STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

May 11, 2009

Thomas J. Regan, Esq.
Brown Rudnick LLP
CityPlace I, 185 Asylum Street
Hartford, CT 06103

RE: **EM-T-MOBILE-164-090406** - T-Mobile USA, Inc. notice of intent to modify an existing telecommunications facility located at 440 Hayden Station Road, Windsor, Connecticut

Dear Attorney Regan:

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

The proposed modifications are to be implemented as specified here and in your notice dated April 6, 2009, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/MP/laf

c: The Honorable Donald Trinks, Mayor, Town of Windsor
Peter Souza, Town Manager, Town of Windsor
Eric Barz, Town Planner, Town of Windsor
Crown Castle USA, Inc.

THOMAS J. REGAN
Direct Dial: (860) 509-6522
tregan@brownrudnick.com

BROWNRUDNICK
CityPlace I
185 Asylum
Street
Hartford
Connecticut
06103
tel 860.509.6500
fax 860.509.6501

Via Hand Delivery

April 6, 2009

Daniel F. Caruso, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: T-Mobile USA, Inc - Exempt Modification

Dear Mr. Caruso:

On behalf of T-Mobile USA, Inc., enclosed for filing are an original and five (5) copies of a Notice to Make an Exempt Modification to an Existing Facility for each of the following:

1. Berlin @ 260 Beckley Road;
2. Bloomfield @ 28 Brewer Street;
3. Enfield @ 5 Town Farm Road, a/k/a 85 Post Office Road;
4. Farmington @ 130 Birdseye Road;
5. Hartford @ 305 West Service Road;
6. Rocky Hill @ 949 France Street;
7. South Windsor @ 59 McGuire Road;
8. Suffield @ 848 East Street South;
9. Vernon @ 197 South Street;
10. Wallingford @ 90 North Plains Industrial Road;
11. Wallingford @ 992 Northrop Road; and
12. Windsor @ 440 Hayden Station Road.

I have also enclosed a sixth copy of each Notice which I would like to have date-stamped and returned to the courier delivering this package.

Also enclosed are twelve (12) checks in the amount of $500.00 each to cover the filing fee. If you have any questions, please feel free to contact me.

Very truly yours,

BROWN RUDNICK BERLACK ISRAELS LLP

By: _____
Thomas J. Regan

TJR/bh
Enclosures

Scott Lingenfelter, First Selectman
Town of Suffield
Town Hall
83 Mountain Road
Suffield, CT 06078

Jason L. McCoy, Mayor
Town of Vernon
Memorial Building
14 Park Place
Vernon, CT 06066

William W. Dickinson, Jr., Mayor
Town of Wallingford
Town Hall
45 South Main Street, Room 310
Wallingford, CT 06492

Donald Trinks, Mayor
Town of Windsor
Town Hall
275 Broad Street
PO Box 472
Windsor, CT 06095-0472

CONNECTICUT SITING COUNCIL

EM-T-MOBILE-164-090406

In re:

T-Mobile USA, Inc. Notice to Make an Exempt Modification to an Existing Facility at 440 Hayden Station Road, Windsor, Connecticut.	:	**EXEMPT MODIFICATION NO. _____**
	:	April 6, 2009

ORIGINAL

NOTICE OF EXEMPT MODIFICATION

Pursuant to Conn. Agencies Regs. §§ 16-50j-73 and 16-50j-72(b), T-Mobile USA, Inc. ("T-Mobile") hereby gives notice to the Connecticut Siting Council ("Council") and the Town of Windsor of T-Mobile's intent to make an exempt modification to an existing monopole (the "Tower") located at 440 Hayden Station Road in Windsor, Connecticut. Specifically, T-Mobile plans to upgrade its wireless system in Connecticut by implementing its Universal Mobile Telecommunications System ("UMTS"). UMTS is a third-generation ("3G") technology that utilizes a code division multiple access ("CDMA") base to allow for fast and large data transfers. To accomplish this upgrade, T-Mobile must modify its antenna and equipment configurations at many of its existing sites.

Once the UMTS upgrade is complete, T-Mobile will operate on a more unified communication system, allowing international wireless telephones to function world-wide. Furthermore, UMTS will enhance Global Positioning System ("GPS") navigation capabilities and provide emergency responders with more advanced tracking capabilities. The proposed UMTS technology is compatible with the existing second-generation ("2G") Global System for Mobile Communication ("GSM") currently on the Tower and the proposed upgrade is expected

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HARTFORD, CT 06103
(860) 509-6500

to enhance the existing 2G system. At this site T-Mobile proposed to add UMTS technology, update GSM technology and install associated equipment at the base of the Tower.

Under the Council's regulations (Conn. Agencies Regs. § 16-50j-72(b)), T-Mobile's plans do not constitute a modification subject to the Council's review because T-Mobile will not change the height of the Tower, will not extend the boundaries of the compound, will not increase the noise levels at the site, and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards.

The Tower is a 95-foot monopole located at 440 Hayden Station Road in Windsor, Connecticut (41° 53' 52.8", -72° 38' 38.04"). There are multiple carriers on the Tower. The Tower is owned by Crown Castle International. Currently, T-Mobile has 3 antennas and 3 Tower Mounted Amplifiers ("TMA") located on the Tower with a centerline of 73 feet. A site plan with Tower specifications is attached.

