



June 30, 2014

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

RE: Notice of Exempt Modification  
11 Francis J. Clarke Circle  
Bethel, CT 06801  
T-Mobile #: CTFF752A  
N 42° 21' 36.3"  
W -73° 25' 30.2"

Dear Mr. Martin and Members of the Siting Council:

On behalf of T-Mobile Northeast LLC, SBA Communications is submitting an exempt modification application to the Connecticut Siting Council for modification of existing equipment at a tower facility located at 11 Francis J. Clarke Circle, Bethel CT.

The 11 Francis J. Clarke Circle facility consists of a 158' MONOPOLE Tower owned and operated by SBA Towers, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile Northeast LLC 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.

T-Mobile Northeast LLC wishes 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 Sprint'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 Northeast LLC, respectfully submits that the 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 3807 with any questions you may have concerning this matter.

Thank you,



Peter Nute  
SBA Communications Corporation  
33 Boston Post Road West Suite 320  
Marlborough, MA 01752  
508-251-0720 x 3807 + T  
508-251-1755 + F  
[Pnute@sbsite.com](mailto:Pnute@sbsite.com)



**T-Mobile Northeast LLC  
Equipment Modification**

11 Francis J. Clarke Circle, Bethel CT  
Site number CTF752A

**Tower Owner:** SBA Towers, LLC

**Equipment Configuration:** MONOPOLE Tower

**Current and/or approved:**

- (3) Kathrein 800 10504
- (3) Kathrein 742 351
- (12) 1-5/8" Lines

**Planned Modifications:**

- (3) Ericsson AIR 21 B2A/B4P
- (3) Ericsson AIR 21 B4A/B2P
- (12) 1-5/8" 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 0.846% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 55.236% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.846%
AT&T	15.140%
Verizon Wireless	23.050%
Nextel	7.140%
Clearwire	0.760%
Sprint	5.810%
Sprint WiMAX	2.460%
Sprint MW	0.030%
Total Site MPE %	55.236%



June 30, 2014

Matt Knickerbocker  
First Selectman  
Town of Bethel  
Clifford J. Hurgin Municipal Center  
1 School Street  
Bethel, CT 06801

RE: Telecommunications Facility @ 11 Francis J. Clarke Circle, Bethel CT

Dear Mr. Knickerbocker,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile Northeast LLC 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 Sprint'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 3807.

Thank you,

Peter Nute  
SBA Communications Corporation  
33 Boston Post Road West Suite 320  
Marlborough, MA 01752  
508-251-0720 x 3807 + T  
508-251-1755 + F  
[Pnute@sbsite.com](mailto:Pnute@sbsite.com)

June 30, 2014

Costa Stergue  
562 Redding Road  
Redding CT 06896-1903

RE: Telecommunications Facility @ 11 Francis J. Clarke Circle, Bethel CT

Dear Mr. Stergue,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile Northeast LLC 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 Sprint'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 3807.

Thank you,



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

T-Mobile Existing Facility

Site ID: CTFF752A

SBA Bethel monopole  
11 Francis J Clarke Circle  
Bethel, CT 06801

**June 25, 2014**

**EBI Project Number: 62143619**

June 25, 2014

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

Re: Emissions Values for Site: **CTFF752A - SBA Bethel monopole**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 11 Francis J Clarke Circle, Bethel, 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 11 Francis J Clarke Circle, Bethel, 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 channels (1940.000 MHz—to 1950.000 MHz) were considered for each sector of the proposed installation.
- 2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
- 3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
- 4) 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.
- 5) 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.
- 6) 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.

- 7) The antenna mounting height centerline of the proposed antennas is **117 feet** above ground level (AGL).
- 8) 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 calculations were done with respect to uncontrolled / general public threshold limits.

