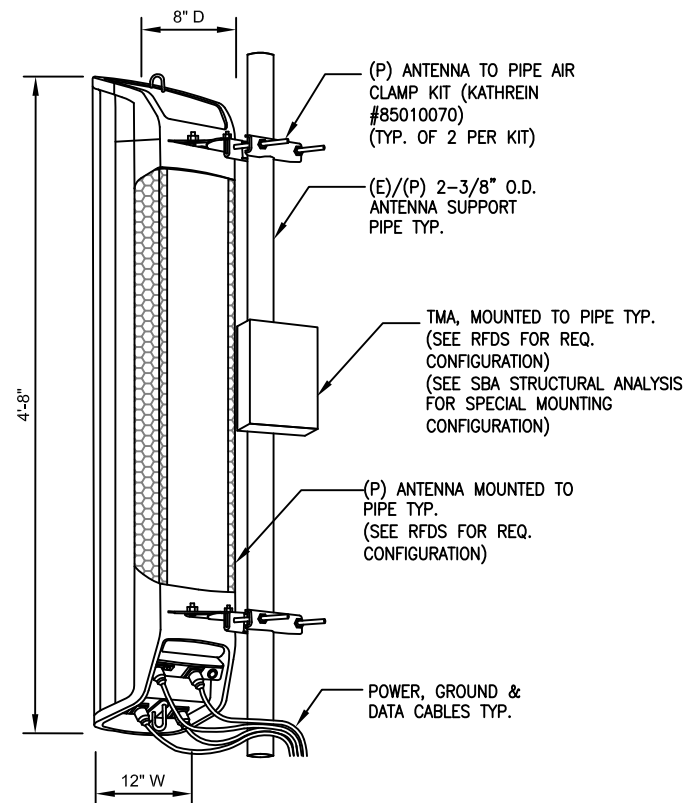
3 OF (2) PER SECTOR, (6) TOTAL
A-3 (SEE SBA STRUCTURAL ANALYSIS FOR SPECIAL MOUNTING CONFIGURATION)

(P) AWS TMA TO POSITION 1 BEHIND (P) AIR ANTENNA, (1) PER SECTOR, (3) TOTAL (SEE SBA STRUCTURAL ANALYSIS FOR SPECIAL MOUNTING CONFIGURATION)

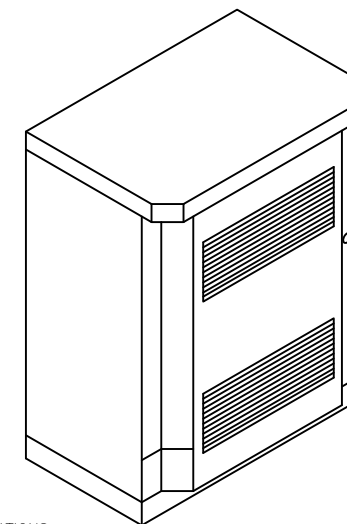
*** SPECIAL INSTALLATION NOTE:**
PROPOSED ANTENNAS SHALL BE VERTICALLY CENTERED ON EXISTING PLATFORM RAIL. ADJUST ANTENNA MOUNTING PIPE AS REQUIRED.



