

**JULIE D. KOHLER**

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

April 1, 2015

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

**Re: Notice of Exempt Modification  
American Tower Corporation/T-Mobile equipment upgrade  
Site ID CT11477B  
1140 Wolcott Road, Wolcott, CT**

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, American Tower Corporation owns the existing self-supporting lattice telecommunications tower and related facility at 1140 Wolcott Road, Wolcott Connecticut (latitude 41.617525/ longitude -72.97457). T-Mobile intends to add three (3) 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 and the property owner, Roger Levesque.

The existing Wolcott Facility consists of a 180 foot tall lattice structure.<sup>1</sup> T-Mobile plans to add three (3) antenna and three (3) RRUs (remote radio units) on existing pipe masts at a centerline of 162 feet. (See the plans revised to March 27, 2015 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 March 24, 2015 and attached hereto as Exhibit B.

The planned modifications to the Wolcott Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

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<sup>1</sup> The online CSC database does not reflect a Docket or Petition for this Facility. T-Mobile's location on this Facility was approved by the CSC in TS-T-MOBILE-166-040408.

April 1, 2015  
Site ID CT11403A  
Page 2

1. The proposed modification will not increase the height of the tower. T-Mobile's proposed antennas will be installed at the 162 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. T-Mobile doesn't propose any changes to 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 additional 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 March 30, 2015 T-Mobile's operations would add 4.96% 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 28.16% 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 additional 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  
American Tower Corporation  
Roger Levesque  
Sheldon Freinkle, NSS

# **EXHIBIT A**



# T-MOBILE NORTHEAST LLC

SITE #: CT11477B

SITE NAME: CT477/GENERAL COMM. SST

SITE ADDRESS:

1140 WOLCOTT RD

WOLCOTT, CT 06716

WIRELESS BROADBAND FACILITY  
CONSTRUCTION DRAWINGS  
(702CU CONFIGURATION)

## VICINITY MAP



## DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

WWW.CBYD.COM

CALL 800 922 4455, OR 811

SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TIMINGS IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

CALL THREE WORKING DAYS PRIOR TO DIGGING

**ELECTRIC** - RED  
GAS/OIL - YELLOW  
TEL/CATV - ORANGE  
WATER - BLUE

**SEWER** - GREEN  
SURVEY - PINK  
PROPOSED EXCAVATION - WHITE  
RECLAIMED WATER - PURPLE



## GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
17. ATLANTIS GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE ADEQUACY OF THE STRUCTURE AND COMPONENTS.
18. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT" PREPARED BY AMERICAN TOWER CORPORATION, "T-MOBILE SITE ID CT11477B", DATED MARCH 24, 2015.

## SITE INFORMATION

SITE NUMBER: CT11477B  
SITE NAME: CT477/GENERAL COMM. SST  
SITE ADDRESS: 1140 WOLCOTT RD WOLCOTT, CT 06716  
LAT./LONG.: N 41.617550 / W -72.974592  
JURISDICTION: NEW HAVEN COUNTY  
PROPERTY OWNER: BRIAN L. MUCK NETWORK DEVELOPMENT AMERICAN TOWER CORPORATION (717) 486-3169 OFFICE (717) 762-6519 FAX BRIAN.MUCK@AMERICANTOWER.COM

## PROJECT SUB-CONTRACTORS

APPLICANT: T-MOBILE NORTHEAST, LLC, 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692-7100  
PROJECT MANAGER: LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434-5237  
ARCHITECT/ENGINEER: ATLANTIS GROUP INC, 1340 CENTRE STREET SUITE 212 NEWTON CENTER, MA 02459 (617) 965-0789

## CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE  
2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT  
2011 NATIONAL ELECTRICAL CODE  
CONSTRUCTION TYPE: 2B USE GROUP: N/A

## SHEET INDEX

SHEET	TITLE	DESCRIPTION
T-1	GENERAL SHEET	
N-1	GENERAL AND ELECTRICAL NOTES	
A-1	KEY PLAN AND SITE PLAN	
A-2	ELEVATION AND DETAILS	
E-1	GROUNDING DIAGRAM	
E-2	GROUNDING DETAILS	

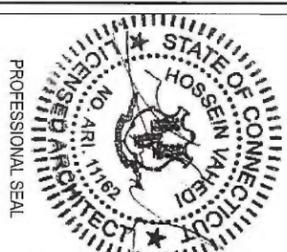
**T-Mobile**  
T-MOBILE NORTHEAST, LLC  
35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
OFFICE: (860) 692-7100  
FAX: (860) 922-7159

**ATLANTIS GROUP**  
1340 Centre Street, Suite 212  
Newton Center, MA 02459  
Office: 617-965-0789  
Fax: 617-213-5056

DATE	DESCRIPTION	REVISION
02/12/15	ISSUED FOR REVIEW	A
02/13/15	REVISED PER COMMENTS	0
02/16/15	REVISED PER COMMENTS	1
02/27/15	FINAL CD	2

DEPT.	DATE	APPROV.	REVISIONS
REG. PLAN.			
ZONING			
CONSER.			
SITE NO.			

PROJECT NO: CT11477B  
DRAWN BY: MIB  
CHECKED BY: SM



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SITE NUMBER  
CT11477B

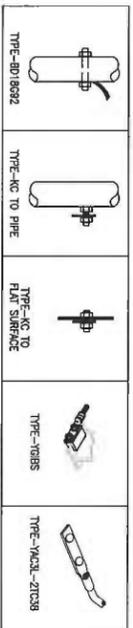
SITE NAME  
CT477/GENERAL COMM. SST  
SITE ADDRESS  
1140 WOLCOTT RD  
WOLCOTT, CT 06716

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
T-1





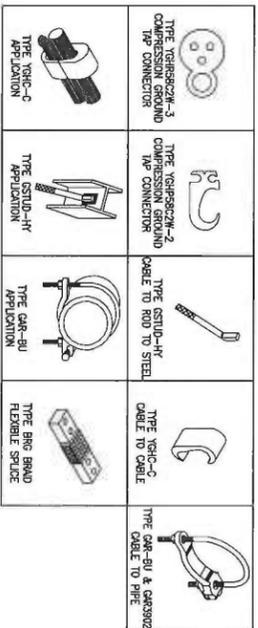


**BUNDY GROUNDING DETAILS**

SCALE: N.T.S.

1

E-2

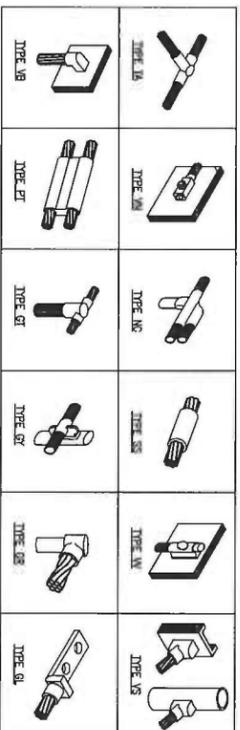


**BUNDY GROUNDING PRODUCTS**

SCALE: N.T.S.

2

E-2



**CADWELD GROUNDING CONNECTION PRODUCTS**

SCALE: N.T.S.

3

E-2

TERMINATION TYPES:  
 A. MECHANICAL COMPRESSION LUG  
 B. DOUBLE BARRELL COMPRESSION CONNECTOR  
 C. EXOTHERMIC TERMINATION  
 D. BEAM CLAMP

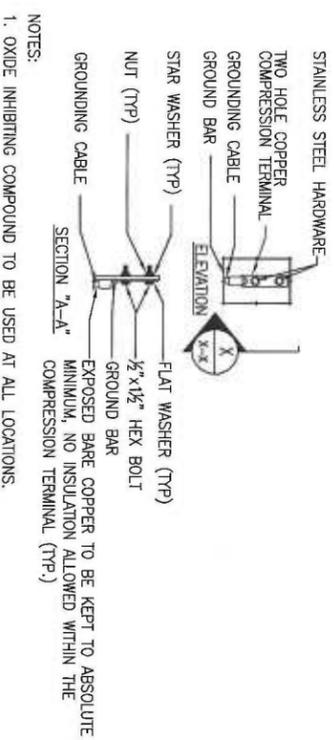
SOLID #2 TINNED COPPER	SOLID #2 TINNED COPPER		#6 GROUND LEAD		#2/0 STRANDED MAIN DOWN CONDUCTOR		MASTER GRND BAR		STRUCTURAL OR TOWER STEEL		BLDG SERVICE ENTR OR GRND RING		GROUND ROD	
#6 GROUND LEAD	B OR C	B OR C	B OR C	B OR C	A	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR	B OR C	B OR C	B OR C	B OR C	A	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D
MASTER GROUND BAR	C	C	C	C	A	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D
GROUND RING	C	C	C	C	A	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D	A, C, OR D

**GROUNDING TERMINATION MARTIX**

SCALE: N.T.S.

