COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

August 27, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: EM-T-MOBILE-004-130528
T-Mobile Site ID CT11380C
10 Redwood Lane, Avon, CT
Notice of Compliance with Conditions and Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") notice of exempt modification on June 26, 2013.

The Council imposed the following condition in its acknowledgment:

- The proposed coax lines and accessory equipment shall be installed in accordance with the recommendation made in the Structural Analysis Report prepared by FDH Engineering dated April 29, 2013 and stamped by Christopher Murphy.

- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendation of the structural analysis.

T-Mobile has complied with each of these conditions as evidenced by the PE Close Out Letter, dated August 22, 2014, attached hereto.

In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of January 23, 2014.

Please don't hesitate to contact me with any questions.

Sincerely,

Rachel A. Schwartzman, Esq.

cc: Samuel Simons, T-Mobile
Mark Richard, T-Mobile
Alex Giannaras, HPC Wireless
Julie Kohler, Esq.

ADVANCED
ENGINEERING GROUP, P.C.

500 North
Broadway East
Providence, RI 02914
Phone: 401-354-2403
Fax: 401-633-6354

August 22, 2014

Mr. Samuel Simons
Engineering Development - Connecticut
T-Mobile
35 Griffin Road South
Bloomfield, CT 06002
sam.simons@t-mobile.com

RE: PE Close Out Letter
EM-T-MOBILE-004-130528 / T-Mobile Site ID #CT11380C

Mr. Simons:

Advanced Engineering Group, P.C. has completed its post-construction review of the above-referenced site to determine whether T-Mobile complied with conditions imposed by the Connecticut Siting Council's (the "Council") acknowledgment letter, dated 6/26/13 ("the Acknowledgment Letter"). Our compliance review included the following: the Acknowledgment Letter, the approved tower Structural Analysis report by FDH dated 4/29/13 (the "Structural Analysis"), and the approved design plans by this office entitled "CT11380C, SBA Avon / Rt. 177", Rev 1, dated 5/7/13.

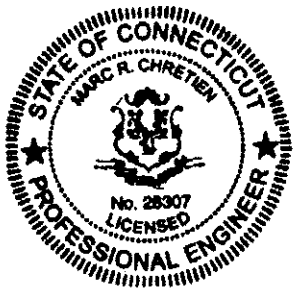
On behalf of Advanced Engineering Group, P.C., based on my review of the information, I, Marc Chretien, licensed professional engineer number 28307, certify that to the best of my knowledge, T-Mobile's work complied with the recommendations of the approved Structural Analysis. Specifically, as required by the Acknowledgment Letter, T-Mobile's work complied with the following structural conditions imposed by the Council:

- The coax lines and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated, April 29, 2013 and stamped by Christopher Murphy.

Should you have any questions regarding the foregoing review, please contact me directly at 401-354-2403 or email to mchretien@aegpc.net.

Very truly yours

Marc R. Chretien, P.E.
Advanced Engineering Group. P.C.



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

June 26, 2013

Rick Woods
SBA Communications Corporation
33 Boston Post Road West
Suite 320
Marlborough, MA 01752

RE: **EM-T-MOBILE-004-130528** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 10 Redwood Lane, Avon, Connecticut.

Dear Mr. Woods:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The coax lines and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated April 29, 2013 and stamped by Christopher Murphy;
- Within 45 days following completion of the antenna installation, T-Mobile shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated May 23, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/jb

c: The Honorable Mark W. Zacchio, Chairman, Town of Avon
Brandon Robertson, Town Manager, Town of Avon
Steven V. Kushner, Town Planner, Town of Avon

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

May 29, 2013

The Honorable Mark W. Zacchio
Chairman Town Council
Town of Avon
60 West Main Street
Avon, CT 06001-3743

RE: **EM-T-MOBILE-004-130528** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 10 Redwood Lane, Avon, Connecticut.

Dear Chairman Zacchio:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by June 12, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

Melanie Bachman
Acting Executive Director

MB/jb

c: Brandon Robertson, Town Manager, Town of Avon
Steven V. Kushner, Town Planner, Town of Avon

EM-T-MOBILE-004-130528

May 23, 2013

ORIGINAL

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

RE: Notice of Exempt Modification
10 Redwood Lane
Avon, CT 06001
N 41° 46' 20"
W 72° 52' 48"

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 10 Redwood Lane, Avon, CT.