Site ID	CTFF752A - SBA Bethel monopole
Site Address	11 Francis J Clarke Circle, Bethel, CT 06801
Site Type	Monopole

**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	117	111	None	0	0	48.326044	1.410072	0.14101%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	117	111	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	117	111	1-5/8"	0	0	24.163022	0.705036	0.07050%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	117	111	1-5/8"	0	0	24.163022	0.705036	0.07050%

Sector total Power Density Value: 0.282%

**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	117	111	None	0	0	48.326044	1.410072	0.14101%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	117	111	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	117	111	1-5/8"	0	0	24.163022	0.705036	0.07050%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	117	111	1-5/8"	0	0	24.163022	0.705036	0.07050%

Sector total Power Density Value: 0.282%

**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	117	111	None	0	0	48.326044	1.410072	0.14101%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	117	111	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	117	111	1-5/8"	0	0	24.163022	0.705036	0.07050%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	117	111	1-5/8"	0	0	24.163022	0.705036	0.07050%

Sector total Power Density Value: 0.282%

**Site Composite MPE %**

Carrier	MPE %
T-Mobile	0.846%
AT&T	15.140%
Verizon Wireless	23.050%
Nextel	7.140%
Clearwire	0.760%
Sprint	5.810%
Sprint WiMAX	2.460%
Sprint MW	0.030%
<b>Total Site MPE %</b>	<b>55.236%</b>

## 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 **0.846% (0.282% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously.

The anticipated composite MPE value for this site assuming all carriers present is **55.236%** of the allowable FCC established general public limit. 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 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.**

**155' Monopole Tower**

**SBA Site Name: North Bethel  
SBA Site ID: CT00248-S-06  
T-Mobile Site ID: CTFF752A**

FDH Project Number 1466BW1400

**Analysis Results**

Tower Components	87.5%	Sufficient
Foundation	87.6%	Sufficient

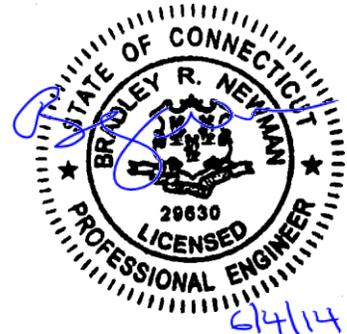
Prepared By:

Virginia Chriscoe  
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



June 4, 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 Bethel, 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*. Information pertaining to the existing/proposed antenna loading, current tower geometry, foundation dimensions, and member sizes was obtained from:

- Summit Manufacturing LLC. (Job No. 4071) original design drawings dated October 22, 1998
- Paul J. Ford and Company (Job No. 29200-1210) Pad and Pier Foundation design drawings dated August 17, 2000
- Jaworski Geotech, Inc. (Project No. C98342E) Geotechnical Evaluation dated December 5, 2002
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* 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 117 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* provided the **Recommendation** listed below is satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Paul J. Ford and Company Job No. 29200-1210), the foundation should have the necessary capacity to support the existing and proposed 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.

## Recommendation

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

1. The proposed feed lines should be installed outside the pole's shaft next to the existing coax, as shown in **Figure 1**.

## 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	Feedlines <sup>1</sup>	Carrier	Mount Elevation (ft)	Mount Type
157.4	(3) RFS APXVSP18-C-A20 (3) Alcatel Lucent 1900 MHz RRH (3) Alcatel Lucent 800 MHz RRH (3) Alcatel Lucent 800 MHz Filter (4) RFS ACU-A20-N RET (3) RFS APXVTM14-C-I20 (3) Alcatel Lucent TD-RRH8x20-25	(3) 1-1/4" (1) 1-1/4"	Sprint	155	(1) Low Profile Platform
147	(9) Decibel DB844H90-XY	(9) 1-1/4"	Nextel	147	(1) Low Profile Platform
137	(2) Antel LPA-80080/6CF (2) Antel LPA-80063/6CF (2) Antel BXA-70063/4CF (2) Antel LPA-80080/4CF (3) Antel BXA-171063-8BF-2 (1) Swedcom SLCP 2x6014F (6) RFS FD9R6004/2CL-3CL Diplexer (1) GPS	(12) 1-5/8" (1) 1/2"	Verizon	137	(1) Low Profile Platform
127	(3) Powerwave 7770.00 (3) Powerwave P65-16-XL-2 (6) Powerwave LGP21401 TMA (6) Ericsson RRUS-11 RRUs (1) Raycap DC6-48-60-18-8F Surge Arrestor	(9) 1-1/4" (1) Fiber (2) DC Power Cables	AT&T	127	(1) Low Profile Platform
117	(3) Kathrein 800 10504 (3) Kathrein 742 351	(12) 1-5/8" <sup>2</sup>	T-Mobile	117	(3) T-Arms