T-Mobile plans to add 3 UMTS antennas, remove and replace 3 of its existing TMA and add 3 TMA to the Tower. The 3 existing TMA will be replaced with 3 new GSM Twin TMA and the 3 additional TMA will be UMTS Twin TMA. The proposed antennas and TMA will have the same centerline as the existing antennas and TMA – 73 feet. To confirm the Tower can support these changes, T-Mobile commissioned IETS Engineering Services to perform a structural analysis of the Tower (attached). According to the structural analysis, dated March 19, 2009, "the tower stress level for the structure and foundation, under the following load case, to be: LC1: Existing + Reserved + Proposed Equipment – Sufficient Capacity" (Page 1, Structural Analysis Report).

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In addition, T-Mobile proposes to locate 6, 7/8 inch coax cables under the existing ice bridge. The existing ice bridge connects the proposed UTMS equipment cabinet and the proposed antennas. T-Mobile proposes to install the UMTS equipment cabinet on its existing 4-foot by 13-foot (approximately) concrete pad. Hence, no increase in the size of the concrete pad is necessary. T-Mobile also proposes to install power and telephone wiring at this site to service the proposed equipment.

Therefore, excluding brief, minor, construction-related noise during the addition of the antennas and the installation of the equipment cabinet, T-Mobile's changes to the Tower will not increase noise levels at the site.

The proposed antennas and TMA will not adversely impact the health and safety of the surrounding community or the people working on the Tower. The total radio frequency exposure measured around the Tower will be well below the National Council on Radiation Protection and Measurements' ("NCRP") standard adopted by the Federal Communications Commission ("FCC"). The worst-case power density analysis measured at the base of the Tower indicates that T-Mobile's antennas will emit 23.08% of the NCRP's standard for maximum permissible exposure. A cumulative power density analysis indicates that together, all of the antennas on the Tower will emit only 39.15% of the NCRP's standard for maximum permissible exposure. Therefore, the power density levels will be well below the FCC mandated radio frequency exposure limits in all locations around the Tower, even with extremely conservative assumptions. The power density analysis is attached.

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In conclusion, T-Mobile's proposed plan to add 3 antennas and remove and replace 3 existing TMA and add 3 TMA at this site does not constitute a modification subject to the Council's jurisdiction because T-Mobile will not increase the height of the Tower, will not

extend the boundaries of the site, will not increase the noise levels at the site, and the total radio frequency electromagnetic radiation power density will stay within all applicable standards. *See* Conn. Agencies Regs. § 16-50j-72.

T-Mobile USA, Inc.

By: _____

Thomas J. Regan
Brown Rudnick LLP
185 Asylum Street, CityPlace I
Hartford, CT 06103-3402
Email - tregan@brownrudnick.com
Phone - 860.509.6522
Fax - 860.509.6622

Certificate of Service

This is to certify that on this 16th day of April, 2009, the foregoing Notice of Exempt Modification was sent, via first class mail, to the following:

Town of Windsor
Mayor Donald Trinks
Town Hall
275 Broad Street
PO Box 472
Windsor, CT 06095

By: _____
Thomas J. Regan

40258211 v1 - 025064/0016

BROWN RUDNICK LLP
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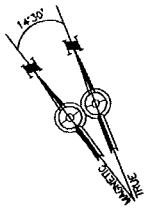
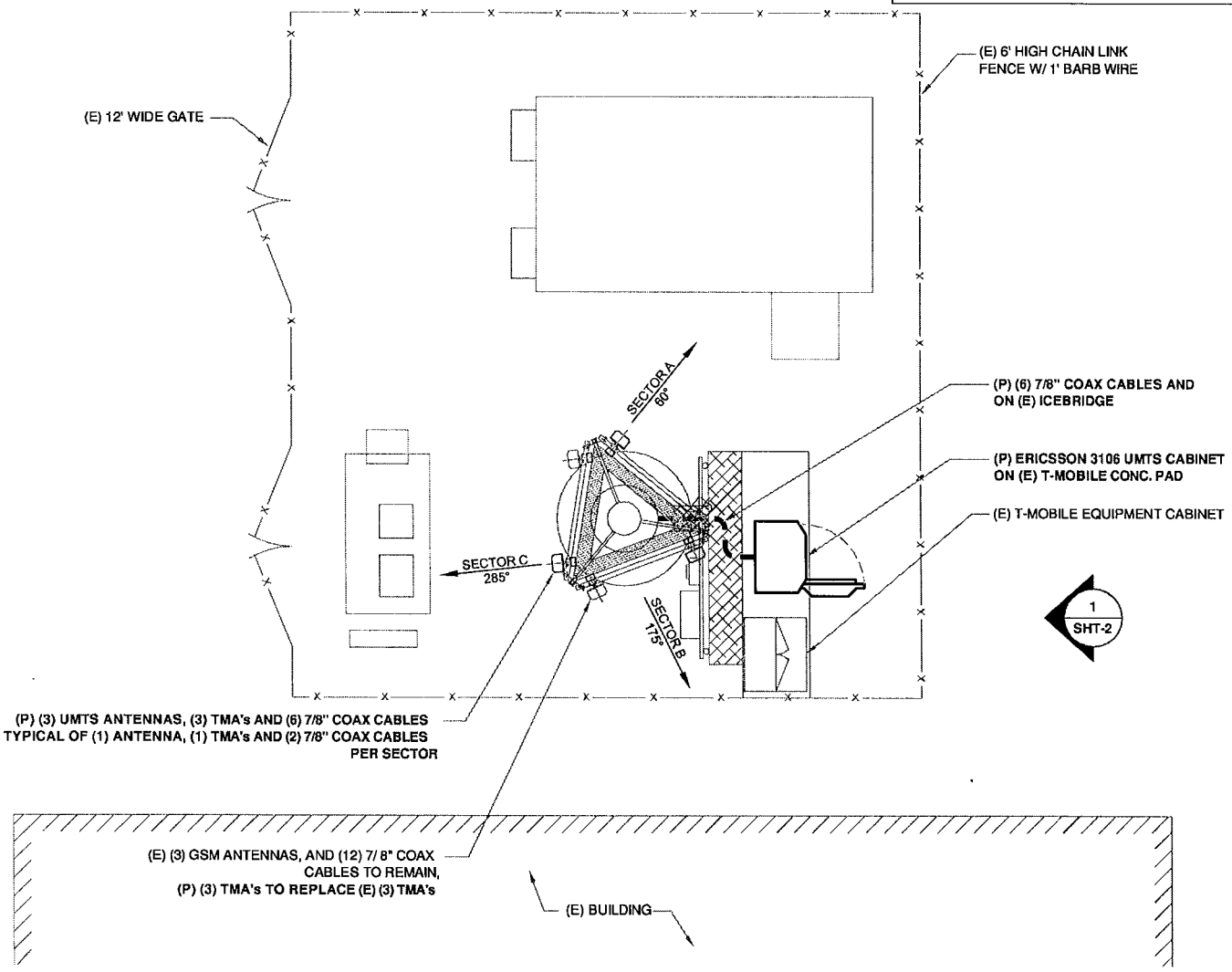
HARTFORD, CT 06103
(860) 509-6500