4

E-2



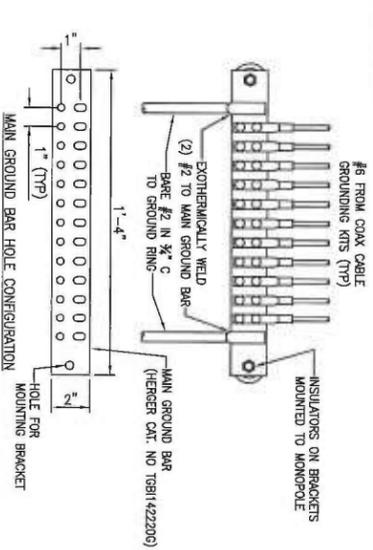
**TYPICAL GROUND BAR CONNECTIONS DETAIL**

SCALE: N.T.S.

5

E-2

- NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
  2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL.
  3. ALL HOLES ARE COUNTERSUNK  $\frac{1}{8}$ ".

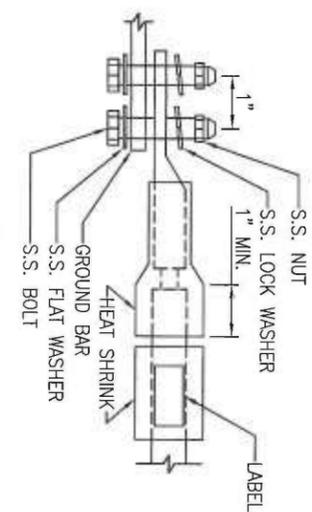


**GROUND BAR DETAIL**

SCALE: N.T.S.

6

E-2



**GROUND BAR DETAIL**

SCALE: N.T.S.

7

E-2

- LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
  2. ALL HARDWARE SHALL BE S.S.  $\frac{3}{8}$ " OR LARGER.
  3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

**T-Mobile**  
 T-MOBILE NORTHEAST, LLC  
 31 GREEN ROAD SOUTH  
 NEWTON CENTER, MA 02459  
 OFFICE: (860) 692-2100  
 FAX: (860) 692-1139

**ATLANTIS GROUP**  
 1340 Centre Street, Suite 212  
 Newton Center, MA 02459  
 Office: 617-985-0789  
 Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/12/15	ISSUED FOR REVIEW	A
02/13/15	REVISED PER COMMENTS	0
02/16/15	REVISED PER COMMENTS	1
02/27/15	FINAL CD	2

DEPT.	DATE	APP'D.	REVISIONS
EE			
ME			
PL			
CE			
ENR			
GENL			
SRE			

PROJECT NO.: CT11477B  
 DRAWN BY: MB  
 CHECKED BY: SM

STATE OF CONNECTICUT  
 HOSEA W. VAHEDI  
 LICENSED ARCHITECT  
 NO. AR. 11162  
 PROFESSIONAL SEAL

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SITE NUMBER <b>CT11477B</b>
SITE NAME CT1477/GENERAL COMM. SST
SITE ADDRESS 1140 WOLCOTT RD WOLCOTT, CT 06716
SHEET TITLE <b>GROUNDING DETAILS</b>
SHEET NUMBER <b>E-2</b>

# **EXHIBIT B**



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 180 ft Self Supported Tower  
**ATC Site Name** : Levesque CT, CT  
**ATC Site Number** : 275375  
**Engineering Number** : 61590621  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : CT477/General Comm. SST  
**Carrier Site Number** : CT11477B  
**Site Location** : 1140 Wolcott Road  
Wolcott, CT 06716-1514  
41.617550,-72.974592  
**County** : New Haven  
**Date** : March 24, 2015  
**Max Usage** : 95%  
**Result** : Pass

Reviewed by:  
Scott Wirgau, PE  
Structural Team Leader

Prepared By:  
Joshua L. Johnson, E.I.  
Structural Engineer I



Mar 24 2015 4:23 PM



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Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 180 ft self supported tower to reflect the change in loading by T-Mobile.

## Supporting Documents

<b>Tower Drawings</b>	Rohn Drawing #B881302, dated November 28, 1988
<b>Foundation Drawing</b>	Rohn Drawing #A881602-1, dated December 7, 1988
<b>Geotechnical Report</b>	CTB Project #88-718, dated November 22, 1988

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	95 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.19, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
180.0	187.0	2	15' Omni	Leg	(2) 1/2" Coax	-
174.0	180.0	1	12' Omni	Side Arms	(1) 1/2" Coax	
162.0	162.0	3	Ericsson AIR 21, 1.3M, B4A B2P	Sector Frames	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex	T-Mobile
		3	Ericsson AIR 21, 1.3M, B2A			
		3	Ericsson KRY 112 144/1			
103.0	112.0	1	18' Dipole	Leg	(1) 1/2" Coax	-
61.0	72.0	1	18' Omni	Side Arm	(1) 1/2" Coax	
55.0	66.0	1	18' Omni	Side Arm	(1) 1/2" Coax	
45.0	50.0	1	10' Dipole	Leg	(1) 1/2" Coax	

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
162.0	162.0	3	Commscope LNX-6515DS-VTM	Sector Frames	-	T-Mobile
		3	Ericsson RRUS 11			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	95%	Pass
Diagonals	93%	Pass
Horizontals	14%	Pass
Anchor Bolts	48%	Pass
Leg Bolts	54%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kip-Ft)	2340.0	37%
Axial (Kips)	136.9	12%
Shear (Kips)	14.2	17%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, considering a factor of safety of 2, therefore no modification or reinforcement of the foundation will be required.

**Deflection, Twist and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
162.0	Commscope LNX-6515DS-VTM	T-Mobile	0.325	0.076	0.337
	Ericsson RRUS 11		0.325	0.076	0.337

\*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



## Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

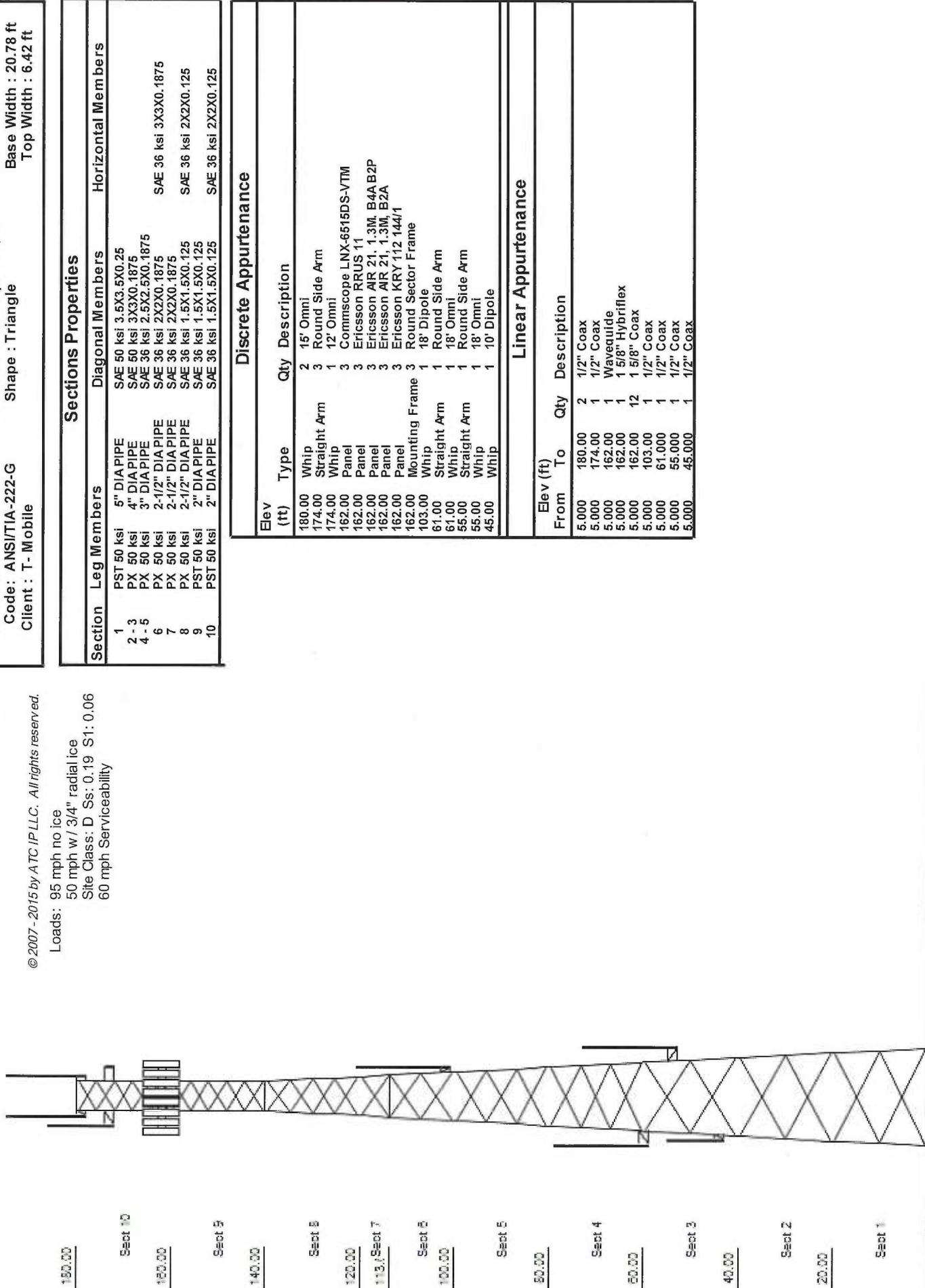
Job Information		
Tower : 275375	Location : Levesque CT, CT	Base Width : 20.78 ft
Code: ANSI/TIA-222-G	Shape : Triangle	Top Width : 6.42 ft
Client : T-Mobile		