1. Feed lines installed inside the monopole shaft unless noted otherwise.

2. Currently, T-Mobile has (12) 1-5/8" coax installed outside the pole's shaft, double stacked as shown in Figure 1.

### Proposed Carrier Final Loading:

Antenna Elevation (ft)	Description	Feedlines	Carrier	Mount Elevation (ft)	Mount Type
117	(3) Ericsson AIR 21 B2A/B4P (3) Ericsson AIR 21 B4A/B2P	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	117	(3) T-Arms (Valmont P/N RMV12-3xx)

## 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	65 ksi
Base Plate	50 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 105% 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	155 - 120	Pole	TP26x16.5x0.1875	84.0	Pass
L2	120 - 89.5	Pole	TP33.91x24.7429x0.3125	85.4	Pass
L3	89.5 - 44	Pole	TP45.64x32.1306x0.375	84.2	Pass
L4	44 - 0	Pole	TP56.83x43.3286x0.375	87.5	Pass
		Anchor Bolts	(20) 2.25" Ø w/ BC = 64"	65.3	Pass
		Base Plate	64" Square PL x 2.75" Thick	74.5	Pass

\*Capacities include a 1/3 allowable stress increase due to wind per TIA/EIA-222-F standards.

**Table 4 - Maximum Base Reactions**

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	38 k	54 k
Shear	31 k	33 k
Moment	3,448 k-ft	3,938 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**

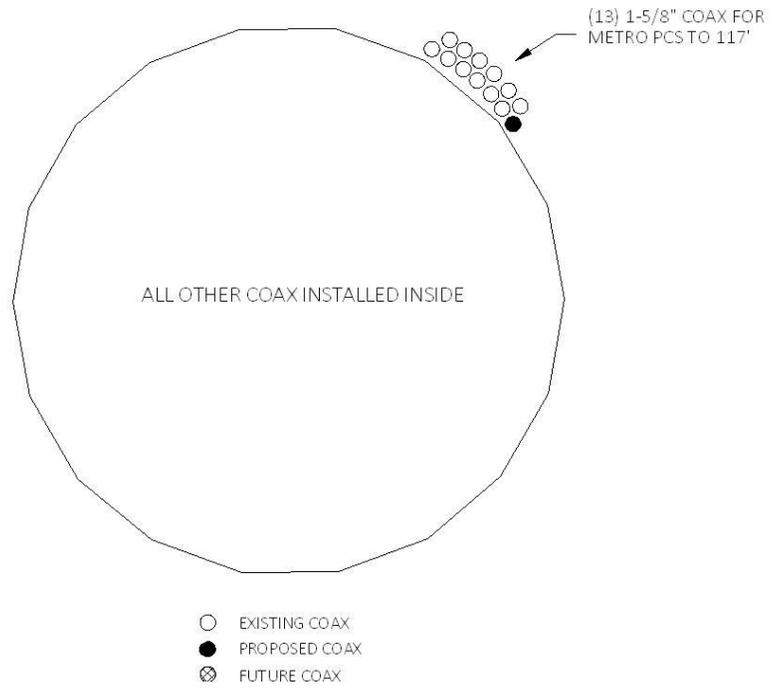
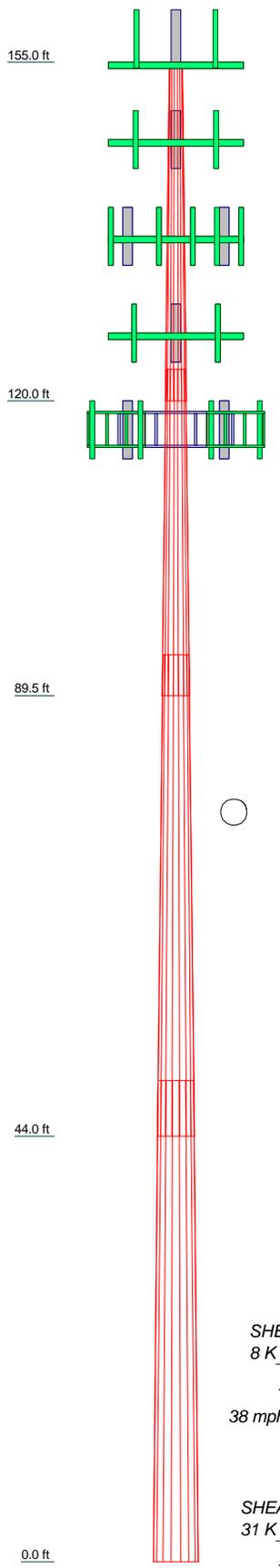