The 10 Redwood Lane facility consists of a 105' 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 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

ORIGINAL

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) 614-0389 with any questions you may have concerning this matter.

Thank you,

Rick Woods
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-1691 x 319 + T
508-251-1755 + F
508-614-0389 + C
rwoods@sbasite.com

T-Mobile

Equipment Modification

10 Redwood Lane, Avon, CT
Site number CT11380C

Tower Owner: SBA Towers LLC

Equipment Configuration: Monopole Tower

Current and/or approved:

- (3) EMS RR901702DP
- (3) RFS APX16PV-16PVL-C
- (6) Allen FE15501P77-75 TMAs
- (6) Andrew ETW200VA12UB TMAs
- (12) 1-5/8" Coax

Planned Modifications:

- (3) Ericsson AIR 21 B2A/B4P
- (3) Ericsson AIR 21 B4A/B2P
- (3) Ericsson KRY 112 144 TMAs
- (12) 1-5/8" coax
- (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 1.042% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 86.882% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.042%
AT&T	37.560%
MetroPCS	20.500%
Clearwire	2.240%
Sprint	14.760%
Farm. Woods	10.780%
Total Site MPE %	86.882%

May 23, 2013

Mr. Brandon Robertson
Town Manager
Town of Avon
60 West Main Street
Avon, CT 06001

RE: Telecommunications Facility @ 10 Redwood Lane

Dear Mr. Robertson,

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) 614-0389.

Thank you,

Rick Woods
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-1691 x 319 + T
508-251-1755 + F
508-614-0389 + C
rwoods@sbasite.com

FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

Structural Analysis for SBA Network Services, Inc.

105 ft Monopole

SBA Site Name: Avon
SBA Site ID: CT01498-S-01
T-Mobile Site ID: CT11380C

FDH Project Number 1326671400

Analysis Results

Tower Components	96.5%	Sufficient
Foundation	56.0%	Sufficient

Prepared By:

Joe W. Fulk, EI
Project Engineer

Reviewed By:

Christopher M. Murphy, PE
President
CT PE License No. 25842

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

April 29, 2013

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

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

- Pirod, Inc. (Eng. File No. A-117586) original design drawings dated September 26, 2000
- SBA Network Services Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CSBC* is 80 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the current and proposed antennas from T-Mobile at 106 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CSBC* provided the **Recommendations** below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Pirod Eng. File No. A-117586), 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.

Recommendations

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

1. The proposed coax should be installed inside the pole 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 this 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
116	(1) 20' Omni	(1) 7/8"	Farmington Woods	106	(1) Low Profile Platform
106	(3) EMS RR901702DP (3) RFS APX16PV-16PVL-C (6) Allen FE15501P77-75 TMAs (6) Andrew ETW200VA12UB TMAs	(12) 1-5/8"	T-Mobile		
98	(6) Ericsson RRUS-11 RRUs (1) Raycap DC2-48-60-18-8F Surge Arrestor	12) 1-5/8" (1) 3" (1) 10mm Fiber	AT&T	98	(3) Standoff Arms
97	(3) KMW AM-X-CD-16-65-00T-RET (3) Kathrein 800-10121 (6) KMW AM-X-CD-16-65-00T-RET (6) Powerwave LGP 21401 TMAs (6) Kathrein 860-10035 RETs (6) Kathrein 782-10250 Diplexers			97	(1) Low Profile Platform
91	(3) Andrew VHLP2.5 Dishes (3) Samsung RRU Radios (3) Horizon DUO Radio	(6) 5/16" (3) 1/2"	Clearwire	87	(1) Low Profile Platform
87	(3) RFS APXVSPP18-C-A20 (3) ALU 1900 MHz RRUs (3) ALU 800 MHz RRUs (3) ALU 800 MHz Filters (4) RFS ACU-A20-N RETs	(3) 1-1/4"	Sprint		
77[2]	(6) Kathrein 742-213	(6) 1-5/8"	Pocket	77	(1) Low Profile Platform (assumed)
75	(1) GPS	(1) 1/2"	Sprint	75	Standoff

