

**JULIE D. KOHLER**

PLEASE REPLY TO: Bridgeport  
WRITER'S DIRECT DIAL: (203) 337-4157  
E-Mail Address: jkohler@cohenandwolf.com

November 18, 2014

Attorney Melanie Bachman  
Acting Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

**Re: Notice of Exempt Modification  
AT&T Towers/T-Mobile co-location  
Site ID CT11403A  
Andrews Road, Wolcott**

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, AT&T Towers owns the existing lattice telecommunications tower and related facility at Andrews Road, Wolcott Connecticut (latitude 41- 35 -40.73/ longitude -73-22-28.7). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in Wolcott ("Wolcott Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, Thomas G. Dunn. AT&T is also the property owner.

The existing Wolcott Facility consists of an 80 foot tall lattice structure.<sup>1</sup> T-Mobile plans to add three (3) antenna and three (3) RRUs (remote radio units) on a proposed pipe mount with existing tie backs at a centerline of 77 feet. T-Mobile will also relocate three (3) other antenna to proposed mounts with existing tie backs at the same centerline. (See the plans revised to November 7, 2014 attached hereto as Exhibit A). The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated October 29, 2014 and attached hereto as Exhibit B.

The planned modifications to the Wolcott Facility fall squarely within those activities

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<sup>1</sup> The online CSC database does not reflect a Docket or Petition for this Facility. T-Mobile's last modification on the Facility is captioned EM-T-MOBILE-166-130726.

November 18, 2014  
Site ID CT11403A  
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explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1 . The proposed modification will not increase the height of the tower. T-Mobile's proposed antennas will be installed at the 77 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2 . The installation of the T-Mobile replacement equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound area.

3 . The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4 . The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated November 6, 2014 T-Mobile's operations would add 23.94% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 53.05% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Wolcott Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

  
Julie D. Kohler, Esq.

cc: Town of Wolcott, Mayor Thomas G. Dunn  
AT&T Towers  
Elizabeth Jamieson, Transcend Wireless

# **EXHIBIT A**



# SITE NAME: WOLCOTT/ ANDREWS RD. 1

107/109 ANDREWS ROAD  
WOLCOTT, CT 06716  
NEW HAVEN COUNTY

SITE NUMBER: CT11403A  
L700 - 702CU CONFIGURATION

## GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. 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.
2. 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.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

## SPECIAL STRUCTURAL NOTES

1. STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN 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.
2. HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

## T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION: SPECIAL RESTRICTIONS:  
SECTOR A: ACCESS NOT PERMITTED  
SECTOR B: ACCESS NOT PERMITTED  
SECTOR C: ACCESS NOT PERMITTED  
GPS/LMU: UNRESTRICTED  
RADIO CABINETS: UNRESTRICTED  
PPC DISCONNECT: UNRESTRICTED  
MAIN CIRCUIT D/C: UNRESTRICTED  
NIU/T DEMARC: UNRESTRICTED  
OTHER/SPECIAL: NONE



CALL  
**BEFORE YOU DIG**

CALL TOLL FREE 800-922-4455  
 OR CALL 811  
 UNDERGROUND SERVICE ALERT

## PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION

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).

SITE ADDRESS: 107/109 ANDREWS ROAD WOLCOTT, CT 06716

LATITUDE: 41° 37' 3.7" N  
LONGITUDE: -73° 0' 16.1" W

JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

## DRAWING INDEX

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

*Transcend Wireless*

TRANSCEND WIRELESS  
10 INDUSTRIAL AVE  
MAYFIELD, NJ 07489  
TEL: (201) 464-0055  
FAX: (201) 464-0066

**Hudson**  
Design Group Inc  
1400 ORCOCO STREET  
BUILDING 20 NORTH SUITE 3090  
N ANDOVER, MA 01945  
TEL: (978) 537-5533  
FAX: (978) 538-5586