Figure 1- Coax Layout for T-Mobile at 117'

Section	1	2	3	4	
Length (ft)	35.00	33.75	49.75	49.75	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.3125	0.3750	0.3750	
Socket Length (ft)	3.25	4.25	5.75		
Top Dia (in)	16.5000	24.7429	32.1306	43.3286	
Bot Dia (in)	26.0000	33.9100	45.6400	56.8300	
Grade					A607-65
Weight (K)	1.5	3.3	7.8	10.0	22.6



**DESIGNED APPURTENANCE LOADING**

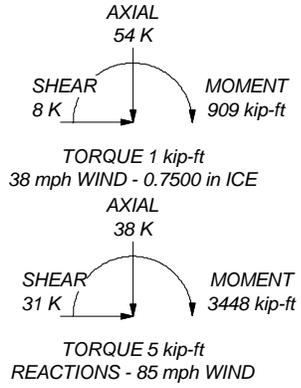
TYPE	ELEVATION	TYPE	ELEVATION
Low Profile Platform	155	(2) BXA-70063/4CF w/ Mount Pipe	137
APXVSP18-C-A20 w/Mount Pipe	155	(2) LPA-80080/4CF W/Mount Pipe	137
APXVSP18-C-A20 w/Mount Pipe	155	(2) BXA-171063-8BF-2	137
APXVSP18-C-A20 w/Mount Pipe	155	BXA-171063-8BF-2	137
1900 MHz RRH	155	SLCP 2x6014F w/ Mount Pipe	137
1900 MHz RRH	155	(2) FD9R6004/2CL-3CL Diplexer	137
1900 MHz RRH	155	(2) FD9R6004/2CL-3CL Diplexer	137
800 MHz RRH	155	(2) FD9R6004/2CL-3CL Diplexer	137
800 MHz RRH	155	Low Profile Platform	127
800 MHz RRH	155	7770.00 w/Mount Pipe	127
800 MHz Filter	155	7770.00 w/Mount Pipe	127
800 MHz Filter	155	7770.00 w/Mount Pipe	127
800 MHz Filter	155	7770.00 w/Mount Pipe	127
ACU-A20-N RET	155	P65-16-XL-2 w/Mount Pipe	127
ACU-A20-N RET	155	P65-16-XL-2 w/Mount Pipe	127
(2) ACU-A20-N RET	155	(2) LGP21401 TMA	127
APXVTM14-C-I20 w/ Mount Pipe	155	(2) LGP21401 TMA	127
APXVTM14-C-I20 w/ Mount Pipe	155	(2) LGP21401 TMA	127
APXVTM14-C-I20 w/ Mount Pipe	155	(2) RRUUS-11	127
TD-RRH8x20-25	155	(2) RRUUS-11	127
TD-RRH8x20-25	155	(2) RRUUS-11	127
TD-RRH8x20-25	155	DC6-48-60-18-8F Surge Arrestor	127
Low Profile Platform	147	(3) T-Arm Mounts (Valmont P/N RMV12-3xx)	117
(3) DB844H90-XY w/ Mount Pipe	147	AIR 21 B2A/B4P w/Mount Pipe	117
(3) DB844H90-XY w/ Mount Pipe	147	AIR 21 B2A/B4P w/Mount Pipe	117
(3) DB844H90-XY w/ Mount Pipe	147	AIR 21 B2A/B4P w/Mount Pipe	117
Low Profile Platform	137	AIR 21 B4A/B2P w/Mount Pipe	117
(2) LPA-80080/6CF w/ Mount Pipe	137	AIR 21 B4A/B2P w/Mount Pipe	117
(2) LPA-80063/6CF w/ Mount Pipe	137	AIR 21 B4A/B2P w/Mount Pipe	117
GPS	137	AIR 21 B4A/B2P w/Mount Pipe	117