1. The existing coax is located inside the pole's shaft, unless otherwise noted.
2. Pocket currently has (6) 1-5/8" coax installed outside the monopole shaft in a single row.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
116	(1) 20' Omni	(1) 7/8"	Farmington Woods	106	(1) Low Profile Platform
106	(3) Ericsson AIR 21 B2A/B4P (3) Ericsson AIR 21 B4A/B2P (3) Ericsson KRY 112 144 TMAs	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile		

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	42 ksi
Flange Bolts	92 ksi
Flange Plate	36 ksi & 58 ksi
Base Plate	36 ksi
Anchor Bolts	105 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. **Table 5** displays the maximum antenna rotations at service wind speeds.

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	105 - 80	Pole	P36x3/8	19.1	Pass
		Flange Bolts	(28) 1" ø Bolts on a 39" BC	16.1	Pass
		Flange Plate	41.25"Ø x 1.25" thick	21.2	Pass
L2	80 - 60	Pole	P42x3/8	35.6	Pass
		Flange Bolts	(32) 1" ø Bolts on a 45" BC	30.7	Pass
		Flange Plate	47.25"Ø x 1.25" thick	39.2	Pass
L3	60 - 40	Pole	P48x3/8	47.0	Pass
		Flange Bolts	(36) 1" ø Bolts on a 51" BC	40.7	Pass
		Flange Plate	53.25"Ø x 1.25" thick	51.4	Pass
L4	40 - 20	Pole	P54x3/8	54.9	Pass
		Flange Bolts	(48) 1" ø Bolts on a 57" BC	39.5	Pass
		Flange Plate	59.25"Ø x 1.25" thick	59.7	Pass
L5	20 - 0	Pole	P60x3/8	60.7	Pass
		Anchor Bolts	(48) 1" Bolts on a 63" BC	42.6	Pass
		Base Plate	1" thick x 66.125" round	96.5	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 *(TIA/EIA-222-F)*
Axial	31 k	41 k
Shear	19 k	31 k
Moment	1,430 k-ft	2,555 k-ft

Table 5 – Maximum Antenna Rotations at Service Wind Speeds

Centerline Elevation (ft)	Antenna	Tilt (deg)*	Twist (deg)*
91	(3) Andrew VHLP2.5 Dishes	0.3400	0.0010

*Tilt and Twist values to be reviewed by the carrier.