CONSTRUCTION DATE

RF ENGINEERING DATE

ZONING/SITE ACD. DATE

OPERATIONS DATE

TOWER OWNER DATE

PROJECT NO: CT11403A

DRAWN BY: JC

CHECKED BY: DR

1 11/07/14 ISSUED FOR REVIEW

0 08/22/14 ISSUED FOR REVIEW

SITE NUMBER: CT11403

SITE NAME: WOLCOTT/  
ANDREWS RD. 1

107/109 ANDREWS ROAD  
WOLCOTT, CT 06716  
NEW HAVEN COUNTY

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1







**NOTE:**  
 GENERAL CONTRACTOR TO REFER TO THE STRUCTURAL ANALYSIS BY: RDH ENGINEERING INC. DATED: OCTOBER 29, 2014 AND EQUIPMENT INSTALLATION RECOMMENDATIONS PRIOR TO COMMENCING CONSTRUCTION.

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

**Transcend Wireless**

TRANSCEND WIRELESS  
 1100 WASHINGTON STREET  
 MIDDLETOWN, CT 06457  
 TEL: (860) 946-0055  
 FAX: (860) 946-0066

**Hudson**  
 Design Group Inc.  
 1000 STATE STREET  
 SUITE 201 NORTH  
 BRIDGEWATER, MA 01921  
 TEL: (978) 532-5333  
 FAX: (978) 536-5888

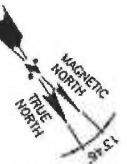
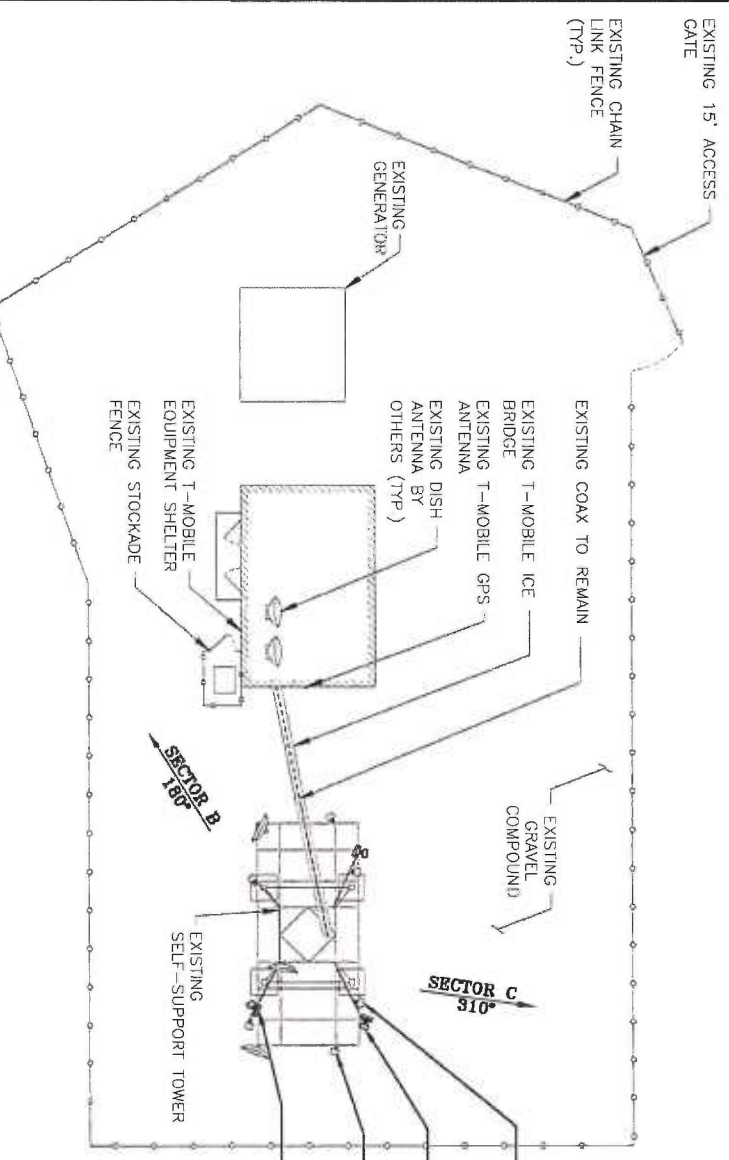


CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING/SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE
PROJECT NO.:	CT11403A
DRAWN BY:	JC
CHECKED BY:	DR
ISSUED FOR REVIEW	11/07/14
ISSUED FOR REVIEW	08/22/14

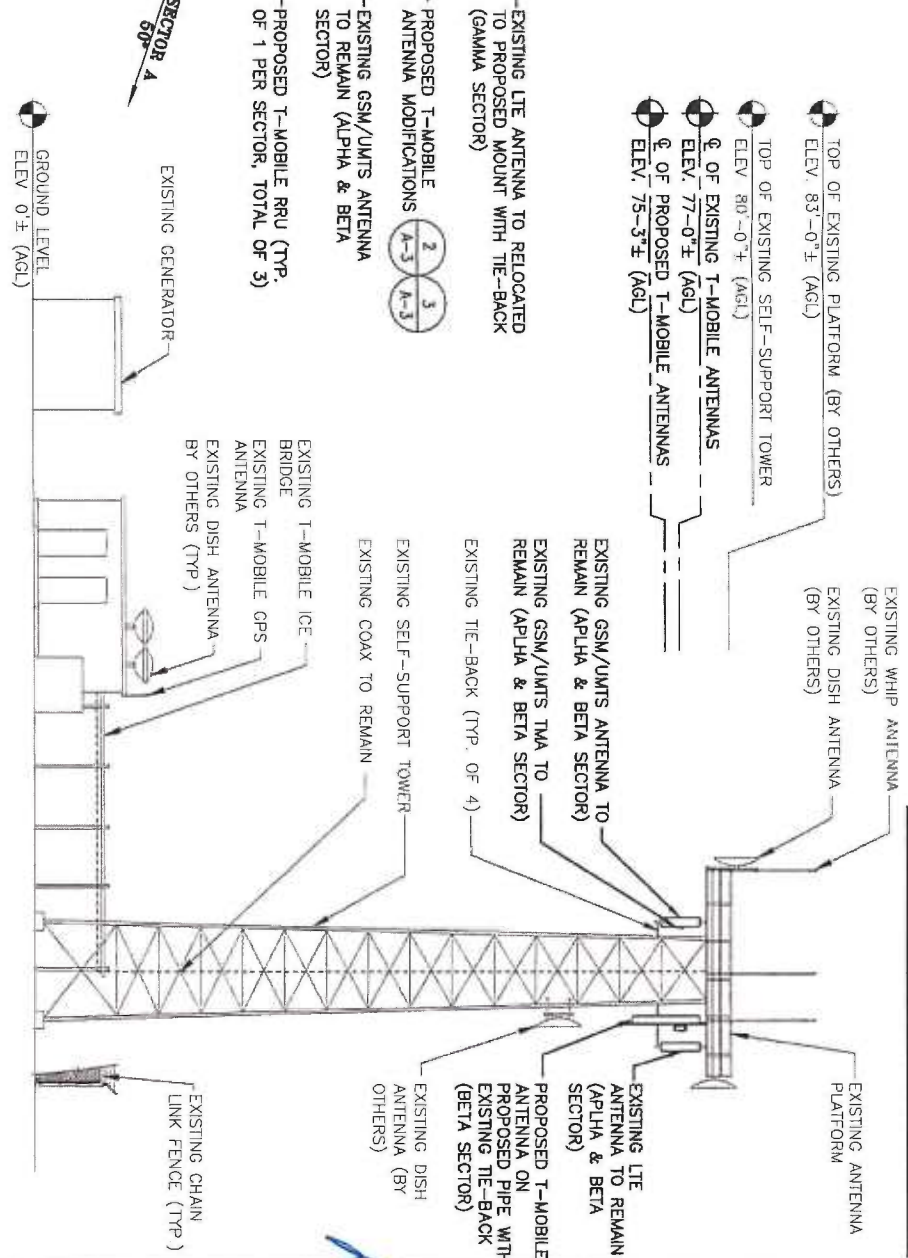
**SITE NUMBER: CT11403**  
**SITE NAME: WOLCOTT/ ANDREWS RD\_1**  
 107/109 ANDREWS ROAD  
 WOLCOTT, CT 06716  
 NEW HAVEN COUNTY