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Fairfield 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: 87.5%



 <b>FDH Engineering, Inc.</b> 6521 Meridian Drive, Suite 107 Raleigh, North Carolina 27616 Tower Analysis Phone: 9197551012 FAX: 9197551031	<b>Job: North Bethel, CT00248-S-06</b>		
	Project: <b>1466BW1400</b>		
	Client: SBA	Drawn by: vChriscoe	App'd:
	Code: TIA/EIA-222-F	Date: 06/04/14	Scale: NTS
Path:		Dwg No. E-1	

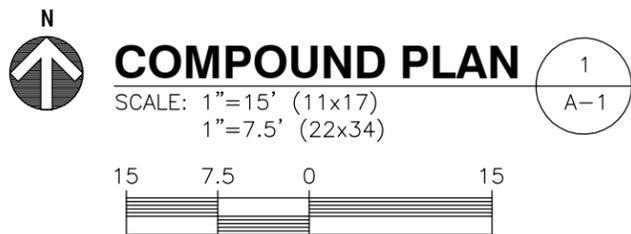
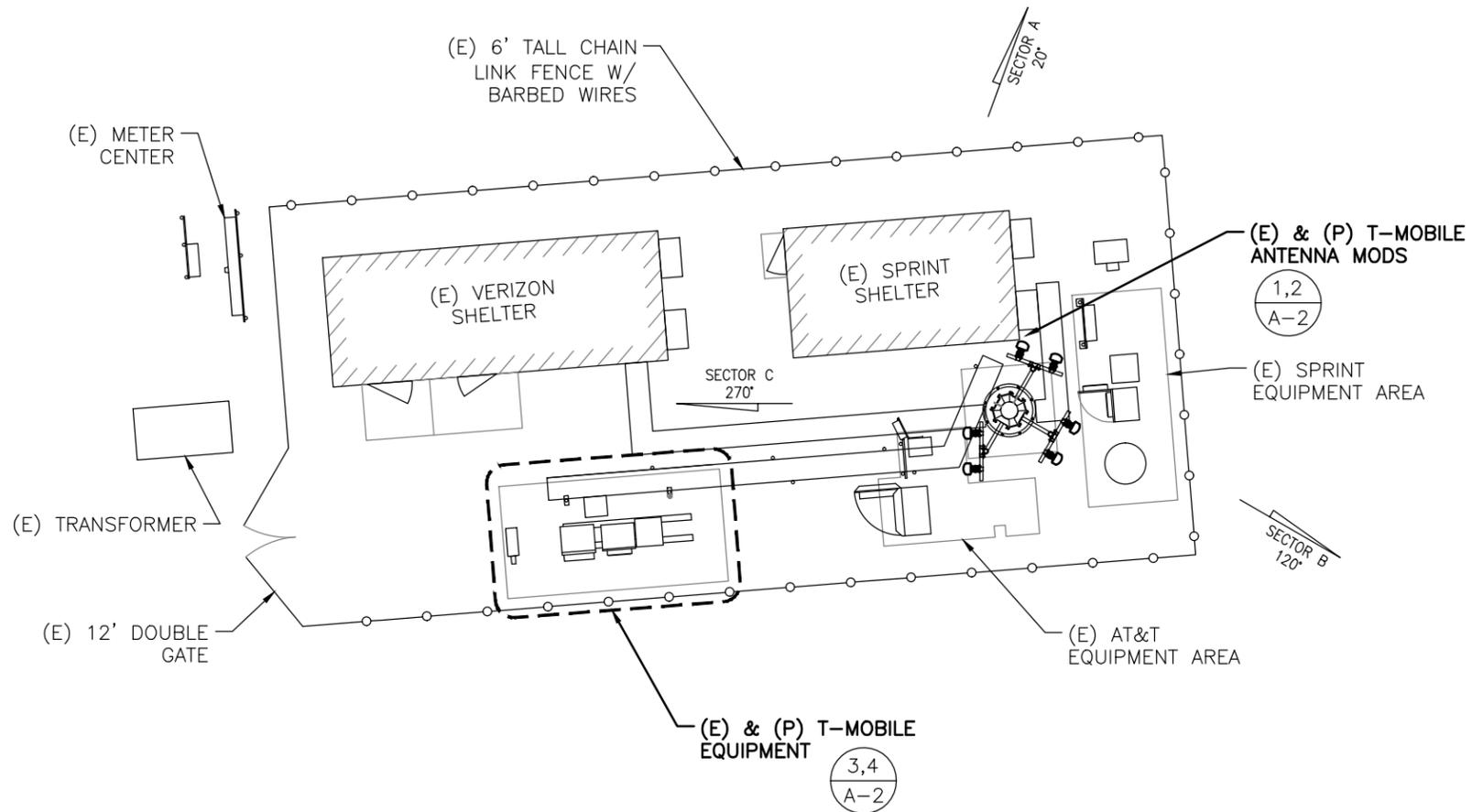