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

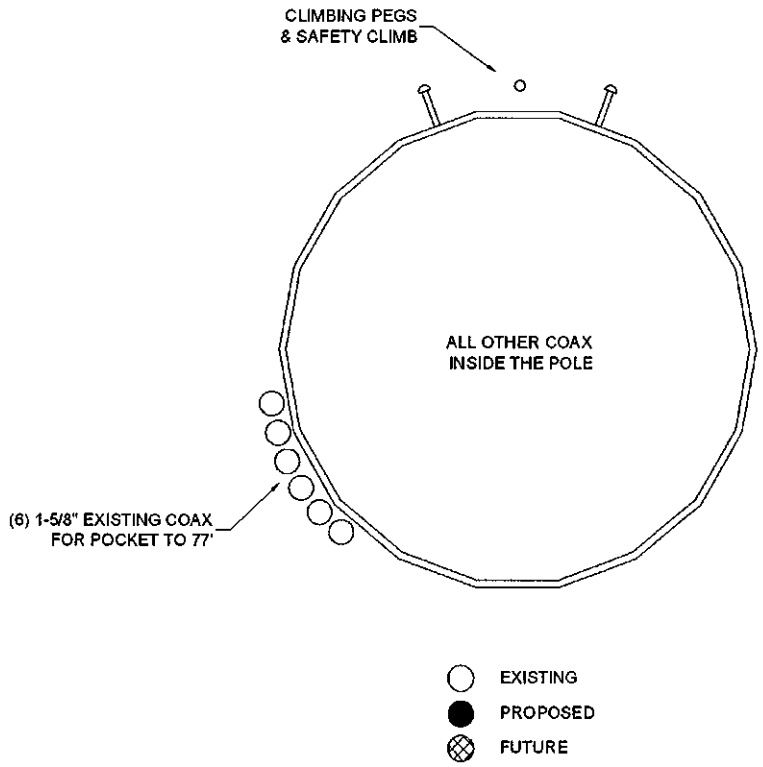
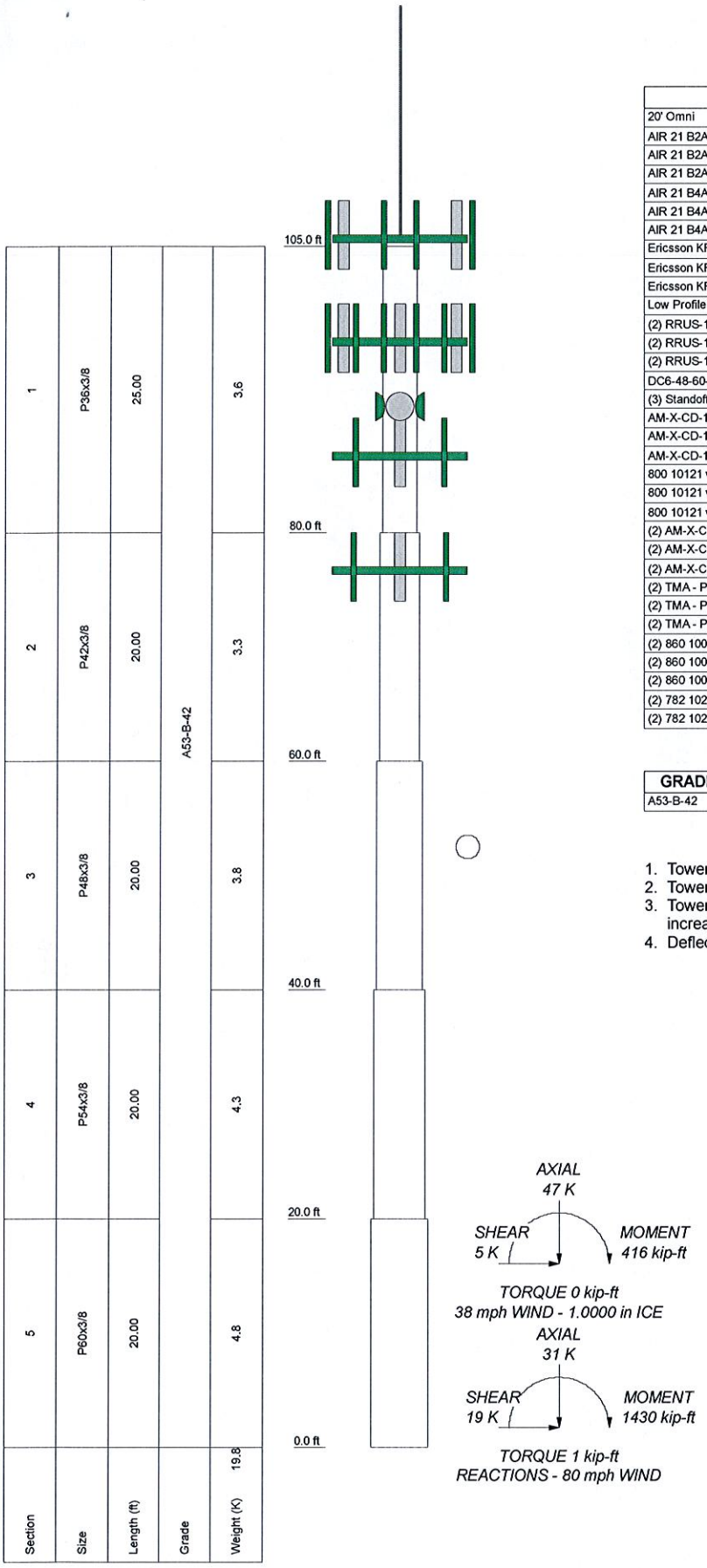


Figure 1 – Assumed Coax Layout



Section	Size	Length (ft)	Grade	Weight (K)
1	P36x3/8	25.00	A53-B-42	3.6
2	P42x3/8	20.00		3.3
3	P48x3/8	20.00		3.8
4	P54x3/8	20.00		4.3
5	P60x3/8	20.00		4.8
				19.8