FINAL CONFIGURATION	
CABINETS: 2	(E) (1) CABINET TO REMAIN (P) (1) CABINET TO BE ADDED
ANTENNAS: 6	(E) (3) TO REMAIN (P) (3) QUAD POL TO BE ADDED
TMA: 6	(E) (3) TO BE REPLACE (P) (3) TO BE ADDED
COAX: 18	(E) (12) TO REMAIN (P) (6) TO BE ADDED



ANTENNA AZIMUTHS:
SECTOR A= 60°
SECTOR B= 175°
SECTOR C= 285°

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

PLAN

SCALE: 1" = 10'-0"

5 0 5 10 15

TRANSCEND WIRELESS
10 INDUSTRIAL AVE.
MAHWAH, NJ 0740
OFFICE: (210) 316-2085
FAX:(210) 684-0066

FOR

OMNIPOINT COMMUNICATIONS, INC. DBA T-MOBILE USA, INC
35 GRIFIN ROAD SOUTH
BLOOMFIEL, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

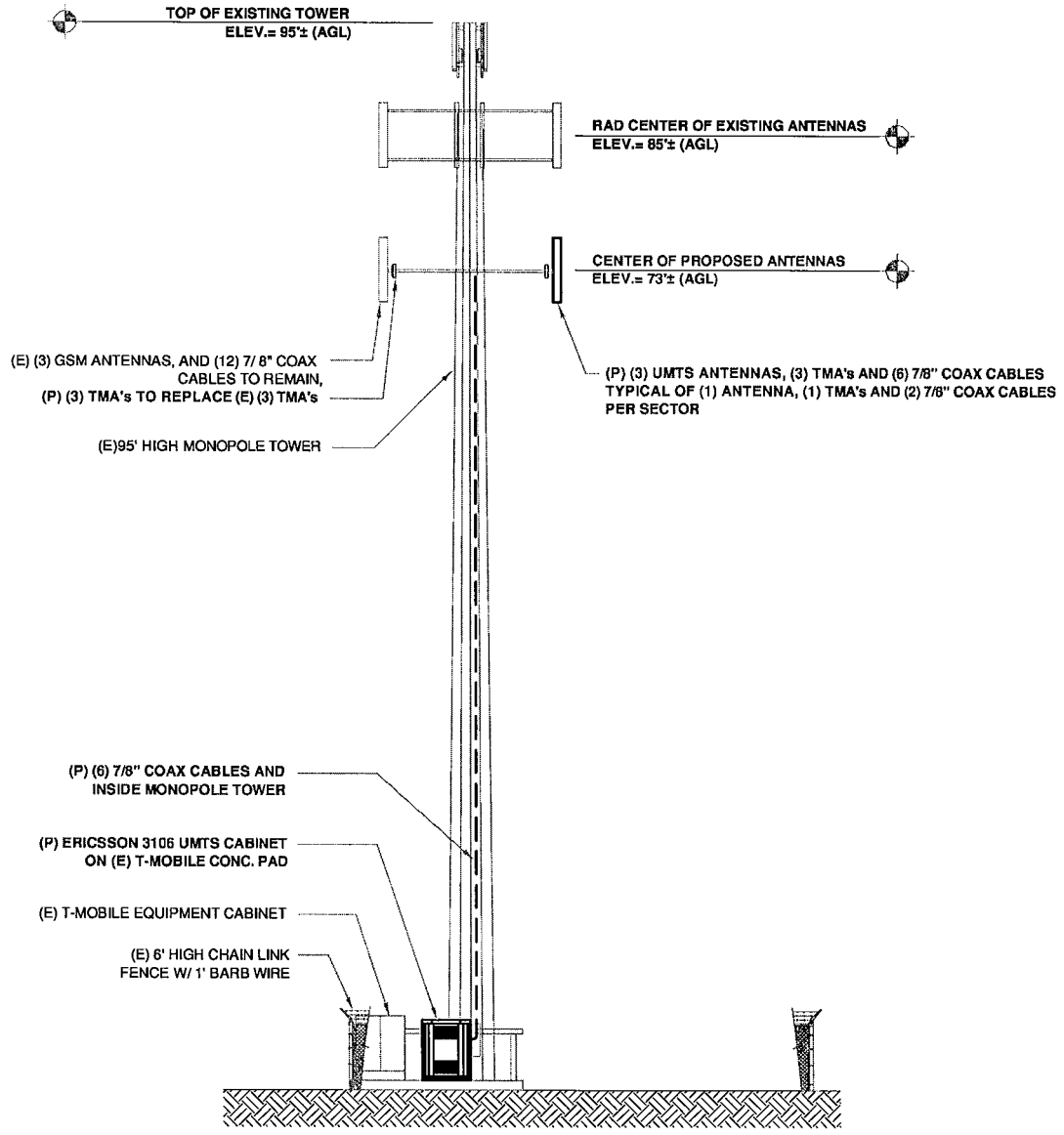
ATLANTIS GROUP
15 Cypress St., Suite 300
Newton Centre, MA 02459
Office: 617-965-0789
Fax: 617-663-6032