2 PROPOSED ANTENNA MOUNT TYP.
A-3 N.T.S.



3 ANTENNA MOUNT TYP.
A-3 SCALE: N.T.S.

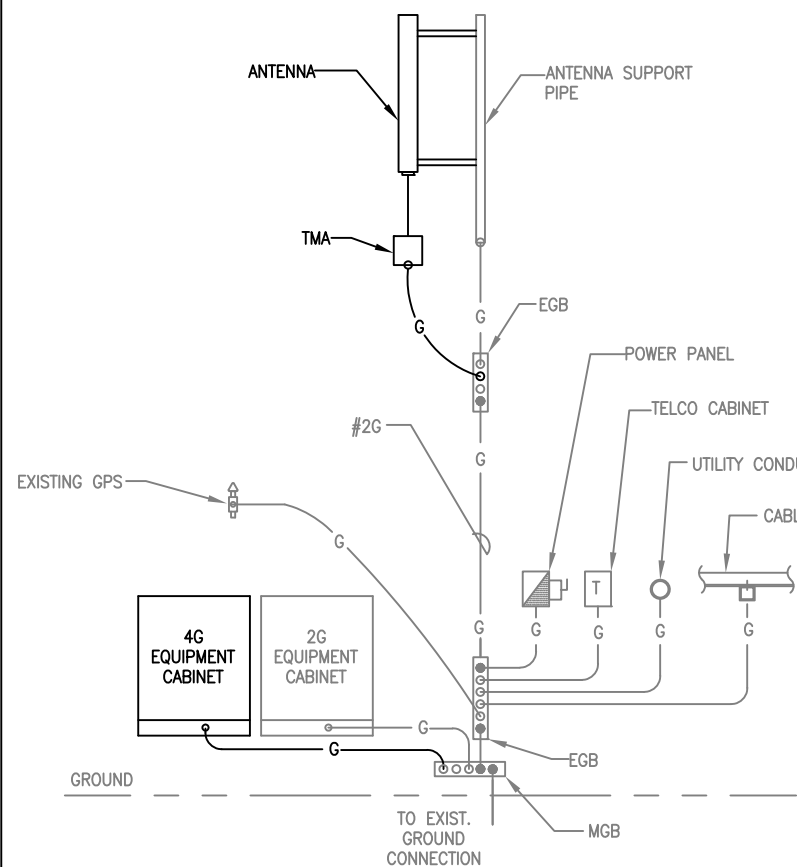


NOTE:
ANCHOR (P) EQUIPMENT TO (E) CONCRETE PAD PER MANUFACTURER'S RECOMMENDATIONS

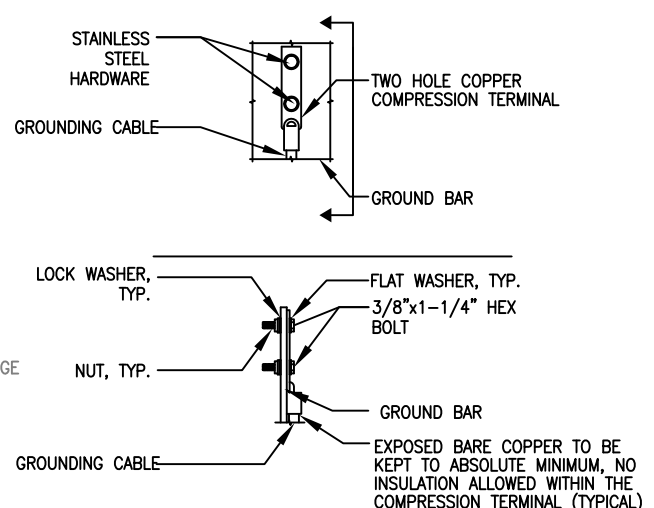
DIMENSIONS		
CABINET	DEPTH x WIDTH x HEIGHT	APPROX. MAX. WEIGHT
OUTDOOR RBS3106	36.45" x 51.18" x 64.17"	1874 LBS.