IMAGE SOURCE: PROTERRA 5/30/14

- (E) ANTENNAS, TYP. (OTHERS)

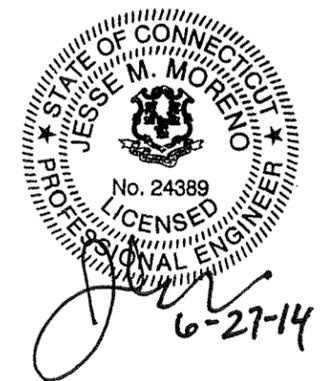
☉ OF T-MOBILE ANTENNAS  
ELEV.= 117'± A.G.L. (T-MOBILE)\*

(E) 158'± TALL  
MONOPOLE

NOTE:  
GROUND EQUIPMENT NOT  
SHOWN FOR CLARITY

\* NOTE:  
ANTENNA ELEVATION BASED ON  
CLIENT-PROVIDED INFORMATION

**EXISTING ELEVATION** (2 / A-1)  
SCALE: N.T.S.



**ProTerra**  
DESIGN GROUP, LLC  
1 Short Street  
Suite 3  
Northampton, MA 01060  
Ph: (413)320-4918  
Fax: (413)320-4917

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

**SITE NUMBER: CTFF752A**  
**SITE NAME: SBA BETHEL MONOPOLE**  
11 FRANCIS J. CLARKE CIRCLE  
BETHEL, CT 06801

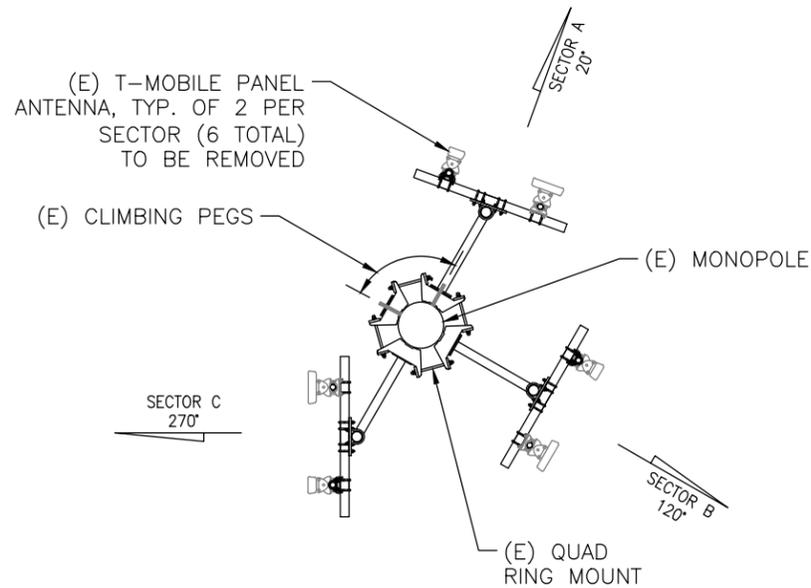
**T-Mobile**  
T-MOBILE NORTHEAST LLC  
15 COMMERCE WAY, SUITE B  
NORTON, MA 02766