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20' Omni	106	(2) 782 10250 Combiner	97
AIR 21 B2A/B4P w/Mount Pipe	106	Low Profile Platform	97
AIR 21 B2A/B4P w/Mount Pipe	106	1900 MHz RRH	87
AIR 21 B2A/B4P w/Mount Pipe	106	800 MHz RRH	87
AIR 21 B4A/B2P w/Mount Pipe	106	800 MHz RRH	87
AIR 21 B4A/B2P w/Mount Pipe	106	800 MHz RRH	87
AIR 21 B4A/B2P w/Mount Pipe	106	800 MHz Filter	87
Ericsson KRY 112 144	106	800 MHz Filter	87
Ericsson KRY 112 144	106	800 MHz Filter	87
Ericsson KRY 112 144	106	(2) ACU-A20-N RET	87
Low Profile Platform	106	ACU-A20-N RET	87
(2) RRUS-11	98	ACU-A20-N RET	87
(2) RRUS-11	98	Dragonwave Horizon Duo ODU	87
(2) RRUS-11	98	Dragonwave Horizon Duo ODU	87
DC6-48-60-18-8F Surge Arrestor	98	Dragonwave Horizon Duo ODU	87
(3) Standoffs	98	Samsung RRU	87
AM-X-CD-16-65-00T w/ Mount Pipe	97	Samsung RRU	87
AM-X-CD-16-65-00T w/ Mount Pipe	97	APXVSPP18-C-A20 w/Mount Pipe	87
AM-X-CD-16-65-00T w/ Mount Pipe	97	APXVSPP18-C-A20 w/Mount Pipe	87
800 10121 w/ Mount Pipe	97	APXVSPP18-C-A20 w/Mount Pipe	87
800 10121 w/ Mount Pipe	97	Samsung RRU	87
800 10121 w/ Mount Pipe	97	Low Profile Platform	87
(2) AM-X-CD-16-65-00T w/ Mount Pipe	97	1900 MHz RRH	87
(2) AM-X-CD-16-65-00T w/ Mount Pipe	97	1900 MHz RRH	87
(2) AM-X-CD-16-65-00T w/ Mount Pipe	97	VHLP2.5	87
(2) TMA - Powerwave LGP21401	97	VHLP2.5	87
(2) TMA - Powerwave LGP21401	97	VHLP2.5	87
(2) TMA - Powerwave LGP21401	97	(2) Kathrein 742-213 w/ Mount Pipe	77
(2) 860 10025	97	(2) Kathrein 742-213 w/ Mount Pipe	77
(2) 860 10025	97	(2) Kathrein 742-213 w/ Mount Pipe	77
(2) 860 10025	97	Low Profile Platform	77
(2) 782 10250 Combiner	97	Side Mount Standoff (1)	75
(2) 782 10250 Combiner	97	GPS	75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

FDH Engineering, Inc.
6521 Meridian Drive
Raleigh, NC 27616
Phone: 919-755-1012
FAX: 919-755-1031
Tower Analysis

Job: Avon, CT01498-S-01			
Project: 1326671400			
Client: SBA Network Services, Inc	Drawn by: Joe Fulk	App'd:	
Code: TIA/EIA-222-F	Date: 04/29/13	Scale: NTS	
Path:		Dwg No. E-1	

EBI CONSULTING
www.ebiconsulting.com

21 B Street
Burlington, MA 01803
Tel: (781) 273.2500

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

T-Mobile Existing Facility

Site ID: CT11380C

Avon / Route 177
10 Redwood Lane
Avon, CT 06001

May 22, 2013

EBI Project Number: 62136237

EBI CONSULTING
www.ebiconsulting.com

21 B Street
Burlington, MA 01803
Tel: (781) 273.2500

May 22, 2013

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

Re: Emissions Values for Site: **CT11380C - Avon / Route 177**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 10 Redwood Lane, Avon, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 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 (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS band is 1000 μW/cm2. 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.