SITE NUMBER:	
CT11280A	
SITE NAME:	
WINDSOR LOCKS/AIRPORT	
ADDRESS:	
440 HAYDEN STATION ROAD WINDSOR, CT 06095	
DRAWN BY	
G.C.	
0: FINAL	03-11-09
A: REVIEW	02-06-09
REVISION	DATE

APPROVALS

Site Owner	Date
Construction Manager	Date
RF Engineer	Date
Site Acquisition	Date

The above parties hereby approve and accept these documents and authorize the contractor to proceed with the construction described herein, all construction documents are subject to review by the local building department and any changes or modifications they may impose.



ELEVATION

SCALE: 1" = 16'-0"

8 0 8 16 24

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

TRANSCEND WIRELESS
10 INDUSTRIAL AVE.
MAHWAH, NJ 0740
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FOR

OMNIPOINT COMMUNICATIONS, INC.
DBA T-MOBILE USA, INC
35 GRIFFIN ROAD SOUTH
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FAX:(860) 692-7159

ATLANTIS GROUP
15 Cypress St., Suite 300
Newton Centre, MA 02459
Office: 617-965-0789
Fax: 617-663-6032

SITE NUMBER:	CT11280A
SITE NAME:	WINDSOR LOCKS/AIRPORT
ADDRESS:	440 HAYDEN STATION ROAD WINDSOR, CT 06095
DRAWN BY	G.C.

REVISION	DATE
0: FINAL	03-11-09
A: REVIEW	02-06-09

APPROVALS

Site Owner	Date
Construction Manager	Date
RF Engineer	Date
Site Acquisition	Date

The above parties hereby approve and accept these documents and authorize the contractor to proceed with the construction described herein, all construction documents are subject to review by the local building department and any changes or modifications they may impose.

Date: **March 19, 2009**

Mr. Kevin DePatie
Crown Castle USA Inc.
12725 Morris Road Ext., Suite 400
Alpharetta, GA 30004

IETS, P.C.
17106 NE 29th Ave
Ridgefield, WA 98642
(360) 450-5703
towerdata@iets.com

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11280A
	Carrier Site Name:	Windsor Locks/Airport
Crown Castle Designation:	**Crown Castle BU Number:**	876326
	Crown Castle Site Name:	HAYDEN STATION
	Crown Castle JDE Job Number:	116653
	Crown Castle Work Order Number:	259524
Engineering Firm Designation:	**IETS, P.C. Project Number:**	2009-70155
Site Data:	**440 Hayden Station Road, WINDSOR, Hartford County, CT** **Latitude *41° 53' 52.8"*, Longitude *-72° 38' 38.4"*** **96 Foot - Monopole Tower**	

Dear Mr. DePatie,

IETS, P.C. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 323574, in accordance with application 75847, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2006 IBC based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *IETS, P.C.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle USA Inc. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

G. Lance Cooke, P.E.
Senior Project Engineer

William A. Griswold, Jr., P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 96 ft Monopole tower designed by ROHN in January of 1997. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 69.3 mph with 0.5 inch ice thickness and 60 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
75	75	3	Celwave	APX16DWV-16DWV-S-E-ACU	6	7/8	1
		6	Andrew	Onebase Twin Dual Duplex TMA			

Notes:
1) To be installed on existing mounts.

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
92	92	1	Mount	Clamp Mount	6	1-5/8	1
		3	Powerwave	7770.00	6	1-5/8	2
		6	Powerwave	LGP21401			
83	85	9	MLA Antennas	MLA Antenna	9	1-5/8	3
		3	Dapa	58000	3	1-5/8	2
		6	Dapa	58000	6	1-1/4	1
	83	1	Mount	13' Low Profile Platform			
75	75	3	EMS Wireless	DR65-18-00DPL2Q	12	7/8	1
		1	Mount	13' Low Profile Platform			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) MLA Equipment Controlling

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	85	12		ALP9212		
	75	12		ALP9212		
	60	12		ALP9212		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
GEOTECHNICAL REPORTS		1530918	CCISITES
TOWER FOUNDATION DRAWINGS		1640630	CCISITES
TOWER MANUFACTURER DRAWINGS		1639483	CCISITES

3.1) Analysis Method

RISATower (version 5.3.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. IETS, P.C. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	96 - 85	Pole	P12.75 x 0.5"	1	-1.62	538.65	6.2	Pass
L2	85 - 65	Pole	P42x3/8	2	-8.67	1484.55	10.8	Pass
L3	65 - 32.5	Pole	P48x3/8	3	-15.70	1643.28	26.6	Pass
L4	32.5 - 0	Pole	P48x1/2	4	-24.81	2356.76	34.5	Pass
							Summary	
						Pole (L4)	34.5	Pass
						Rating =	34.5	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods		31.8	Pass
1	Base Plate		39.7	Pass
1, 2	Base Foundation (Compared w/ Design Loads)		58.0	Pass

Structure Rating (max from all components) =	58.0%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Foundation capacity determined by comparing analysis reactions to original design reactions.