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	6/27/14	CONSTRUCTION FINAL	TBD	TEJ	JMM
0	6/12/14	CONSTRUCTION	TBD	TEJ	JMM
SCALE: AS SHOWN    DESIGNED BY: JMM/TEJ    DRAWN BY: TBD					

**T-MOBILE**

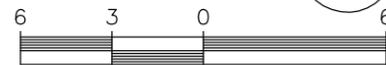
COMPOUND PLAN AND ELEVATION

JOB NUMBER	SHEET	REV
#13-062	A-1	0



**EXISTING ANTENNA PLAN**

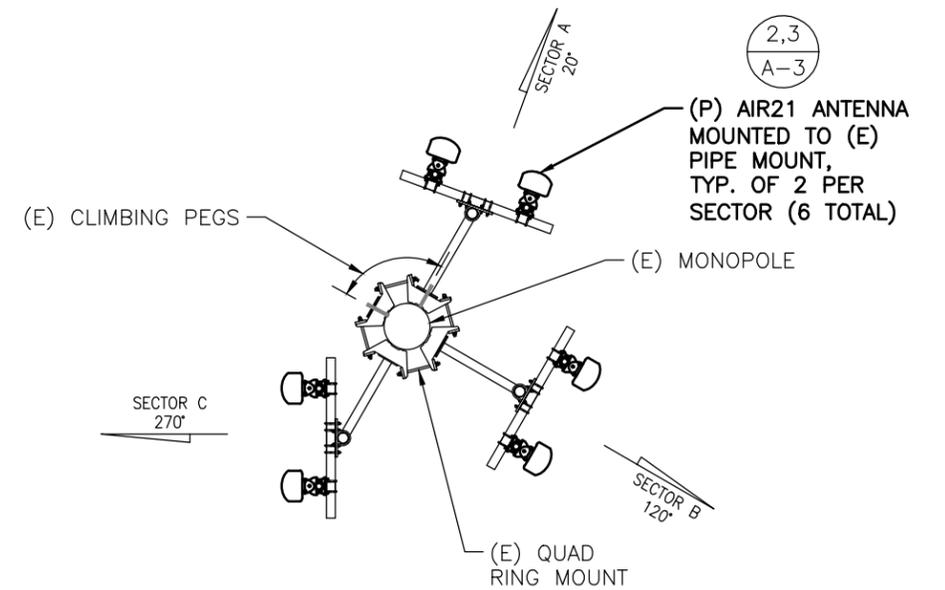
SCALE: 1"=6' (11x17)  
1"=3' (22x34)



EXISTING ANTENNA SCHEDULE			
SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	RFS	APXV18-206517S	6.8x3.15x72.0
SECTOR B:	RFS	APXV18-206517S	6.8x3.1x72.0
SECTOR C:	RFS	APXV18-206517S	6.8x3.15x72.0

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



**PROPOSED ANTENNA PLAN**

SCALE: 1"=6' (11x17)  
1"=3' (22x34)