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May 22, 2013

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

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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 10 Redwood Lane, Avon, 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 (1935.000 MHz—to 1945.000 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

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7) The antenna mounting height centerline of the proposed antennas is **106 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11380C - Avon / Route 177
Site Addresss	10 Redwood Lane, Avon, CT 06001
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	106	100	None	0	0	48.326044	1.73735	0.17373%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	106	100	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	106	100	1-5/8"	0	0	24.163022	0.868675	0.08687%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	106	100	1-5/8"	0	0	24.163022	0.868675	0.08687%
														Sector total Power Density Value:		0.347%	

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	106	100	None	0	0	48.326044	1.73735	0.17373%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	106	100	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	106	100	1-5/8"	0	0	24.163022	0.868675	0.08687%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	106	100	1-5/8"	0	0	24.163022	0.868675	0.08687%
														Sector total Power Density Value:		0.347%	

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	106	100	None	0	0	48.326044	1.73735	0.17373%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	106	100	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	106	100	1-5/8"	0	0	24.163022	0.868675	0.08687%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	106	100	1-5/8"	0	0	24.163022	0.868675	0.08687%
														Sector total Power Density Value:		0.347%	

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.042%
AT&T	37.560%
MetroPCS	20.500%
Clearwire	2.240%
Sprint	14.760%
Farm. Woods	10.780%
Total Site MPE %	**86.882%**

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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 **1.042% (0.347% 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 **86.882%** 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

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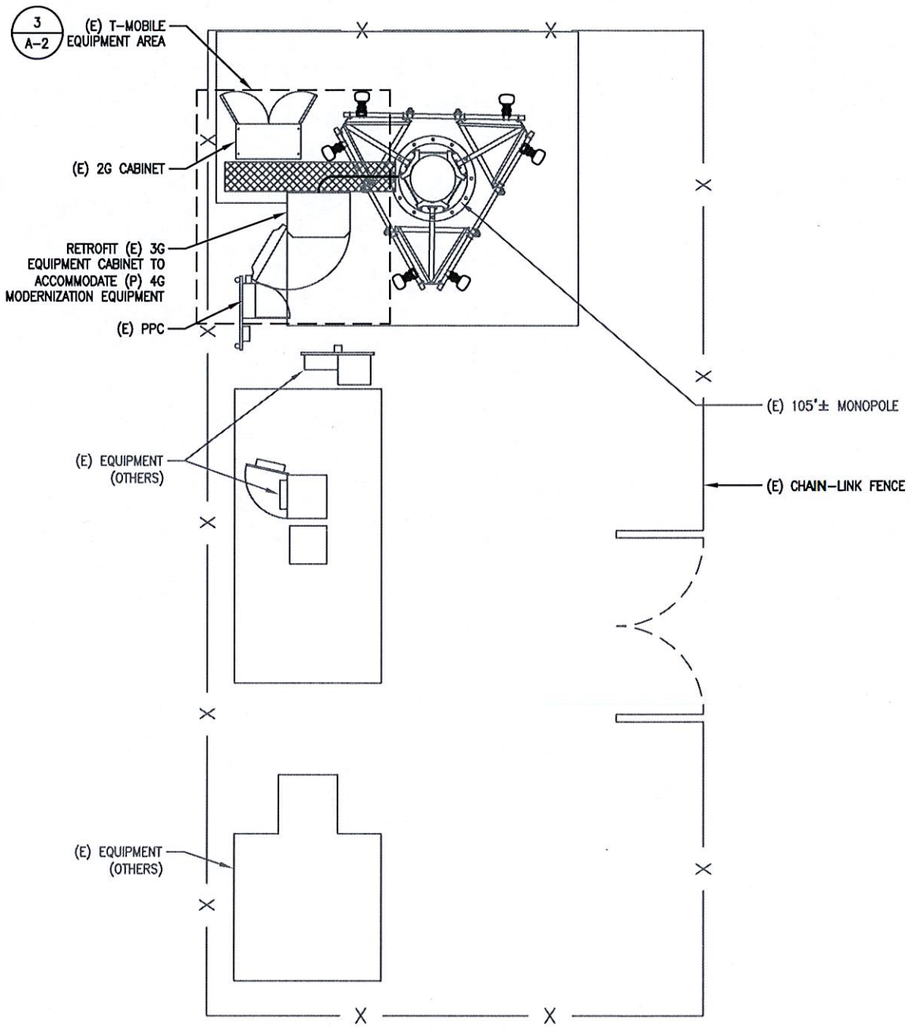
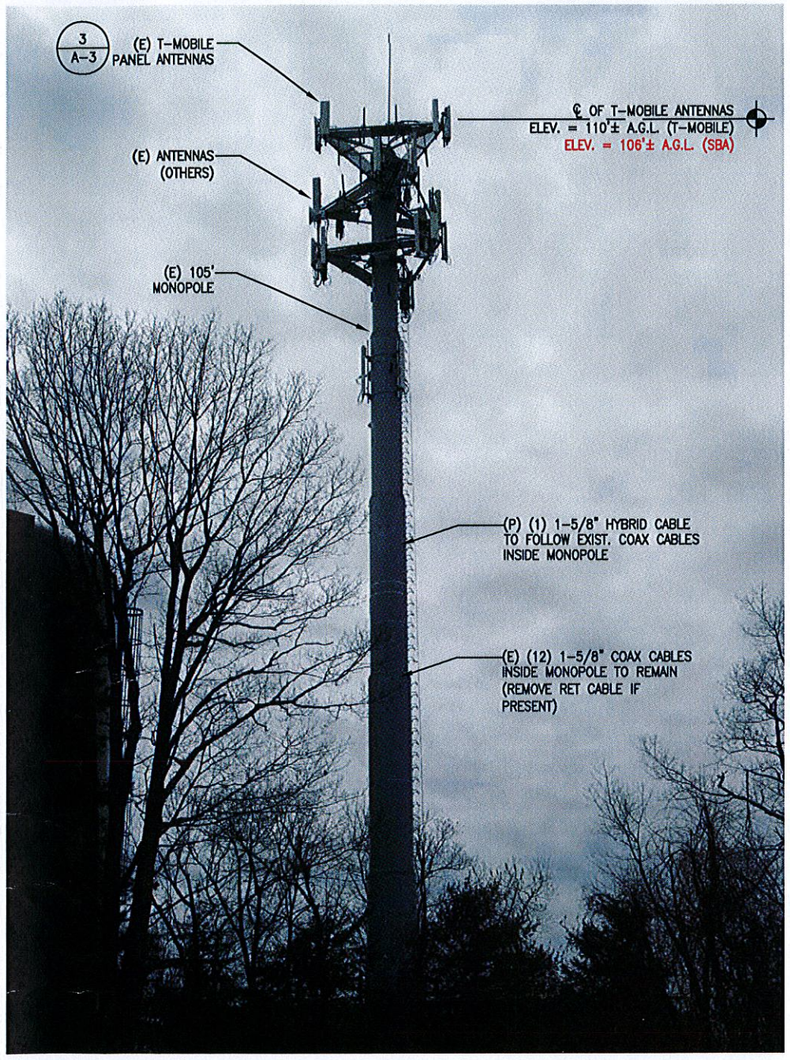