**SHEET TITLE**  
 COMPOUND, EQUIPMENT  
 PLAN & ELEVATION

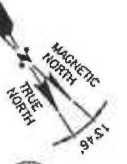
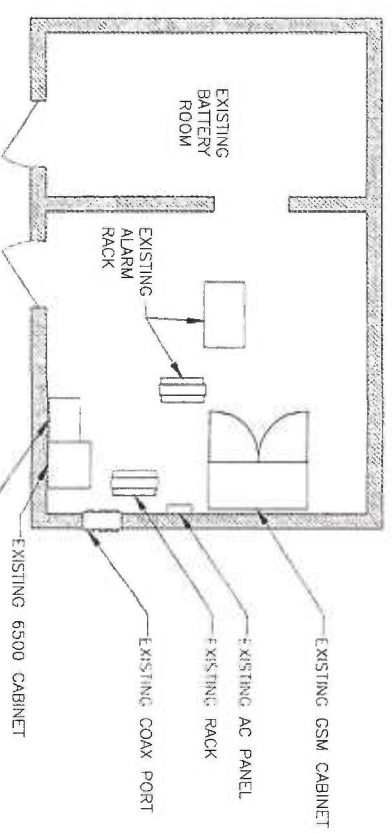
**SHEET NUMBER**  
 A-1



**1 COMPOUND PLAN**  
 SCALE: 3/32"=1'-0"



**2 ELEVATION**  
 SCALE: 3/32"=1'-0"



**3 EQUIPMENT ROOM PLAN**  
 SCALE: 1/4"=1'-0"



**L700 - 702CU CONFIGURATION**









# **EXHIBIT B**



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

**Structural Analysis for  
Transcend Wireless, LLC**

**80' Self-Support Tower**

**Transcend Wireless Site Name: Wolcott  
Transcend Wireless Site ID: SNET037-A  
T-Mobile Towers Site Name: Wolcott/ Andrews Rd.\_1  
T-Mobile Towers Site ID: CT11403A**

FDH Project Number 146FQS1400

**Analysis Results**

Tower Components	74.0%	Sufficient
Foundation	22.3%	Sufficient

Prepared By:

Drew Alexander, EI  
Project Engineer

Reviewed By:

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

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



October 29, 2014

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



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## EXECUTIVE SUMMARY

At the request of Transcend Wireless, FDH Engineering, Inc. performed a structural analysis of the existing self-supported tower located in Wolcott, 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 CT State Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, geotechnical data, and foundation dimensions was obtained from:

- FDH Engineering, Inc. (Project No. 1308551500) Dispersive Wave Propagation Testing of an Existing Tower Foundation dated June 25, 2013
- FDH Engineering, Inc. (Project No. 1304701600) Geotechnical Evaluation of Subsurface Conditions dated June 26, 2013
- FDH Engineering, Inc. (Project No. 1308541500) Self-Support Tower Mapping Report dated July 1, 2013
- Transcend Wireless, LLC

The *basic design wind speed* per the *TIA/EIA-222-F* standards 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 77 ft, the tower meets the requirements of the *TIA/EIA-222-F* standard and *2005 CT State Building Code* provided the **Recommendation** listed below is satisfied. Furthermore, given the existing foundation dimensions listed (see FDH Project No. 1308551500), and given the existing soil parameters (see FDH Project No. 1304701600), 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.