4 PROPOSED EQUIPMENT CABINET
A-3 SCALE: N.T.S.



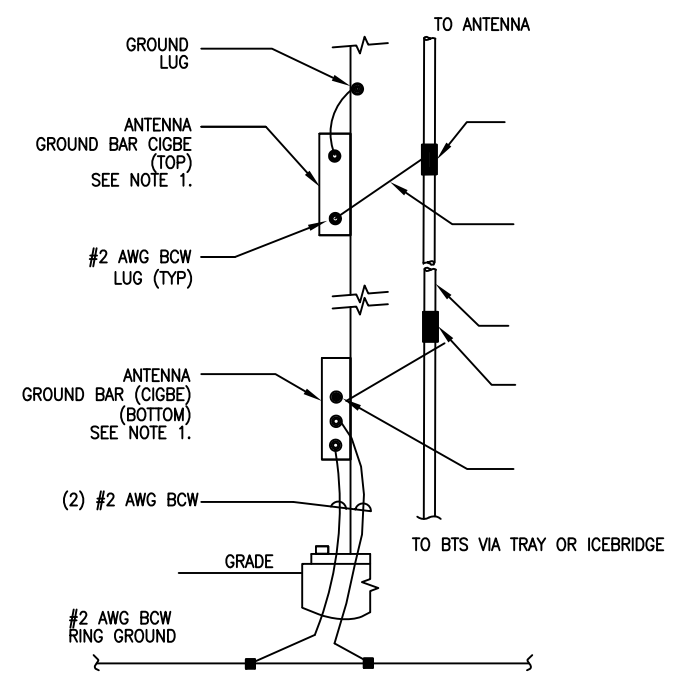


1 TYPICAL GROUND RISER DIAGRAM
SCALE: N.T.S.



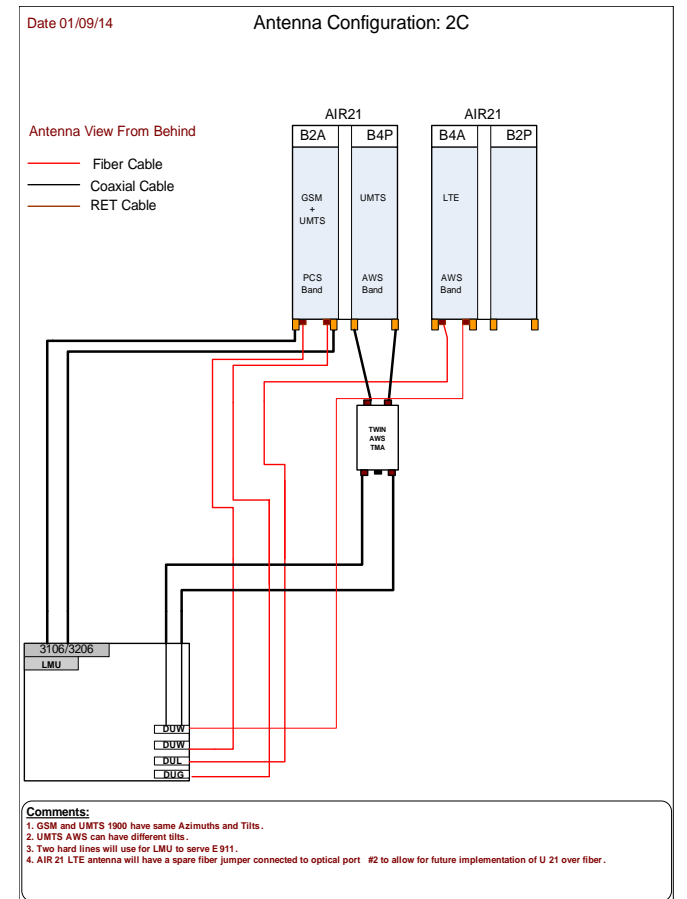
- NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
 3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.
 4. ALL GROUND LUGS MUST BE HEAT SHRUNK AT WIRE/LUG CONNECTION

2 TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



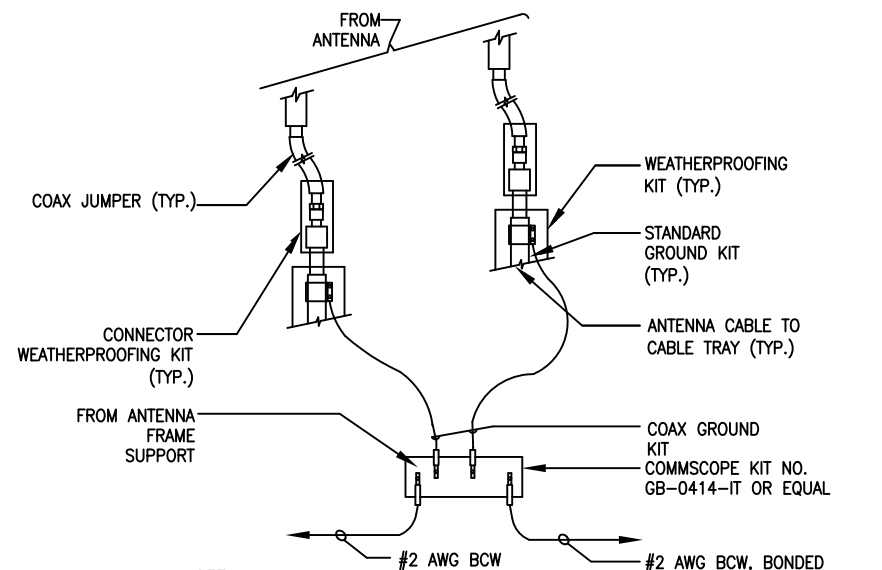
- NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
 2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