© 2007 - 2015 by ATC IP LLC. All rights reserved.  
 Loads: 95 mph no ice  
 50 mph w/ 3/4" radial ice  
 Site Class: D Ss: 0.19 S1: 0.06  
 60 mph Serviceability

Sections Properties		
Section	Leg Members	Horizontal Members
1	PST 50 ksi 5" DIA PIPE	SAE 50 ksi 3.5X3.5X0.25
2-3	PX 50 ksi 4" DIA PIPE	SAE 50 ksi 3X3X0.1875
4-5	PX 50 ksi 3" DIA PIPE	SAE 36 ksi 2.5X2.5X0.1875
6	PX 50 ksi 2-1/2" DIA PIPE	SAE 36 ksi 2X2X0.1875
7	PX 50 ksi 2-1/2" DIA PIPE	SAE 36 ksi 2X2X0.1875
8	PX 50 ksi 2-1/2" DIA PIPE	SAE 36 ksi 1.5X1.5X0.125
9	PST 50 ksi 2" DIA PIPE	SAE 36 ksi 1.5X1.5X0.125
10	PST 50 ksi 2" DIA PIPE	SAE 36 ksi 2X2X0.125

Discrete Appurtenance		
Elev (ft)	Type	Qty Description
180.00	Whip	2 15' Omni
174.00	Straight Arm	3 Round Side Arm
174.00	Whip	1 12' Omni
162.00	Panel	3 Commscope LNX-6515DS-VTM
162.00	Panel	3 Ericsson RRUS 11
162.00	Panel	3 Ericsson AIR 21, 1.3M, B4A B2P
162.00	Panel	3 Ericsson AIR 21, 1.3M, B2A
162.00	Panel	3 Ericsson KRY 112 144/1
162.00	Mounting Frame	3 Round Sector Frame
103.00	Whip	1 18' Dipole
61.00	Straight Arm	1 Round Side Arm
61.00	Whip	1 18' Omni
55.00	Straight Arm	1 Round Side Arm
55.00	Whip	1 18' Omni
45.00	Whip	1 10' Dipole

Linear Appurtenance			
Elev (ft)	From	To	Qty Description
5.000	180.00	180.00	2 1/2" Coax
5.000	174.00	174.00	1 1/2" Coax
5.000	162.00	162.00	1 Waveguide
5.000	162.00	162.00	1 5/8" Hybriflex
5.000	162.00	162.00	12 1 5/8" Coax
5.000	103.00	103.00	1 1/2" Coax
5.000	61.000	61.000	1 1/2" Coax
5.000	55.000	55.000	1 1/2" Coax
5.000	45.000	45.000	1 1/2" Coax



Uplift 115.21 k Moment 2,340.02 k-Moment Ice 888.23 k-ft  
 Vert 135.50 k Tot Down 20.81 k Tot Down Ice 55.55 k  
 Horiz 14.22 k Tot Shear 24.05 k Tot Shear Ice 3.95 k

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

3/24/2015 11:16:11 AM

Customer: T- Mobile

### Analysis Parameters

Location:	New Haven County, CT		
Code:	ANSI/TIA-222-G	Height (ft):	180
Shape:	Triangle	Base Elevation (ft):	0.00
Tower Manufacturer:	Rohn	Bottom Face Width (ft):	20.78
Tower Type:	Self Support	Top Face Width (ft):	6.42

### Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	95 mph
Exposure Category:	B	Design Windspeed With Ice:	50 mph
Topographic Category:	1	Operational Windspeed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

### Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	0.84		
$T_L$ (sec):	6	$p$ :	1.3
$S_s$ :	0.186	$S_1$ :	0.064
$F_a$ :	1.600	$F_v$ :	2.400
$S_{ds}$ :	0.198	$S_{d1}$ :	0.102
		$C_s$ :	0.041
		$C_{s, Max}$ :	0.041
		$C_{s, Min}$ :	0.030

### Load Cases

1.2D + 1.6W Normal	95 mph Normal to Face with No Ice
1.2D + 1.6W 60 deg	95 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	95 mph 90 degree with No Ice
0.9D + 1.6W Normal	95 mph Normal to Face with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	95 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	95 mph 90 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 degree with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 degree with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 degree
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 degree
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 degree
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 degree
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 degree
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 degree

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

3/24/2015 11:16:11 AM

Customer: T-Mobile

### Tower Loading

#### Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1988.4	23.21	284	115
174.0	12' Omni	1	40	3.6	12.0	3.0	3.0	1.00	1.00	6.0	674.4	22.96	112	58
174.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	22.73	323	648
162.0	Commscope LNX-	3	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	22.28	699	217
162.0	Ericsson AIR 21,	3	83	6.1	4.7	12.0	8.0	0.80	0.86	0.0	0.0	22.28	378	359
162.0	Ericsson AIR 21,	3	82	6.1	4.7	12.1	7.9	0.80	0.85	0.0	0.0	22.28	376	352
162.0	Ericsson KRY 112	3	11	0.4	0.6	6.1	2.7	0.80	0.50	0.0	0.0	22.28	15	48
162.0	Ericsson RRUS 11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	22.28	125	216
162.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	22.28	736	1296
103.0	18' Dipole	1	55	6.8	18.0	3.0	0.0	1.00	1.00	9.0	1661.1	20.05	185	79
61.00	18' Omni	1	55	5.4	18.0	3.0	3.0	1.00	1.00	11.0	1427.3	17.67	130	79
61.00	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	16.85	119	216
55.00	18' Omni	1	55	5.4	18.0	3.0	3.0	1.00	1.00	11.0	1392.3	17.23	127	79
55.00	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	16.36	116	216
45.00	10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	5.0	407.1	15.92	81	43
<b>Totals</b>		<b>30</b>	<b>2792</b>	<b>182.8</b>										

#### Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1988.4	23.21	284	65
174.0	12' Omni	1	40	3.6	12.0	3.0	3.0	1.00	1.00	6.0	674.4	22.96	112	32
174.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	22.73	323	365
162.0	Commscope LNX-	3	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	22.28	699	122
162.0	Ericsson AIR 21,	3	83	6.1	4.7	12.0	8.0	0.80	0.86	0.0	0.0	22.28	378	202
162.0	Ericsson AIR 21,	3	82	6.1	4.7	12.1	7.9	0.80	0.85	0.0	0.0	22.28	376	198
162.0	Ericsson KRY 112	3	11	0.4	0.6	6.1	2.7	0.80	0.50	0.0	0.0	22.28	15	27
162.0	Ericsson RRUS 11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	22.28	125	122
162.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	22.28	736	729
103.0	18' Dipole	1	55	6.8	18.0	3.0	0.0	1.00	1.00	9.0	1661.1	20.05	185	45
61.00	18' Omni	1	55	5.4	18.0	3.0	3.0	1.00	1.00	11.0	1427.3	17.67	130	45
61.00	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	16.85	119	122
55.00	18' Omni	1	55	5.4	18.0	3.0	3.0	1.00	1.00	11.0	1392.3	17.23	127	45
55.00	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	16.36	116	122
45.00	10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	5.0	407.1	15.92	81	24
<b>Totals</b>		<b>30</b>	<b>2792</b>	<b>182.8</b>										

#### Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	15' Omni	2	241	10.0	15.0	3.0	3.0	1.00	1.00	7.0	764.6	6.43	109	599
174.0	12' Omni	1	202	7.7	12.0	3.0	3.0	1.00	1.00	6.0	248.9	6.36	41	252
174.0	Round Side Arm	3	224	8.0	0.0	0.0	0.0	1.00	0.67	0.0	0.0	6.30	86	915
162.0	Commscope LNX-	3	318	13.1	8.0	11.9	7.1	0.80	0.84	0.0	0.0	6.17	139	1180
162.0	Ericsson AIR 21,	3	255	7.2	4.7	12.0	8.0	0.80	0.86	0.0	0.0	6.17	78	976
162.0	Ericsson AIR 21,	3	253	7.2	4.7	12.1	7.9	0.80	0.85	0.0	0.0	6.17	77	970
162.0	Ericsson KRY 112	3	28	0.6	0.6	6.1	2.7	0.80	0.50	0.0	0.0	6.17	4	108
162.0	Ericsson RRUS 11	3	133	3.2	1.5	17.3	7.2	0.80	0.67	0.0	0.0	6.17	27	514

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

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Customer: T- Mobile

### Tower Loading

162.0 Round Sector Frame	3	673	31.2	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.17	276	2640
103.0 18' Dipole	1	248	17.1	18.0	3.0	0.0	1.00	1.00	9.0	727.3	5.55	81	311
61.00 18' Omni	1	268	11.4	18.0	3.0	3.0	1.00	1.00	11.0	521.2	4.89	47	335
61.00 Round Side Arm	1	218	7.7	0.0	0.0	0.0	1.00	1.00	0.0	0.0	4.67	31	298
55.00 18' Omni	1	259	11.2	18.0	3.0	3.0	1.00	1.00	11.0	499.5	4.77	45	324
55.00 Round Side Arm	1	216	7.6	0.0	0.0	0.0	1.00	1.00	0.0	0.0	4.53	29	295
45.00 10' Dipole	1	130	9.1	10.0	3.0	3.0	1.00	1.00	5.0	171.2	4.41	34	163
<b>Totals</b>	<b>30</b>	<b>7674</b>	<b>303.4</b>										

### Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	495.7	9.26	71	80
174.0	12' Omni	1	40	3.6	12.0	3.0	3.0	1.00	1.00	6.0	168.1	9.16	28	40
174.0	Round Side Arm	3	150	5.2	0.0	0.0	0.0	1.00	0.67	0.0	0.0	9.07	81	450
162.0	Commscope LNX-	3	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	8.89	174	151
162.0	Ericsson AIR 21,	3	83	6.1	4.7	12.0	8.0	0.80	0.86	0.0	0.0	8.89	94	249
162.0	Ericsson AIR 21,	3	82	6.1	4.7	12.1	7.9	0.80	0.85	0.0	0.0	8.89	94	245
162.0	Ericsson KRY 112	3	11	0.4	0.6	6.1	2.7	0.80	0.50	0.0	0.0	8.89	4	33
162.0	Ericsson RRUS 11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	8.89	31	150
162.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.89	184	900
103.0	18' Dipole	1	55	6.8	18.0	3.0	0.0	1.00	1.00	9.0	414.1	8.00	46	55
61.00	18' Omni	1	55	5.4	18.0	3.0	3.0	1.00	1.00	11.0	355.8	7.05	32	55
61.00	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.72	30	150
55.00	18' Omni	1	55	5.4	18.0	3.0	3.0	1.00	1.00	11.0	347.1	6.87	32	55
55.00	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.53	29	150
45.00	10' Dipole	1	30	3.8	10.0	3.0	3.0	1.00	1.00	5.0	101.5	6.35	20	30
<b>Totals</b>		<b>30</b>	<b>2792</b>	<b>182.8</b>										

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

3/24/2015 11:16:11 AM

Customer: T-Mobile

### Tower Loading

#### Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
5.00	180.0	1/2" Coax	2	0.63	0.15	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	174.0	1/2" Coax	1	0.63	0.15	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	162.0	1 5/8" Coax	12	1.98	0.82	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	162.0	1 5/8" Hybriflex	1	1.98	1.30	0	Lin App	Individual	0.00	N	1.00	1.00	0.01
5.00	162.0	Waveguide	1	2.00	6.00	0	3	Individual	0.00	N	1.00	1.00	0.00
5.00	103.0	1/2" Coax	1	0.63	0.15	0	1	Individual	0.00	N	1.00	1.00	0.01
5.00	61.00	1/2" Coax	1	0.63	0.15	0	2	Individual	0.00	N	1.00	1.00	0.01
5.00	55.00	1/2" Coax	1	0.63	0.15	0	3	Individual	0.00	N	1.00	1.00	0.01
5.00	45.00	1/2" Coax	1	0.63	0.15	0	3	Individual	0.00	N	1.00	1.00	0.01

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

3/24/2015 11:16:12 AM

Customer: T-Mobile

### Force/Stress Summary

Section: 1		1		Bot Elev (ft): 0.00				Height (ft): 20.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PST - 5" DIA PIPE	-133.34	1.2D + 1.6W	9.64	100	100	100	61.5	50.0	146.70	0	0	0.00	0.00	90 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 3.5X3.5X0.25	-4.63	1.2D + 1.6W 90	21.56	50	50	50	186.5	42.0	10.98	1	1	12.43	19.50	42 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PST - 5" DIA PIPE	114.35	1.2D + 1.6W 60	50	65	193.50	0	0	0.00	0.00	59	Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3.5X3.5X0.25	4.49	1.2D + 1.6W 90	50	65	54.94	1	1	12.43	11.70	38	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		103.44	0.9D + 1.6W 60	0.00	0	0	
Top Compression		122.47	1.2D + 1.6W	0.00	0		
Bot Tension		115.89	0.9D + 1.6W 60	242.28	48	4	1" A354-BC
Bot Compression		137.26	1.2D + 1.6W	0.00	0		

Section: 2		2		Bot Elev (ft): 20.00				Height (ft): 20.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 4" DIA PIPE	-118.15	1.2D + 1.6W	9.64	100	100	100	78.2	50.0	126.94	0	0	0.00	0.00	93 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 3X3X0.1875	-4.24	1.2D + 1.6W 90	20.64	50	50	50	207.8	44.0	5.70	1	1	12.43	14.63	74 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 4" DIA PIPE	103.59	0.9D + 1.6W 60	50	65	198.45	0	0	0.00	0.00	52	Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.1875	4.24	1.2D + 1.6W 90	50	65	34.71	1	1	12.43	8.77	48	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		90.28	0.9D + 1.6W 60	0.00	0	0	
Top Compression		106.58	1.2D + 1.6W	0.00	0		
Bot Tension		103.44	0.9D + 1.6W 60	218.08	47	4	1 A325
Bot Compression		122.47	1.2D + 1.6W	0.00	0		

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

3/24/2015 11:16:12 AM

Customer: T-Mobile

### Force/Stress Summary

Section: 3		3		Bot Elev (ft): 40.00				Height (ft): 20.000									
		Pu		Len	Bracing %			Fy	Phic	Pn	Num	Shear		Bear	Use		
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls	
LEG	PX - 4" DIA PIPE	-102.15	1.2D + 1.6W	9.64	100	100	100	78.2	50.0	126.94	0	0	0.00	0.00	80	Member X	
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0		
DIAG	SAE - 3X3X0.1875	-4.04	1.2D + 1.6W 90	18.89	50	50	50	190.3	44.0	6.80	1	1	12.43	14.63	59	Member Z	

		Pu		Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use		
Max Tension Member		(kip)	Load Case	(ksi)	(ksi)	(kip)	Bolts	Holes	Holes	phiRnv	phiRn	%	Controls	
LEG	PX - 4" DIA PIPE	89.33	1.2D + 1.6W 60	50	65	198.45	0	0	0	0.00	0.00	45	Member	
HORIZ		0.00		0	0	0.00	0	0	0	0.00	0.00	0		
DIAG	SAE - 3X3X0.1875	4.04	1.2D + 1.6W 90	50	65	34.71	1	1	1	12.43	8.77	46	Bolt Bear	