## Recommendation

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

1. Coax lines must be installed as shown in **Figure 1**.
2. The proposed TMAs should be installed directly behind the existing and proposed panel antennas.
3. RRH/RRU Stipulation: The equipment may be installed in any arrangement as determined by the client.



**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	Carrier	Mount Elevation (ft)	Mount Type
88.8	(1) 2.4" $\phi$ x 21.5' Omni	(4) 1/2"	AT&T	80	Platform
85.5	(2) 2" $\phi$ x 20' (4 element) Dipole				
84	(1) 6.6' Yagi (2) 4' Grid Dish				
77	(6) Ericsson AIR21 w/ Mount Pipe (3) Andrew One Base Twin Dual Duplex TMA	(12) 1-5/8" (1) 1-5/8" Hybrid	T-Mobile		
63	(1) 4' Dish	(1) 1/2"	AT&T	63	Pipe Mount

**Proposed Carrier - Final Loading:**

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
77	(3) Ericsson AIR21 B2A/B4P (3) Ericsson AIR21 B4A/B2P (3) Commscope SBNHH-1D65C (2) Ericsson KRY112 61/2 (3) RRUS 11 B12	(4) 1-5/8" (3) RET (5) 1/4" Fiber	T-Mobile	80	Platform

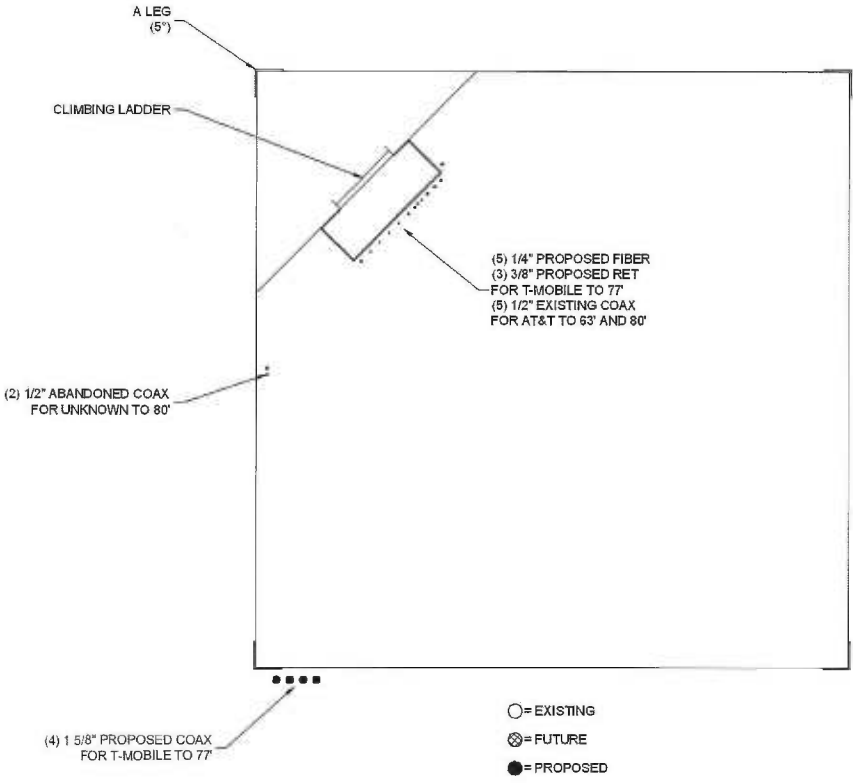


Figure 1 – Coax Layout



**RESULTS**

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

**Table 2 - Material Strength**

Member Type	Yield Strength
Legs	36 ksi (assumed)
Bracing	36 ksi (assumed)

**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. **Table 5** displays the maximum antenna rotations at service wind speeds (dishes only).