APPENDIX A

RISA TOWER OUTPUT

Tower Input Data

This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:
Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.500 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	96'-85'	11'	P12.75 x 0.5"	A53-B-35 (35 ksi)	
L2	85'-65'	20'	P42x3/8	A53-B-42 (42 ksi)	
L3	65'-32'6"	32'6"	P48x3/8	A53-B-42 (42 ksi)	
L4	32'6"-0'	32'6"	P48x1/2	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 96'-85'				1	1	1		
L2 85'-65'				1	1	1		
L3 65'-32'6"				1	1	1		
L4 32'6"-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 5/8 Cable	C	No	Inside Pole	92' - 0'	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
1 5/8 Cable	B	No	Inside Pole	85' - 0'	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
7/8 Cable	A	No	Inside Pole	75' - 0'	24	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*** AT ***									
Clamp Mount	C	None		0.0000	92'	No Ice	9.42	9.42	0.60
						1/2" Ice	10.86	10.86	0.67
7770.00	A	From Leg	1.00 0' 0'	0.0000	92'	No Ice	5.88	2.93	0.04
						1/2" Ice	6.31	3.27	0.07
7770.00	B	From Leg	1.00 0' 0'	0.0000	92'	No Ice	5.88	2.93	0.04
						1/2" Ice	6.31	3.27	0.07
7770.00	C	From Leg	1.00 0' 0'	0.0000	92'	No Ice	5.88	2.93	0.04
						1/2" Ice	6.31	3.27	0.07
(2) LGP21401	A	From Leg	1.00 0' 0'	0.0000	92'	No Ice	1.29	0.23	0.02
						1/2" Ice	1.45	0.31	0.02
(2) LGP21401	B	From Leg	1.00 0' 0'	0.0000	92'	No Ice	1.29	0.23	0.02
						1/2" Ice	1.45	0.31	0.02
(2) LGP21401	C	From Leg	1.00 0' 0'	0.0000	92'	No Ice	1.29	0.23	0.02
						1/2" Ice	1.45	0.31	0.02
*** Sp ***									
Mount - 13' Platform w/ Handrails	C	None		0.0000	85'	No Ice	31.30	31.30	1.82
						1/2" Ice	40.20	40.20	2.45
(3) Sprint MLA_Antenna	A	From Leg	6.00 0' 0'	0.0000	85'	No Ice	8.40	4.70	0.00
						1/2" Ice	8.95	5.15	0.05
(3) Sprint MLA_Antenna	B	From Leg	6.00 0' 0'	0.0000	85'	No Ice	8.40	4.70	0.00
						1/2" Ice	8.95	5.15	0.05
(3) Sprint MLA_Antenna	C	From Leg	6.00 0' 0'	0.0000	85'	No Ice	8.40	4.70	0.00
						1/2" Ice	8.95	5.15	0.05
*** T-Mobile ***									
Mount - 13' Low Profile Platform	C	None		0.0000	75'	No Ice	15.70	15.70	1.30
						1/2" Ice	20.10	20.10	1.77
DR65-18-00DPL2Q	A	From Leg	6.00 0' 0'	0.0000	75'	No Ice	6.30	2.42	0.02
						1/2" Ice	6.73	2.76	0.06
DR65-18-00DPL2Q	B	From Leg	6.00 0' 0'	0.0000	75'	No Ice	6.30	2.42	0.02
						1/2" Ice	6.73	2.76	0.06
DR65-18-00DPL2Q	C	From Leg	6.00 0' 0'	0.0000	75'	No Ice	6.30	2.42	0.02
						1/2" Ice	6.73	2.76	0.06
APX16DWV-16DWV-S-E-	A	From Leg	6.00	0.0000	75'	No Ice	6.70	2.00	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ACU			0' 0'			1/2" Ice	7.13	2.33	0.07
APX16DWV-16DWV-S-E-ACU	B	From Leg	6.00 0' 0'	0.0000	75'	No Ice 1/2" Ice	6.70 7.13	2.00 2.33	0.04 0.07
APX16DWV-16DWV-S-E-ACU	C	From Leg	6.00 0' 0'	0.0000	75'	No Ice 1/2" Ice	6.70 7.13	2.00 2.33	0.04 0.07
Onebase Twin Dual Duplex TMA	A	From Leg	6.00 0' 0'	0.0000	75'	No Ice 1/2" Ice	0.67 0.79	0.31 0.39	0.01 0.02
Onebase Twin Dual Duplex TMA	B	From Leg	6.00 0' 0'	0.0000	75'	No Ice 1/2" Ice	0.67 0.79	0.31 0.39	0.01 0.02
Onebase Twin Dual Duplex TMA	C	From Leg	6.00 0' 0'	0.0000	75'	No Ice 1/2" Ice	0.67 0.79	0.31 0.39	0.01 0.02