3 ANTENNA CABLE GROUNDING
SCALE: N.T.S.



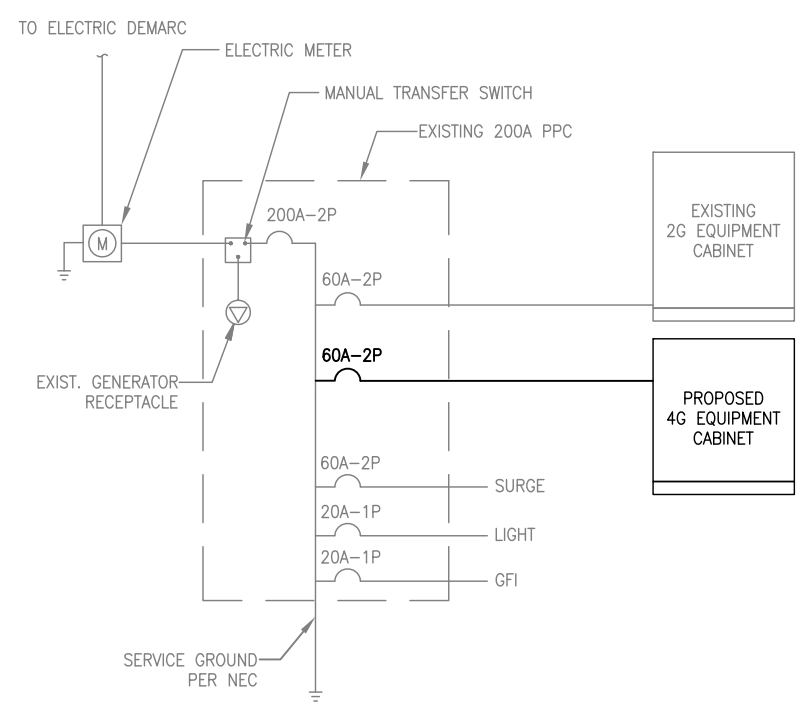
- Comments:
1. GSM and UMTS 1900 have same Azimuths and Tilts.
 2. UMTS AWS can have different tilts.
 3. Two hard lines will use for LMU to serve E911.
 4. AIR 21 LTE antenna will have a spare fiber jumper connected to optical port #2 to allow for future implementation of U 21 over fiber.

4 RAN DIAGRAM
SCALE: N.T.S.



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

5 GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.



6 ONE LINE POWER DIAGRAM
SCALE: N.T.S.

CONTRACTOR NOTES:
1. PROVIDE ALL CONDUIT & CONDUCTORS REQUIRED.



SITE NUMBER: CT11311G
SITE NAME: CT311/ OPTA PAWS PLACE
1294 PLEASANT VALLEY ROAD NORTH
GROTON, CT 06340

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	03/25/14	FINAL	SO	SB	MRC
0	03/20/14	CONSTRUCTION	SO	SB	MRC

SCALE: AS SHOWN DESIGNED BY: MRC DRAWN BY: SO

JOB NUMBER		DRAWING NUMBER		REV
CT11311G		G-1		1

T-MOBILE
GROUNDING, ONE-LINE DIAGRAM & DETAILS