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
T1	80 - 60	Leg	L4x4x3/8	25.4 30.9 (b)	Pass
		Diagonal	L2 1/2x2 1/2x1/4	13.4 13.7 (b)	Pass
		Top Girt	L3x3x1/4	0.6	Pass
T2	60 - 40	Leg	L5x5x1/2	29.9 44.2 (b)	Pass
		Diagonal	L2 1/2x2 1/2x1/4	13.7	Pass
		Top Girt	C7x12.25	0.2 0.3 (b)	Pass
T3	40 - 20	Leg	L6x6x1/2	31.8 44.5 (b)	Pass
		Diagonal	L3x3x5/16	30.1	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	3.5	Pass
		Top Girt	L2 1/2x2 1/2x1/4	21.9	Pass
		Mid Girt	L2 1/2x2 1/2x1/4	50.5	Pass
T4	20 - 0	Leg	L6x6x5/8	35.4 49.1 (b)	Pass
		Diagonal	L3x3x5/16	39.2	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	6.2	Pass
		Top Girt	L2 1/2x2 1/2x1/4	54.1	Pass
		Mid Girt	L2 1/2x2 1/2x1/4	74.0	Pass

**Table 4 - Maximum Base Reactions**

Load Type	Direction	Current Analysis* (TIA/EIA-222-F)
Individual Foundation	Horizontal	9 k
	Uplift	59 k
	Compression	69 k
Overturning Moment	---	971 k-ft

\*Foundation determined to be adequate per independent analysis.

**Table 5 – Maximum Antenna Rotations at Service Wind Speed (Dishes Only)**

Antenna	Centerline Elevation (ft)	Tilt (deg)*	Twist (deg)*
(2) 4' Grid Dish	84	0.0506	0.0058
(1) 4' Dish	83	0.0438	0.0043

\*Allowable 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 Transcend Wireless 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

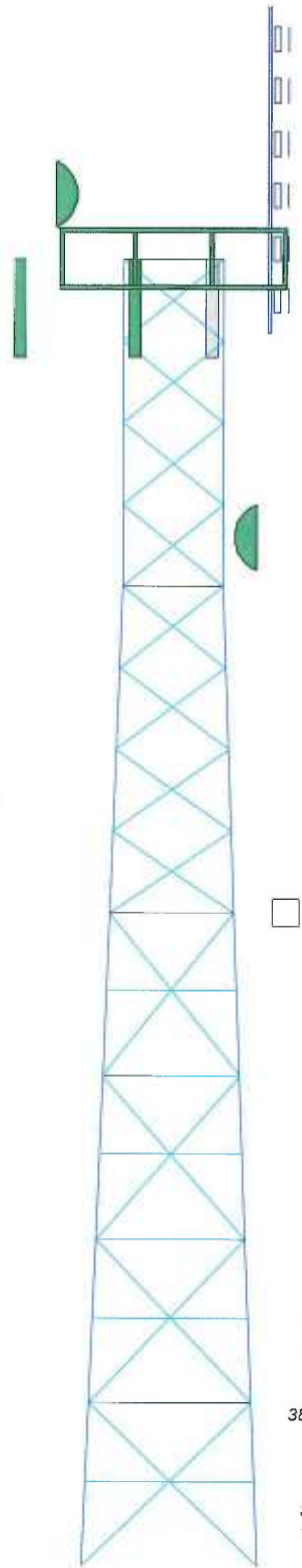
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided 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	T1	T2	T3	T4	
Legs	L4x4x3/8	L5x5x1/2	L6x6x1/2	L6x6x5/8	
Leg Grade			A36	A36	
Diagonals		L2 1/2x2 1/2x1/4		L3x3x5/16	
Diagonal Grade			A36	A36	
Top Girts	L3x3x1/4			L2 1/2x2 1/2x1/4	
Mid Girts	N.A.	C7x12.25		L2 1/2x2 1/2x1/4	
Sec. Horizontals	N.A.			L2 1/2x2 1/2x1/4	
Face Width (ft)	6.17		7.70333	9.23667	
# Panels @ (ft)		8 @ 5	4 @ 10	3 @	
Weight (K)	1.9	2.7	3.4	3.9	12.0