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	96 - 85 (1)	P12.75 x 0.5"	11'	0'	0.0	21.000	19.242	-1.62	404.09	0.004
L2	85 - 65 (2)	P42x3/8	20'	0'	0.0	22.711	49.038	-8.67	1113.69	0.008
L3	65 - 32.5 (3)	P48x3/8	32'6"	0'	0.0	21.972	56.107	-15.70	1232.77	0.013
L4	32.5 - 0 (4)	P48x1/2	32'6"	0'	0.0	23.696	74.613	-24.81	1768.01	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	96 - 85 (1)	P12.75 x 0.5"	8.55	-1.809	23.100	0.078	0.00	0.000	23.100	0.000
L2	85 - 65 (2)	P42x3/8	129.85	-3.081	22.711	0.136	0.00	0.000	22.711	0.000
L3	65 - 32.5 (3)	P48x3/8	415.38	-7.520	21.972	0.342	0.00	0.000	21.972	0.000
L4	32.5 - 0 (4)	P48x1/2	772.11	-10.566	23.696	0.446	0.00	0.000	23.696	0.000

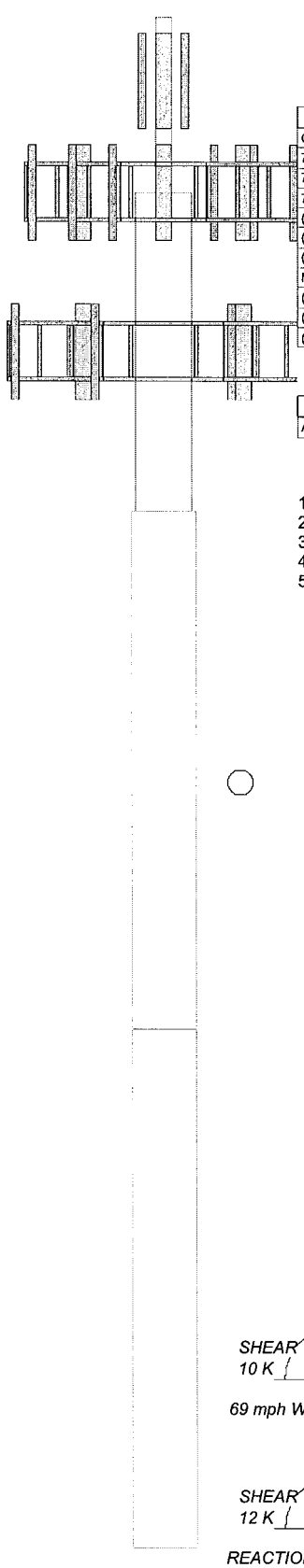
Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	96 - 85 (1)	P12.75 x 0.5"	0.004	0.078	0.000	0.082	1.333	H1-3
L2	85 - 65 (2)	P42x3/8	0.008	0.136	0.000	0.143	1.333	H1-3
L3	65 - 32.5 (3)	P48x3/8	0.013	0.342	0.000	0.355	1.333	H1-3
L4	32.5 - 0 (4)	P48x1/2	0.014	0.446	0.000	0.460	1.333	H1-3

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	96 - 85	Pole	P12.75 x 0.5"	1	-1.62	538.65	6.2	Pass
L2	85 - 65	Pole	P42x3/8	2	-8.67	1484.55	10.8	Pass
L3	65 - 32.5	Pole	P48x3/8	3	-15.70	1643.28	26.6	Pass
L4	32.5 - 0	Pole	P48x1/2	4	-24.81	2356.76	34.5	Pass
							Summary	
						Pole (L4)	34.5	Pass
						RATING =	**34.5**	**Pass**

Section	Size	Length (ft)	Grade	Weight (K)
1	P12.75 x 0.5"	11'	A53-B-35	0.7
2	P42x3/8	20'		3.3
3	P48x3/8	32'6"	A53-B-42	6.2
4	P48x1/2	32'6"		8.3
				18.5



DESIGNED APPURTENANCE LOADING

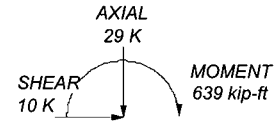
TYPE	ELEVATION	TYPE	ELEVATION
Clamp Mount	92	Mount - 13' Low Profile Platform	75
7770.00	92	DR65-18-00DPL2Q	75
7770.00	92	DR65-18-00DPL2Q	75
7770.00	92	DR65-18-00DPL2Q	75
(2) LGP21401	92	APX16DWV-16DWV-S-E-ACU	75
(2) LGP21401	92	APX16DWV-16DWV-S-E-ACU	75
(2) LGP21401	92	APX16DWV-16DWV-S-E-ACU	75
Mount - 13' Platform w/ Handrails	85	Onebase Twin Dual Duplex TMA	75
(3) Sprint MLA_Antenna	85	Onebase Twin Dual Duplex TMA	75
(3) Sprint MLA_Antenna	85	Onebase Twin Dual Duplex TMA	75
(3) Sprint MLA_Antenna	85		

MATERIAL STRENGTH

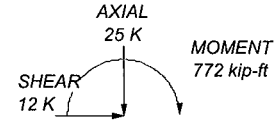
GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A53-B-42	42 ksi	63 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 34.5%