Max Splice Forces		Pu		phiRnt	Use	Num		
		(kip)	Load Case	(kip)	%	Bolts	Bolt Type	
Top Tension		76.64	0.9D + 1.6W 60	0.00	0	0		
Top Compression		89.93	1.2D + 1.6W	0.00	0			
Bot Tension		90.28	0.9D + 1.6W 60	166.24	54	4	7/8 A325	
Bot Compression		106.58	1.2D + 1.6W	0.00	0			

Section: 4		4		Bot Elev (ft): 60.00				Height (ft): 20.000									
		Pu		Len	Bracing %			Fy	Phic	Pn	Num	Shear		Bear	Use		
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls	
LEG	PX - 3" DIA PIPE	-86.85	1.2D + 1.6W	6.43	100	100	100	67.7	50.0	97.22	0	0	0.00	0.00	89	Member X	
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0		
DIAG	SAE - 2.5X2.5X0.1875	-3.02	1.2D + 1.6W 90	15.75	50	50	50	191.0	36.0	5.59	1	1	7.95	10.44	54	Member Z	

		Pu		Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use		
Max Tension Member		(kip)	Load Case	(ksi)	(ksi)	(kip)	Bolts	Holes	Holes	phiRnv	phiRn	%	Controls	
LEG	PX - 3" DIA PIPE	76.81	0.9D + 1.6W 60	50	65	135.90	0	0	0	0.00	0.00	56	Member	
HORIZ		0.00		0	0	0.00	0	0	0	0.00	0.00	0		
DIAG	SAE - 2.5X2.5X0.1875	3.04	1.2D + 1.6W 90	36	58	25.60	1	1	1	7.95	6.20	49	Bolt Bear	

Max Splice Forces		Pu		phiRnt	Use	Num		
		(kip)	Load Case	(kip)	%	Bolts	Bolt Type	
Top Tension		64.36	0.9D + 1.6W 60	0.00	0	0		
Top Compression		74.97	1.2D + 1.6W	0.00	0			
Bot Tension		76.64	0.9D + 1.6W 60	166.24	46	4	7/8 A325	
Bot Compression		89.93	1.2D + 1.6W	0.00	0			

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

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Customer: T-Mobile

### Force/Stress Summary

Section: 5		5		Bot Elev (ft): 80.00				Height (ft): 20.000							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 3" DIA PIPE	-71.75	1.2D + 1.6W	6.43	100	100	100	67.7	50.0	97.25	0	0	0.00	0.00	73 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2.5X2.5X0.1875	-2.98	1.2D + 1.6W 90	13.82	50	50	50	167.5	36.0	7.26	1	1	7.95	10.44	41 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 3" DIA PIPE	64.44	0.9D + 1.6W 60	50	65	135.90	0	0	0.00	0.00	47	Member
HORIZ		0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 2.5X2.5X0.1875	2.96	1.2D + 1.6W 90	36	58	25.60	1	1	7.95	6.20	47	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		50.65	0.9D + 1.6W 60	0.00	0	0	
Top Compression		58.91	1.2D + 1.6W	0.00	0		
Bot Tension		64.36	0.9D + 1.6W 60	166.24	39	4	7/8 A325
Bot Compression		74.97	1.2D + 1.6W	0.00	0		

Section: 6		6		Bot Elev (ft): 100.0				Height (ft): 13.670							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 2-1/2" DIA PIPE	-56.24	1.2D + 1.6W	6.66	100	100	100	86.5	50.0	58.59	0	0	0.00	0.00	95 Member X
HORIZ	SAE - 3X3X0.1875	-0.98	1.2D + 1.6W	9.110	100	100	100	183.4	36.0	7.32	1	1	7.95	10.44	13 Member Z
DIAG	SAE - 2X2X0.1875	-2.27	1.2D + 1.6W 90	12.17	50	50	50	185.4	36.0	4.70	1	1	7.95	10.44	48 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 2-1/2" DIA PIPE	50.75	0.9D + 1.6W 60	50	65	101.25	0	0	0.00	0.00	50	Member
HORIZ	SAE - 3X3X0.1875	0.90	1.2D + 1.6W 60	36	58	31.74	1	1	7.95	6.20	14	Bolt Bear
DIAG	SAE - 2X2X0.1875	2.28	1.2D + 1.6W	36	58	19.50	1	1	7.95	6.20	36	Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		42.18	0.9D + 1.6W 60	0.00	0	0	
Top Compression		49.09	1.2D + 1.6W	0.00	0		
Bot Tension		50.65	0.9D + 1.6W 60	120.40	42	4	3/4 A325
Bot Compression		58.91	1.2D + 1.6W	0.00	0		

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

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Customer: T-Mobile

### Force/Stress Summary

Section: 7		6		Bot Elev (ft): 113.6				Height (ft): 6.330							
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 2-1/2" DIA PIPE	-46.33	1.2D + 1.6W	5.97	100	100	100	77.5	50.0	65.27	0	0	0.00	0.00	70 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2X2X0.1875	-2.49	1.2D + 1.6W	10.61	50	50	50	161.7	36.0	6.18	1	1	7.95	10.44	40 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 2-1/2" DIA PIPE	39.55	1.2D + 1.6W	60	50	65	101.25	0	0	0.00	0.00	39 Member
HORIZ		0.00			0	0	0.00	0	0	0.00	0	
DIAG	SAE - 2X2X0.1875	2.20	1.2D + 1.6W	60	36	58	19.50	1	1	7.95	6.20	35 Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		38.29	0.9D + 1.6W	60	0.00	0	
Top Compression		44.54	1.2D + 1.6W		0.00	0	
Bot Tension		42.18	0.9D + 1.6W	60	120.40	35	4 3/4 A325
Bot Compression		49.09	1.2D + 1.6W		0.00	0	

Section: 8		7		Bot Elev (ft): 120.0				Height (ft): 20.000								
Max Compression Member		Pu (kip)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Phic (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls	
LEG	PX - 2-1/2" DIA PIPE	-42.53	1.2D + 1.6W	4.82	100	100	100	62.6	50.0	76.02	0	0	0.00	0.00	55 Member X	
HORIZ	SAE - 2X2X0.125	-0.11	1.2D + 1.0Di +	6.420	100	100	100	193.6	36.0	2.89	1	1	7.95	6.96	3 Member Z	
DIAG	SAE - 1.5X1.5X0.125	-2.06	1.2D + 1.6W	90	9.459	50	50	50	191.7	36.0	2.21	1	1	7.95	6.96	93 Member Z

Max Tension Member		Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit (kip)	Pn Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG	PX - 2-1/2" DIA PIPE	37.95	1.2D + 1.6W	60	50	65	101.25	0	0	0.00	0.00	37 Member
HORIZ	SAE - 2X2X0.125	0.05	1.2D + 1.6W	90	36	58	13.11	1	1	7.95	4.13	1 Bolt Bear
DIAG	SAE - 1.5X1.5X0.125	2.22	1.2D + 1.6W	90	36	58	9.20	1	1	7.95	4.13	53 Bolt Bear

Max Splice Forces		Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension		23.44	0.9D + 1.6W	60	0.00	0	
Top Compression		28.20	1.2D + 1.6W		0.00	0	
Bot Tension		38.29	0.9D + 1.6W	60	81.36	47	4 5/8 A325
Bot Compression		44.54	1.2D + 1.6W		0.00	0	

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

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Customer: T-Mobile

### Force/Stress Summary

Section: 9		8	Bot Elev (ft): 140.0				Height (ft): 20.000									
		Pu	Len	Bracing %			F'y	Phic	Pn	Num	Shear		Bear		Use	
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls
LEG	PST - 2" DIA PIPE	-25.44	1.2D + 1.6W	3.85	100	100	100	58.7	50.0	37.43	0	0	0.00	0.00	67	Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 1.5X1.5X0.125	-2.57	1.2D + 1.6W 90	7.486	50	50	50	151.7	36.0	3.53	1	1	7.95	6.96	72	Member Z