1 A-1 **COMPOUND PLAN**

SCALE: 1"=10'-0"

0' 5' 10' 20'

NOTE:
ANTENNA ELEVATION BASED ON CLIENT-PROVIDED INFORMATION



2 A-1 **ELEVATION**

SCALE: N.T.S.

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

STATE OF CONNECTICUT
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SBA COMMUNICATIONS CORPORATION
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752
PHONE: 508-366-5505

SITE NUMBER: CT11380C
SITE NAME: SBA AVON RT 177

10 REDWOOD LANE
AVON, CT 06001
HARTFORD COUNTY

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

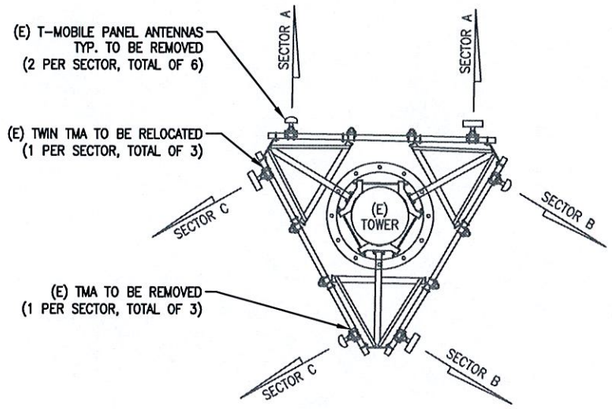
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/07/13	CONSTRUCTION FINAL	BDJ	MRC	MRC
0	04/22/13	CONSTRUCTION	MER	MRC	MRC