80.0 ft  
60.0 ft  
40.0 ft  
20.0 ft  
0.0 ft



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
2.4" x 21.5' Omni	80	SBNHH-1D65C w/ Mount Pipe	80
7'8"x5'5" Yagi	80	(2) SBNHH-1D65C w/ Mount Pipe	80
2"x20' (4 element) Dipole	80	KRY 112 61/2	80
2"x20' (4 element) Dipole	80	KRY 112 61/2	80
Platform	80	RRUS 11 B12	80
AIR 21 B2A/B4P w/Mount Pipe	80	(2) RRUS 11 B12	80
AIR 21 B2A/B4P w/Mount Pipe	80	4' Dish	80
AIR 21 B2A/B4P w/Mount Pipe	80	4' Dish	80
AIR 21 B4A/B2P w/Mount Pipe	80	Pipe Mount	63
AIR 21 B4A/B2P w/Mount Pipe	80	4' Dish	63
AIR 21 B4A/B2P w/Mount Pipe	80		

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

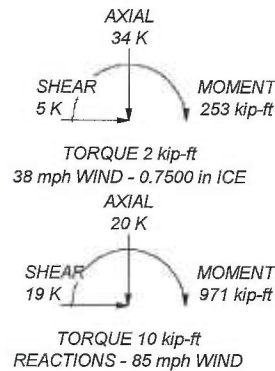
### TOWER DESIGN NOTES


1. Tower is located in New Haven 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: 74%

#### MAX. CORNER REACTIONS AT BASE:

DOWN: 69 K  
SHEAR: 9 K

UPLIFT: -59 K  
SHEAR: 8 K



 <b>FDH Engineering, Inc.</b> 6521 Meridien Drive, Suite 107 Raleigh, North Carolina 27616 Tower Analysis Phone: 9197551012 FAX: 9197551031	<b>Job: Wolcott - SNET037-A</b>		
	Project: <b>146FQS1400</b>		
	Client: Transcend Wireless, LLC	Drawn by: DAlexander	App'd:
	Code: TIA/EIA-222-F	Date: 10/29/14	Scale: NTS
	Path:	Dwg No. E-1	

# **EXHIBIT C**

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

T-Mobile Existing Facility

Site ID: CT11403A

Wolcott/ Andrews Rd.\_1  
107 / 109 Andrews Road  
Wolcott, CT 06716

**November 6, 2014**

**EBI Project Number: 62146107**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>53.05 %</b>



November 6, 2014

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

Emissions Analysis for Site: **CT11403A – Wolcott/ Andrews Rd.\_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **107 / 109 Andrews Road, Wolcott, 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 700 MHz Band is  $467 \mu\text{W}/\text{cm}^2$ , 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 **107 / 109 Andrews Road, Wolcott, 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, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) 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.

- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerline of the proposed antennas is **77 feet** above ground level (AGL).
- 9) 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.



## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A1 MPE%	3.33	Antenna B1 MPE%	3.33	Antenna C1 MPE%	3.33
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	1,906.06	ERP (W):	1,906.06	ERP (W):	1,906.06
Antenna A2 MPE%	3.33	Antenna B2 MPE%	3.33	Antenna C2 MPE%	3.33
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	77	Height (AGL):	77	Height (AGL):	77
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A3 MPE%	1.32	Antenna B3 MPE%	1.32	Antenna C3 MPE%	1.32

Site Composite MPE%	
Carrier	MPE%
T-Mobile	23.94
Personal Vision	0.00 %
SNET TMRS	29.11 %
<b>Site Total MPE %:</b>	<b>53.05 %</b>

T-Mobile Sector 1 Total:	7.98 %
T-Mobile Sector 2 Total:	7.98 %
T-Mobile Sector 3 Total:	7.98 %
<b>Site Total:</b>	<b>53.05 %</b>

## Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	7.98 %
Sector 2:	7.98 %
Sector 3 :	7.98 %
T-Mobile Total:	23.94 %
Site Total:	53.05 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **53.05%** 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.



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