		Pu	Load Case	Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use	Controls
Max Tension Member		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes		(kip)	(kip)	%	
LEG	PST - 2" DIA PIPE	23.34	0.9D + 1.6W 60	50	65	48.15	0	0	0	0.00	0.00	48	Member
HORIZ		0.00		0	0	0.00	0	0	0	0.00	0.00	0	
DIAG	SAE - 1.5X1.5X0.125	2.57	1.2D + 1.6W 90	36	58	9.20	1	1	1	7.95	4.13	62	Bolt Bear

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num	Bolt Type
		(kip)		(kip)	%	Bolts	
Top Tension		3.96	0.9D + 1.6W 60	0.00	0	0	
Top Compression		7.07	1.2D + 1.6W	0.00	0		
Bot Tension		23.44	0.9D + 1.6W 60	81.36	29	4	5/8 A325
Bot Compression		28.20	1.2D + 1.6W	0.00	0		

Section: 10		9	Bot Elev (ft): 160.0				Height (ft): 20.000									
		Pu	Len	Bracing %			F'y	Phic	Pn	Num	Shear		Bear		Use	
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	(kip)	(kip)	%	Controls
LEG	PST - 2" DIA PIPE	-7.03	1.2D + 1.6W	0.38	100	100	100	5.7	50.0	48.04	0	0	0.00	0.00	14	Member X
HORIZ	SAE - 2X2X0.125	-0.15	1.2D + 1.6W 60	6.420	100	100	100	193.6	36.0	2.89	1	1	7.95	6.96	5	Member Z
DIAG	SAE - 1.5X1.5X0.125	-0.96	1.2D + 1.6W	7.486	50	50	50	151.7	36.0	3.53	1	1	7.95	6.96	27	Member Z

		Pu	Load Case	Fy	Fu	Phit	Pn	Num	Num	Shear	Bear	Use	Controls
Max Tension Member		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes		(kip)	(kip)	%	
LEG	PST - 2" DIA PIPE	4.00	0.9D + 1.6W 60	50	65	48.15	0	0	0	0.00	0.00	8	Member
HORIZ	SAE - 2X2X0.125	0.21	1.2D + 1.6W	36	58	13.11	1	1	1	7.95	4.13	4	Bolt Bear
DIAG	SAE - 1.5X1.5X0.125	0.97	1.2D + 1.6W 90	36	58	9.20	1	1	1	7.95	4.13	23	Bolt Bear

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num	Bolt Type
		(kip)		(kip)	%	Bolts	
Top Tension		0.00		0.00	0	0	
Top Compression		0.33	1.2D + 1.0Di +	0.00	0		
Bot Tension		3.96	0.9D + 1.6W 60	81.36	5	4	5/8 A325
Bot Compression		7.07	1.2D + 1.6W	0.00	0		

Site Number: 275375

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Site Name: Levesque CT, CT

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Customer: T-Mobile

### Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
(0.9 - 0.2Sds) * DL + E 60 deg M1	1b	-0.21	-1.13	-0.12	
	1a	-0.49	7.72	0.24	
	1	-0.04	7.72	-0.55	
(0.9 - 0.2Sds) * DL + E 60 deg M2	1b	-0.07	0.35	-0.04	
	1a	-0.42	6.98	0.22	
	1	-0.02	6.98	-0.47	
(0.9 - 0.2Sds) * DL + E 90 deg M1	1b	-0.16	-0.45	-0.07	
	1a	-0.66	10.00	0.35	
	1	-0.05	4.77	-0.29	
(0.9 - 0.2Sds) * DL + E 90 deg M2	1b	-0.03	0.94	-0.01	
	1a	-0.53	8.60	0.29	
	1	-0.02	4.77	-0.29	
(0.9 - 0.2Sds) * DL + E Normal M1	1b	0.04	1.75	-0.02	
	1a	-0.04	1.75	-0.02	
	1	0.00	10.80	-0.82	
(0.9 - 0.2Sds) * DL + E Normal M2	1b	0.10	2.56	0.03	
	1a	-0.10	2.56	0.03	
	1	0.00	9.19	-0.65	
(1.2 + 0.2Sds) * DL + E 60 deg M1	1b	-0.10	0.97	-0.06	
	1a	-0.60	9.83	0.30	
	1	-0.04	9.83	-0.67	
(1.2 + 0.2Sds) * DL + E 60 deg M2	1b	0.04	2.45	0.02	
	1a	-0.53	9.09	0.28	
	1	-0.02	9.09	-0.60	
(1.2 + 0.2Sds) * DL + E 90 deg M1	1b	-0.06	1.64	-0.01	
	1a	-0.77	12.11	0.42	
	1	-0.05	6.87	-0.41	
(1.2 + 0.2Sds) * DL + E 90 deg M2	1b	0.07	3.04	0.06	
	1a	-0.64	10.71	0.35	
	1	-0.02	6.87	-0.41	
(1.2 + 0.2Sds) * DL + E Normal M1	1b	0.14	3.85	0.04	
	1a	-0.14	3.85	0.04	
	1	0.00	12.92	-0.95	
(1.2 + 0.2Sds) * DL + E Normal M2	1b	0.21	4.66	0.10	
	1a	-0.21	4.66	0.10	
	1	0.00	11.30	-0.78	
0.9D + 1.6W 60 deg	1b	-10.84	-115.20	-6.26	
	1a	-6.60	65.01	1.81	
	1	-1.73	65.65	-6.62	
0.9D + 1.6W 90 deg	1b	-10.06	-100.82	-4.68	
	1a	-10.53	111.13	4.89	
	1	-2.02	5.15	-0.21	
0.9D + 1.6W Normal	1b	-4.89	-59.79	-4.97	
	1a	4.89	-59.79	-4.97	

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Customer: T-Mobile

	1	0.00	135.04	-14.12
1.0D + 1.0W Service 60 deg	1b	-2.51	-24.43	-1.45
	1a	-1.90	20.72	0.59
	1	-0.44	20.88	-1.94
1.0D + 1.0W Service 90 deg	1b	-2.31	-20.82	-1.04
	1a	-2.88	32.27	1.36
	1	-0.52	5.72	-0.32
1.0D + 1.0W Service Normal	1b	-0.99	-10.54	-1.13
	1a	0.99	-10.54	-1.13
	1	0.00	38.26	-3.82
1.2D + 1.0Di + 1.0Wi 60 deg	1b	-3.99	-25.53	-2.30
	1a	-2.90	46.12	0.92
	1	-0.65	46.37	-2.97
1.2D + 1.0Di + 1.0Wi 90 deg	1b	-3.62	-19.32	-1.66
	1a	-4.40	63.96	2.10
	1	-0.76	22.32	-0.44
1.2D + 1.0Di + 1.0Wi Normal	1b	-1.54	-2.36	-1.66
	1a	1.54	-2.36	-1.66
	1	0.00	71.68	-5.66
1.2D + 1.6W 60 deg	1b	-10.76	-113.62	-6.21
	1a	-6.68	66.79	1.86
	1	-1.73	67.43	-6.72
1.2D + 1.6W 90 deg	1b	-9.98	-99.22	-4.63
	1a	-10.61	112.96	4.93
	1	-2.02	6.87	-0.31
1.2D + 1.6W Normal	1b	-4.80	-58.15	-4.92
	1a	4.80	-58.15	-4.92
	1	0.00	136.90	-14.22

Max Uplift: 115.20 (kip)  
 Max Down: 136.90 (kip)  
 Max Shear: 14.22 (kip)

Moment: 2,340.02 (kip-ft) 1.2D + 1.6W Normal  
 Total Down: 20.61 (kip)  
 Total Shear: 24.05 (kip)