SCALE: AS SHOWN | DESIGNED BY: MRC | DRAWN BY: MER

T-MOBILE

COMPOUND PLAN & ELEVATION

JOB NUMBER	DRAWING NUMBER	REV
CT11380C	A-1	1



1 / A-2 **EXISTING ANTENNA PLAN**
SCALE: 1/8"=1'-0"
0' 4'-0" 8'-0"

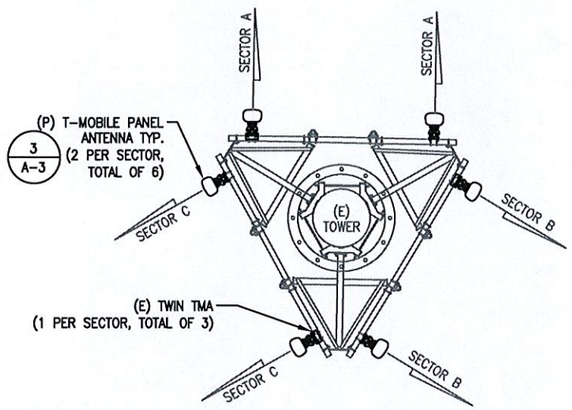
EXISTING ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	ANDREW	RR90-17-02DP	8.0x2.8x56.0
	RFS	APX16DWV-16DWVS-A20	13x3.15x55.9
SECTOR B:	ANDREW	RR90-17-02DP	8.0x2.8x56.0
	RFS	APX16DWV-16DWVS-A20	13x3.15x55.9
SECTOR C:	ANDREW	RR90-17-02DP	8.0x2.8x56.0
	RFS	APX16DWV-16DWVS-A20	13x3.15x55.9

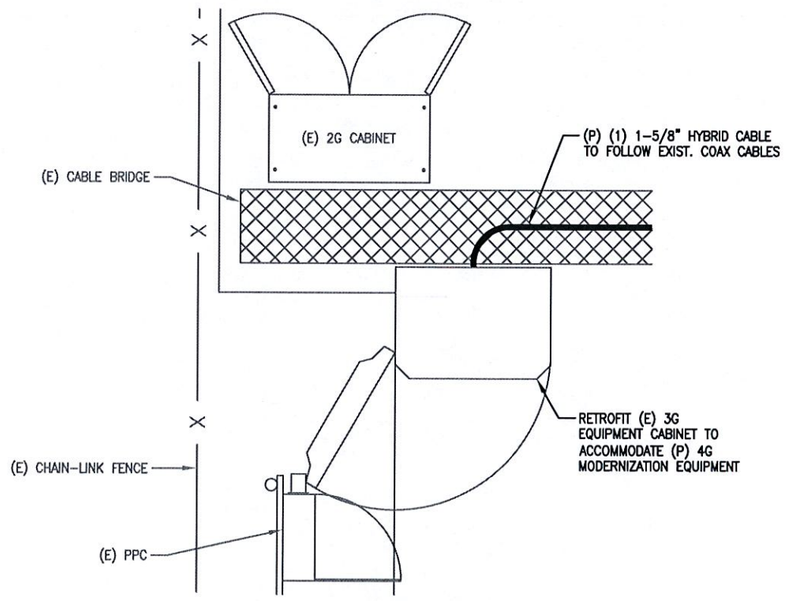
PROPOSED ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
SECTOR A:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B2A/B4P	12x8x56
SECTOR B:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B2A/B4P	12x8x56
SECTOR C:	ERICSSON	AIR21 B2A/B4P	12x8x56
	ERICSSON	AIR21 B2A/B4P	12x8x56

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



2 / A-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/8"=1'-0"
0' 4'-0" 8'-0"



3 / A-2 **PROPOSED EQUIPMENT PLAN**
SCALE: 1/4"=1'-0"
0' 2'-0" 4'-0" 8'-0"

4 / A-2 **EXISTING EQUIPMENT AREA**
SCALE: N.T.S.

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SCALE: AS SHOWN | DESIGNED BY: MRC | DRAWN BY: MER

T-MOBILE

PLANS AND ANTENNA SCHEDULES

JOB NUMBER	DRAWING NUMBER	REV
CT11380C	A-2	1