69 mph WIND - 0.500 in ICE



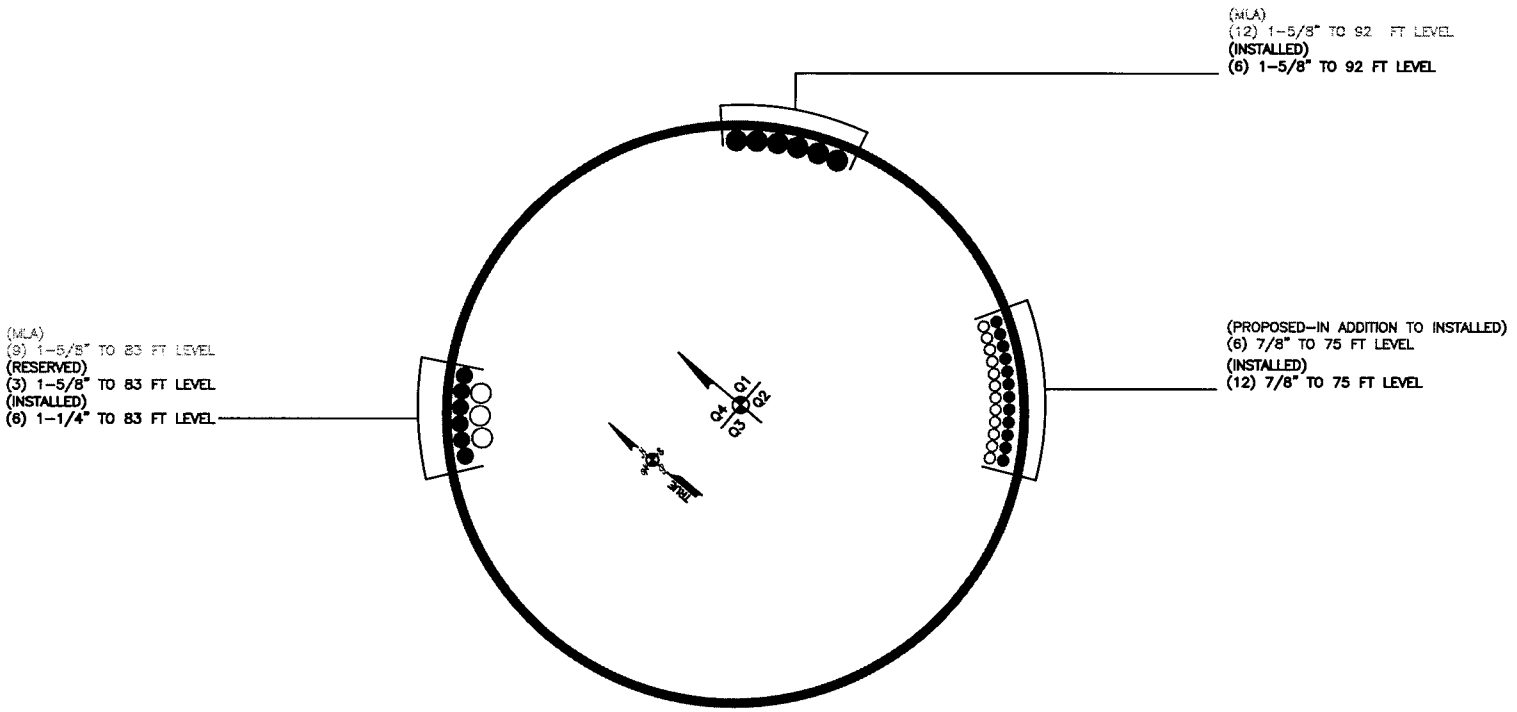
REACTIONS - 80 mph WIND

IETS, P.C.
17106 NE 29th Ave
Ridgefield, WA 98642
Phone: (360) 450-5703
FAX:

Job:	***2009-70155 BU# 876326 "Hayden Station"***
Project:	***T-Mobile Co-Locate***
Client: Crown Castle USA	Drawn by: G. Lance Cooke — App'd:
Code: TIA/EIA-222-F	Date: 03/19/09 — Scale: NTS
Path: N:\2009-70155 MP 876326 Hayden Station (SA)\2009-70155 876326.eri	Dwg No. E-1

APPENDIX B

BASE LEVEL DRAWING



All other lines routed
inside the pole structure

T-Mobile Co-Locate
"Windsor Locks"
"CT11280A"

www.iets.com
IETS
Engineering Services
129 Greenwich Road
Charlotte, NC 28211
Ph:(704)522-1131
Fax:(704)522-1280

NOTES

RELEASE: ORIGINAL

DRAWN BY: LC
CHECKED BY: W. A. Griswold
DRAWING DATE: 3-19-09

BUSINESS UNIT NUMBER

876326

SITE NAME

Hayden Station

SITE INFORMATION

85' Monopole
440 Hayden Station Road
Windsor, CT

DRAWING TITLE

Cable Routing Drawing

DRAWING NUMBER

2009-70155-01

APPENDIX C

ADDITIONAL CALCULATIONS

www.iets.com
IETS
Engineering Services

Industrial Engineering & Testing Services, P.C.
129 Greenwich Road
Charlotte, North Carolina 28211
Phone: (704) 522-1131 / Fax: (704) 522-1280 / Web: www.IETS.com

Foundation Capacity

(Compared w/ Design Loads)

JOB No **2009-70155**
BU# **876326**
DATE 3/19/2009 ENGINEER LC
Foundation: ○ PAD ○ Pier ◉ Tower Dwg ○ Fndn Dwg
Design Code: TIA/EIA-222-F

	Actual	Design	%
Moment	772	2216	**34.8%**
Shear	12	20.7	**58.0%**

www.iets.com
IETS
Engineering Services

Industrial Engineering & Testing Services, P.C.
129 Greenwich Road
Charlotte, North Carolina 28211
Phone: (704) 522-1131 / Fax: (704) 522-1280
Web: www.IETS.com email: towerdata@iets.com