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Site Name: Levesque CT, CT

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Customer: T- Mobile

### Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
50 mph 60 degree with 0.75 in Radial Ice	40.38	0.0320	0.0457	0.1505
	59.63	0.0632	0.0694	0.1736
	60.38	0.0655	0.0706	0.1757
	100.38	0.1761	0.1259	0.2735
	160.37	0.4736	0.1555	0.4731
	175.77	0.5681	0.1708	0.3572
	180.00	0.5938	0.1732	0.3268
50 mph 90 degree with 0.75 in Radial Ice	40.38	0.0318	0.0252	0.1399
	59.63	0.0632	0.0375	0.1556
	60.38	0.0653	0.0380	0.1570
	100.38	0.1763	0.0613	0.2457
	160.37	0.4746	0.0502	0.4605
	175.77	0.5690	0.0499	0.3610
	180.00	0.5941	0.0498	0.2123
50 mph Normal with 0.75 in Radial Ice	40.38	0.0321	0.0386	0.1500
	59.63	0.0645	0.0598	0.1992
	60.38	0.0668	0.0609	0.1970
	100.38	0.1816	0.1113	0.3175
	160.37	0.4889	0.1215	0.4797
	175.77	0.5872	0.1210	0.3563
	180.00	0.6155	0.1212	0.5494
95 mph 60 deg with No Ice (Reduced DL)	40.38	0.0782	0.1358	0.3518
	59.63	0.1567	0.2074	0.4150
	60.38	0.1623	0.2108	0.4130
	100.38	0.4414	0.3822	0.6663
	160.37	1.2120	0.6118	1.2652
	175.77	1.4592	0.7201	0.9335
	180.00	1.5261	0.7366	0.8556
95 mph 60 degree with No Ice	40.38	0.0783	0.1358	0.3522
	59.63	0.1569	0.2075	0.4156
	60.38	0.1625	0.2109	0.4136
	100.38	0.4420	0.3824	0.6677
	160.37	1.2141	0.6125	1.2691
	175.77	1.4618	0.7210	0.9355
	180.00	1.5289	0.7375	0.8575
95 mph 90 deg with No Ice (Reduced DL)	40.38	0.0792	0.0646	0.3434
	59.63	0.1589	0.0964	0.3827
	60.38	0.1640	0.0978	0.3786
	100.38	0.4472	0.1508	0.6203
	160.37	1.2275	0.1234	1.2451
	175.77	1.4768	0.1232	0.9510
	180.00	1.5428	0.1230	0.5666
95 mph 90 degree with No Ice	40.38	0.0793	0.0646	0.3437
	59.63	0.1591	0.0964	0.3831
	60.38	0.1642	0.0978	0.3790
	100.38	0.4478	0.1508	0.6212
	160.37	1.2297	0.1233	1.2481
	175.77	1.4795	0.1230	0.9530
	180.00	1.5456	0.1229	0.5687
95 mph Normal to Face with No Ice (Reduced DL)	40.38	0.0848	0.1006	0.4127
	59.63	0.1691	0.1561	0.5375

Site Number: 275375

Code:

ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

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Customer: T- Mobile

	60.38	0.1764	0.1588	0.5400
	100.38	0.4769	0.2804	0.8370
	160.37	1.3025	0.3192	1.3573
	175.77	1.5690	0.3199	0.9704
	180.00	1.6456	0.3211	1.4640
95 mph Normal to Face with No Ice	40.38	0.0849	0.1007	0.4131
	59.63	0.1693	0.1562	0.5380
	60.38	0.1766	0.1588	0.5405
	100.38	0.4776	0.2805	0.8381
	160.37	1.3048	0.3194	1.3607
	175.77	1.5718	0.3201	0.9726
	180.00	1.6486	0.3213	1.4663
Seismic (Reduced DL) 60 degree M1	40.38	0.0037	0.0005	0.0160
	59.63	0.0077	0.0007	0.0211
	60.38	0.0080	0.0007	0.0209
	100.38	0.0230	0.0008	0.0376
	160.37	0.0692	0.0001	0.0865
	175.77	0.0856	0.0001	0.0607
	180.00	0.0901	0.0001	0.0664
Seismic (Reduced DL) 60 degree M2	40.38	0.0027	0.0003	0.0108
	59.63	0.0058	0.0004	0.0147
	60.38	0.0060	0.0004	0.0146
	100.38	0.0178	0.0004	0.0285
	160.37	0.0580	0.0000	0.0824
	175.77	0.0731	0.0001	0.0556
	180.00	0.0772	0.0001	0.0616
Seismic (Reduced DL) 90 degree M1	40.38	0.0038	0.0003	0.0156
	59.63	0.0079	0.0004	0.0207
	60.38	0.0082	0.0004	0.0206
	100.38	0.0236	0.0004	0.0373
	160.37	0.0710	0.0000	0.0856
	175.77	0.0877	0.0001	0.0623
	180.00	0.0924	0.0001	0.0672
Seismic (Reduced DL) 90 degree M2	40.38	0.0028	0.0002	0.0104
	59.63	0.0058	0.0002	0.0142
	60.38	0.0060	0.0002	0.0142
	100.38	0.0178	0.0002	0.0278
	160.37	0.0581	0.0000	0.0795
	175.77	0.0731	0.0000	0.0557
	180.00	0.0772	0.0000	0.0607
Seismic (Reduced DL) Normal M1	40.38	0.0039	0.0005	0.0164
	59.63	0.0080	0.0007	0.0209
	60.38	0.0083	0.0007	0.0210
	100.38	0.0236	0.0006	0.0370
	160.37	0.0710	0.0000	0.0874
	175.77	0.0877	0.0001	0.0622
	180.00	0.0924	0.0001	0.0674
Seismic (Reduced DL) Normal M2	40.38	0.0028	0.0003	0.0109
	59.63	0.0058	0.0004	0.0140
	60.38	0.0060	0.0004	0.0141
	100.38	0.0179	0.0004	0.0270
	160.37	0.0581	0.0000	0.0813
	175.77	0.0731	0.0000	0.0555
	180.00	0.0772	0.0000	0.0610
Seismic 60 degree M1	40.38	0.0037	0.0005	0.0161
	59.63	0.0077	0.0007	0.0213
	60.38	0.0080	0.0007	0.0211

Site Number: 275375

Code:

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Site Name: Levesque CT, CT

Engineering Number: 61590621

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Customer: T-Mobile

	100.38	0.0231	0.0008	0.0380
	160.37	0.0693	0.0001	0.0870
	175.77	0.0858	0.0001	0.0609
	180.00	0.0903	0.0001	0.0667
Seismic 60 degree M2	40.38	0.0027	0.0003	0.0108
	59.63	0.0058	0.0004	0.0148
	60.38	0.0060	0.0004	0.0147
	100.38	0.0178	0.0004	0.0289
	160.37	0.0582	0.0000	0.0830
	175.77	0.0732	0.0001	0.0557
	180.00	0.0774	0.0001	0.0619
Seismic 90 degree M1	40.38	0.0038	0.0003	0.0156
	59.63	0.0080	0.0004	0.0209
	60.38	0.0082	0.0004	0.0207
	100.38	0.0237	0.0004	0.0377
	160.37	0.0711	0.0000	0.0861
	175.77	0.0879	0.0001	0.0625
	180.00	0.0926	0.0001	0.0675
Seismic 90 degree M2	40.38	0.0028	0.0002	0.0104
	59.63	0.0058	0.0002	0.0144
	60.38	0.0060	0.0002	0.0143
	100.38	0.0179	0.0002	0.0282
	160.37	0.0582	0.0000	0.0800
	175.77	0.0732	0.0000	0.0558
	180.00	0.0774	0.0000	0.0610
Seismic Normal M1	40.38	0.0039	0.0005	0.0165
	59.63	0.0080	0.0007	0.0207
	60.38	0.0083	0.0007	0.0209
	100.38	0.0237	0.0006	0.0368
	160.37	0.0712	0.0000	0.0874
	175.77	0.0879	0.0001	0.0623
	180.00	0.0926	0.0001	0.0675
Seismic Normal M2	40.38	0.0028	0.0003	0.0109
	59.63	0.0059	0.0004	0.0138
	60.38	0.0061	0.0004	0.0141
	100.38	0.0179	0.0004	0.0268
	160.37	0.0583	0.0000	0.0813
	175.77	0.0733	0.0000	0.0557
	180.00	0.0774	0.0000	0.0610
Serviceability - 60 mph Wind 60 degree	40.38	0.0196	0.0272	0.0898
	59.63	0.0392	0.0414	0.1053
	60.38	0.0406	0.0420	0.1045
	100.38	0.1103	0.0700	0.1682
	160.37	0.3027	0.0756	0.3175
	175.77	0.3644	0.0810	0.2330
	180.00	0.3810	0.0819	0.2125
Serviceability - 60 mph Wind 90 degree	40.38	0.0199	0.0155	0.0852
	59.63	0.0398	0.0230	0.0949
	60.38	0.0411	0.0234	0.0938
	100.38	0.1118	0.0351	0.1543
	160.37	0.3066	0.0244	0.3116
	175.77	0.3688	0.0237	0.2375
	180.00	0.3852	0.0236	0.1416
Serviceability - 60 mph Wind Normal	40.38	0.0213	0.0241	0.1017
	59.63	0.0424	0.0374	0.1317
	60.38	0.0442	0.0380	0.1326
	100.38	0.1193	0.0662	0.2055