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

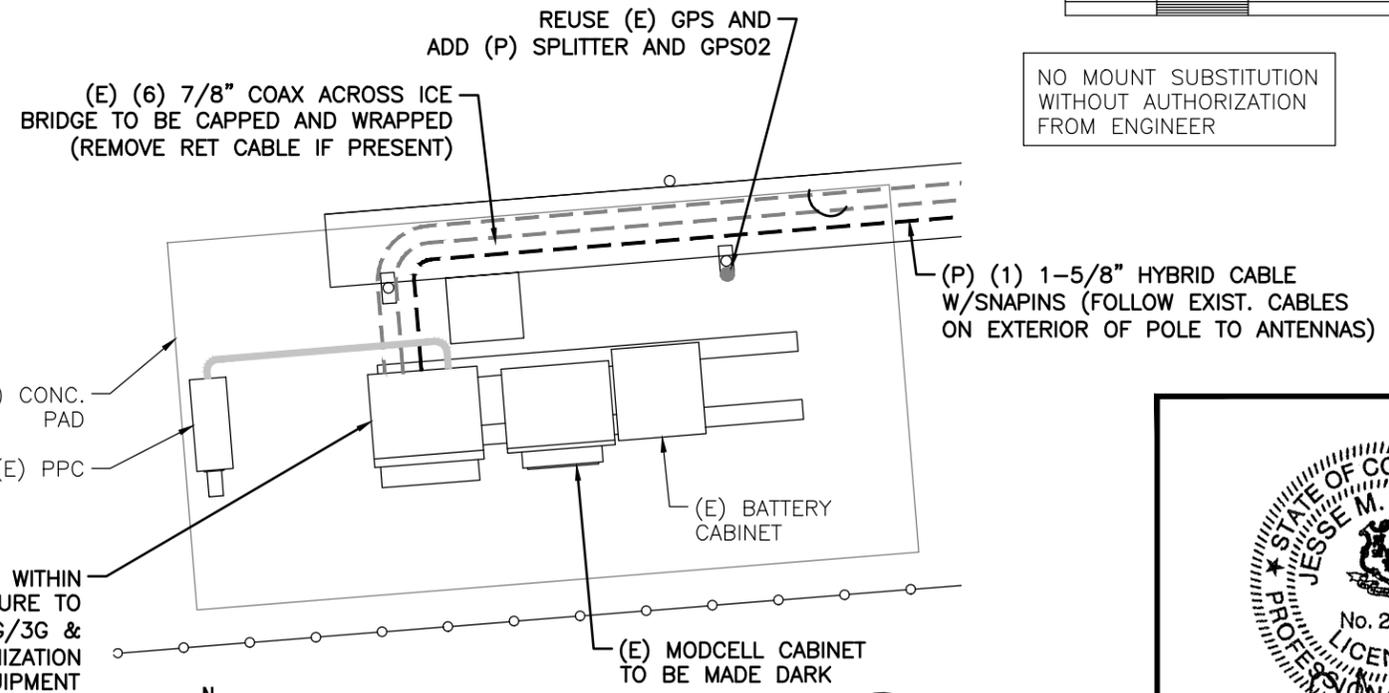
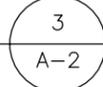
REUSE (E) GPS ATTACHED TO ICE BRIDGE POST AND ADD (P) SPLITTER AND GPS02



IMAGE SOURCE: PROTERRA 6/01/14

**EXISTING EQUIPMENT AREA**

SCALE: N.T.S.

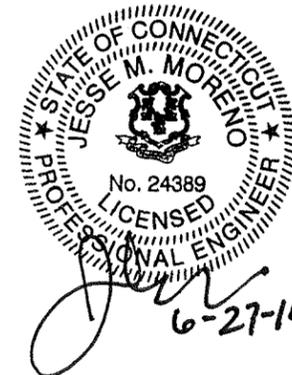


**PROPOSED EQUIPMENT AREA**

SCALE: 1"=5' (11x17)  
1"=2.5' (22x34)



NO MOUNT SUBSTITUTION WITHOUT AUTHORIZATION FROM ENGINEER



1	6/27/14	CONSTRUCTION FINAL	TBD	TEJ	JMM
0	6/12/14	CONSTRUCTION	TBD	TEJ	JMM
REVISIONS					
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: JMM/TEJ	DRAWN BY: TBD	