Round Base Plate and Anchor Bolt Calculations

Project Number	*2009-70155*
Client Name	*Crown Castle International*
BU#:	*876326*
Site Name:	*Hayden*
App #:	*75847*

Reactions		
Moment:	772	ft-kips
Axial:	25	kips
Shear:	12	kips

Bolt Data		
Qty:	20	
Diam:	1.5	in
Grade(Fy):	93	ksi
Circle:	53.5	in

Plate Data		
Diam:	59	in
Thick:	2	in
Grade(Fy):	36	ksi
Eff. Width:	7.54	in

Anchor Rod Results

Maximum Bolt Tension:	33.4 Kips
Allowable Tension:	104.9 Kips
Anchor Rod Stress Ratio:	31.8% Pass

Base Plate Results

Base Plate Stress:	14.3 ksi
Allowable Plate Stress:	36.0 ksi
Base Plate Stress Ratio:	39.7% Pass

T-Mobile

T-Mobile USA Inc.
35 Griffin Rd South, Bloomfield, CT 06002-1853
Phone: (860) 692-7100
Fax: (860) 692-7159

Technical Memo

To: Transcend
From: Farid Marbouh - Radio Frequency Engineer
cc: Jason Overbey
Subject: Power Density Report for CT11280A
Date: March 27, 2009

1. Introduction:

This report is the result of an Electromagnetic Field Intensities (EMF - Power Densities) study for the T-Mobile antenna installation on a Monopole at 440 Hayden Station Road, Windsor, CT. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location.

2. Discussion:

The following assumptions were used in the calculations:

1) The emissions from T-Mobile transmitters are in the (1935-1944.8), (2140-2145), (2110-2120)MHz frequency Band.
2) The antenna array consists of three sectors, with 2 antennas per sector.
3) The model number for GSM antenna is DR65-18-02DP.
3) The model number for UMTS antenna is APX16DWV-16DWV.
4) GSM antenna center line height is 73 ft.
4) UMTS antenna center line height is 73 ft.
5) The maximum transmit power from any GSM sector is 1986.64 Watts Effective Radiated Power (EiRP) assuming 8 channels per sector.
5) The maximum transmit power from any UMTS sector is 2735.84 Watts Effective Radiated Power (EiRP) assuming 2 channels per sector.
6) All the antennas are simultaneously transmitting and receiving, 24 hours a day.
7) Power levels emitting from the antennas 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.
8) The average ground level of the studied area does not change significantly with respect to the transmitting location

Equations given in "FCC OET Bulletin 65, Edition 97-01" were then used with the above information to perform the calculations.

3. Conclusion:

Based on the above worst case assumptions, the power density calculation from the T-Mobile antenna installation on a Monopole at 440 Hayden Station Road, Windsor, CT, is 0.2308 mW/cm^2. This value represents 23.08% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm^2) set forth in the FCC/ANSI/IEEE C95.1-1991. Furthermore, the proposed antenna location for T-Mobile will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.
The combined Power Density from other carriers is 16.07%. The combined Power Density for the site is 39.15% of the M.P.E. standard.

Connecticut Market

T · ·Mobile·

Worst Case Power Density

Site:	**CT11280A**
Site Address:	**440 Hayden Station Road**
Town:	**Windsor**
Tower Height:	**85 ft.**
Tower Style:	**Monopole**

GSM Data		**UMTS Data**	
Base Station TX output	20 W	**Base Station TX output**	40 W
Number of channels	8	**Number of channels**	2
Antenna Model	DR65-18-02DP	**Antenna Model**	APX16DWV-16DWV
Cable Size	7/8 in.	**Cable Size**	7/8 in.
Cable Length	100 ft.	**Cable Length**	100 ft.
Antenna Height	73.0 ft.	**Antenna Height**	73.0 ft.
Ground Reflection	1.6	**Ground Reflection**	1.6
Frequency	1945.0 MHz	**Frequency**	2.1 GHz
Jumper & Connector loss	4.50 dB	**Jumper & Connector loss**	1.50 dB
Antenna Gain	17.3 dBi	**Antenna Gain**	18.0 dBi
Cable Loss per foot	0.0186 dB	**Cable Loss per foot**	0.0116 dB
Total Cable Loss	1.8600 dB	**Total Cable Loss**	1.1600 dB
Total Attenuation	6.3600 dB	**Total Attenuation**	2.6600 dB
Total EIRP per Channel	53.95 dBm	**Total EIRP per Channel**	61.36 dBm
(In Watts)	248.33 W	**(In Watts)**	1367.92 W
Total EIRP per Sector	62.98 dBm	**Total EIRP per Sector**	64.37 dBm
(In Watts)	1986.64 W	**(In Watts)**	2735.84 W
nsg	10.9400	**nsg**	15.3400
Power Density (S) =	**0.097094 mW/cm^2**	**Power Density (S) =**	**0.133709 mW/cm^2**
T-Mobile Worst Case % MPE =		**23.0803%**	

Equation Used :

$$S = \frac{(1000)(grf)^2 (Power) * 10^{(nsg/10)}}{4\pi (R)^2}$$

Office of Engineering and Technology (OET) Bulletin 65, Edition 97-01, August 1997

Co-Location Total

Carrier	**% of Standard**
Verizon	
Cingular	9.9200 %
Sprint	6.1500 %
AT&T Wireless	
Nextel	
MetroPCS	
Other Antenna Systems	
Total Excluding T-Mobile	**16.0700 %**
T-Mobile	23.0803
Total % MPE for Site	**39.1503%**