Site Number: 275375

Code: ANSI/TIA-222-G

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Site Name: Levesque CT, CT

Engineering Number: 61590621

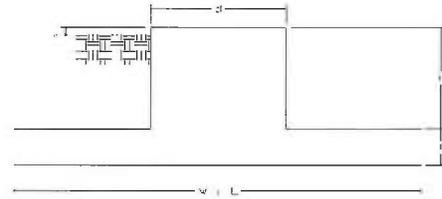
3/24/2015 11:16:12 AM

Customer: T-Mobile

160.37	0.3253	0.0691	0.3370
175.77	0.3919	0.0681	0.2424
180.00	0.4110	0.0681	0.3656

Site Name: Levesque CT, CT  
 Site Number: 275375  
 Engineering Number: 61590621  
 Engineer: J. Johnson  
 Date: 03/24/15  
 Tower Type: SST w/3 Legs

Program Last Updated: 11/15/2012



**Design Loads (Factored) - Analysis per TIA-222-G Standards**

**Design / Analysis / Mapping:**

	Analysis
Compression/Leg:	136.9 k
Uplift/Leg:	115.2 k
Total Shear:	24.1 k
Moment:	2340.0 k-ft
Tower + Appurtenance Weight:	20.6 k
Depth to Base of Foundation (l + t - h):	3.50 ft
Diameter of Pier (d):	0.00 ft
Height of Pier above Ground (h):	0.50
Width of Pad (W):	28.50 ft
Length of Pad (L):	28.50 ft
Thickness of Pad (t):	4.00 ft
Tower Leg Center to Center:	0.00 ft
Number of Tower Legs:	3.0 (1 if MP or GT)
Tower Center from Mat Center:	0.00 ft
Depth Below Ground Surface to Water Table:	99.00 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	110.0 pcf
Unit Weight of Water:	62.4 pcf
Unit Weight of Soil Below Water Table:	50.0 pcf
Friction Angle of Uplift:	15.0 Degrees
Ultimate Coefficient of Shear Friction:	0.35
Ultimate Compressive Bearing Pressure:	12000.0 psf
Ultimate Passive Pressure on Pad Face:	0.0 psf
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9
$\phi_{\text{Soil}}$ :	0.75

Concrete Strength ( $f'_c$ ):	3000 psi
Pad Tension Steel Depth:	44.00 in
$\phi_{\text{Shear}}$ :	0.75
$\phi_{\text{Flexure / Tension}}$ :	0.90
$\phi_{\text{Compression}}$ :	0.65
$\beta$ :	0.85
Bottom Pad Rebar Size #:	7
# of Bottom Pad Rebar:	29
Pad Bottom Steel Area:	17.40 in <sup>2</sup>
Pad Steel $F_y$ :	60000 psi
Top Pad Rebar Size #:	7
# of Top Pad Rebar:	29
Pad Top Steel Area:	17.40 in <sup>2</sup>

**Overturning Moment Usage**

Design OTM:	2436.2 k-ft
OTM Resistance:	6604.0 k-ft
Design OTM / OTM Resistance:	0.37 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	1125 psf
Factored Nominal Bearing Pressure:	9000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.12 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

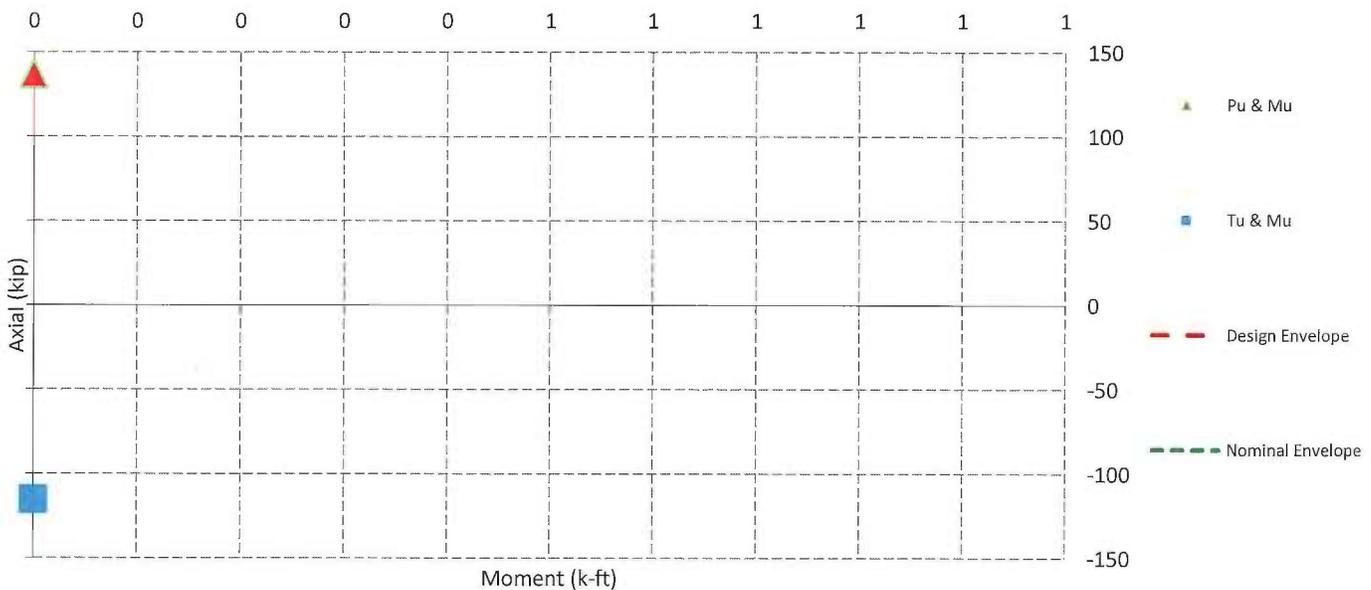
**Sliding Factor of Safety**

Total Factored Sliding Resistance:	132.4 k
Sliding Design / Sliding Resistance:	0.18 Result: OK

**One Way Shear, Flexural Capacity, and Punching Shear**

Factored One Way Shear ( $V_u$ ):	206.1 k
One Way Shear Capacity ( $\phi V_c$ ):	1236.3 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.17 Result: OK
Load Direction Controlling Shear Capacity:	Parallel to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	2046.5 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	3405.4 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.60 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	1109.9 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	3405.4 k-ft
$M_u / \phi M_n$ :	0.33 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0012 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0012 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	132.1 k
Nominal Punching Shear Capacity ( $\phi_c V_n$ ):	999.4 k - ACI11.12.2.1
$V_u / \phi V_c$ :	0.13 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



# **EXHIBIT C**

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

T-Mobile Existing Facility

Site ID: CT11477B

CT477/General Comm.SST  
1140 Wolcott Road  
Wolcott, CT 06716

**March 30, 2015**

**EBI Project Number: 6215001908**

<b>Site Compliance Summary</b>	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>28.16 %</b>

March 30, 2015

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

Emissions Analysis for Site: **CT11477B – CT477/General Comm.SST**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1140 Wolcott 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 **1140 Wolcott 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 & B2A/B4P)** 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 & B2A/B4P)** have a maximum gain of **15.9 dBd** at their 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 **162 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):	162	Height (AGL):	162	Height (AGL):	162
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):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	0.69	Antenna B1 MPE%	0.69	Antenna C1 MPE%	0.69
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	162	Height (AGL):	162	Height (AGL):	162
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):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	0.69	Antenna B2 MPE%	0.69	Antenna C2 MPE%	0.69
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):	162	Height (AGL):	162	Height (AGL):	162
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):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.27	Antenna B3 MPE%	0.27	Antenna C3 MPE%	0.27

Site Composite MPE%	
Carrier	MPE%
T-Mobile	4.96
2 Way Radio	0.40 %
Verizon Wireless	22.80 %
<b>Site Total MPE %:</b>	<b>28.16 %</b>

T-Mobile Sector 1 Total:	1.65 %
T-Mobile Sector 2 Total:	1.65 %
T-Mobile Sector 3 Total:	1.65 %
<b>Site Total:</b>	<b>28.16 %</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:	1.65 %
Sector 2:	1.65 %
Sector 3 :	1.65 %
T-Mobile Total:	4.96 %
Site Total:	28.16 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **28.16%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



Scott Heffernan  
RF Engineering Director

**EBI Consulting**  
21 B Street  
Burlington, MA 01803