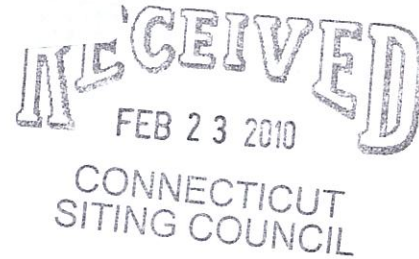


EM-CLEARWIRE-049-100223

February 23, 2010

S. Derek Phelps, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

ORIGINAL



**Re: Notice of Exempt Modification
Clearwire Corporation Notice to make an Exempt Modification to an Existing
Facility at 52 Bright Meadow Blvd, Enfield, CT
Clearwire Site Number CT-HFD0002**

Dear Mr. Phelps,

Pursuant to Conn. Agency Regulations Sections 16-50j-73 and 16-50j-72(b), Clearwire Corporation (Clearwire) hereby gives notice to the Connecticut Siting Council (Council) and the Town of Enfield, CT. of Clearwire's intent to make an exempt modification to an existing monopole tower (tower) located at 52 Bright Meadow Blvd, Enfield, CT. Specifically, Clearwire plans to add three (3) antennas to the tower, one (1) per sector and to add three (3) microwave dishes, one (1) per sector for backhaul at the 147' AGL. Pursuant to the Council's regulations, (Conn. Agency Regulations Section 16-50j-72(b)), Clearwire's plans do not constitute a modification subject to the Council's review because Clearwire 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. A copy of this notice has been sent to Town Manager Mathew Coppler of the Town of Enfield, CT.

Clearwire is currently developing a 4G wireless broadband network to provide high-speed wireless data and VoIP service within the State of Connecticut. Clearwire's 4G service leverages the WiMAX technology to enable enhanced wireless data communications. In order to accomplish the upgrade at this site, Clearwire plans to add three (3) WiMAX antennas, three (3) dishes and to install additional WiMAX related electronic equipment at the base of the tower.

The tower is a 147' monopole located at , Connecticut (Latitude 42 01 14.8 N Longitude 72 35 06.7 W). The tower is owned by Crown Castle USA Inc. Currently, Verizon, Nextel, AT&T, Cingular, Pocket and Sprint are located on the tower. Presently, Clearwire is not located at the site. Clearwire's base station equipment will be located on the ground next to the pole. A site plan with the tower elevations and site plan specifications is attached.

Clearwire will add three (3) antennas, one (1) to each sector, and mount three (3) microwave dishes, one (1) above each of those antennas. The center line for the microwave dishes will be 147'. Nine coaxial cables will be added to the structure, 2 per antenna and one per microwave dish. These cables will be inside the tower and bundled. To confirm that the tower can support these changes, Clearwire commissioned Crown Castle USA Inc. to perform a

structural analysis of the tower and the proposed changes. According to that structural dated February 1, 2010 and attached hereto, the structure is sufficient to support the proposed loading and will not need to be modified. The tower, with the additions and the modifications will be at 88.8% of its capacity.

Within the existing compound, Clearwire will install one (1) WiMAX radio and power cabinet on the existing pad at the site. The new equipment will be adjacent to the existing tower. Excluding brief, construction related noise during the addition of this equipment, the proposed changes to the tower will not increase noise levels at the site.

The addition of new WiMAX antennas and microwave dishes 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 base of 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 for the WiMAX antennas and dishes, measured at the base of the tower, indicates that the WiMAX antennas and dishes will emit 0.359% of the NCRP's standard for maximum permissible exposure. The cumulative power density analysis indicates that all the antennas on the structure will emit 27.039% 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 base of the tower. The power density analysis is attached.

In conclusion, Clearwire's proposed plan to add three (3) WiMAX antennas, three (3) microwave dishes and the associated base station equipment does not constitute a modification subject to the Council's jurisdiction because Clearwire will not increase the height of the tower, will not extend the boundaries of the compound at the site, will not increase the noise levels at the site and the radio frequency electromagnetic radiation power density will stay within all applicable standards.

Respectfully Submitted



Thomas F. Flynn III
Site Development Project Manager
Maxton Technology Inc.
1296 Blue Hills Avenue
Bloomfield, CT 06002
508-821-6974
Tom.Flynn@maxtontech.com
Agent for Clearwire Corporation

Cc: Town Manager
Mathew Coppler



To: Maxton
From: Frantz Pierre – Radio Frequency Engineer
Cc: Micah Hawthorne
Subject: Power Density Report for CT-HFD0002
Date: February 21, 2010

1. Introduction:

This report is the result of Electromagnetic Field Intensities (EMF – Power Densities) study for the Clearwire broadband antenna installation on a Self Support Tower at 55 Bright Meadow Rd, Enfield, CT, 06082. 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:

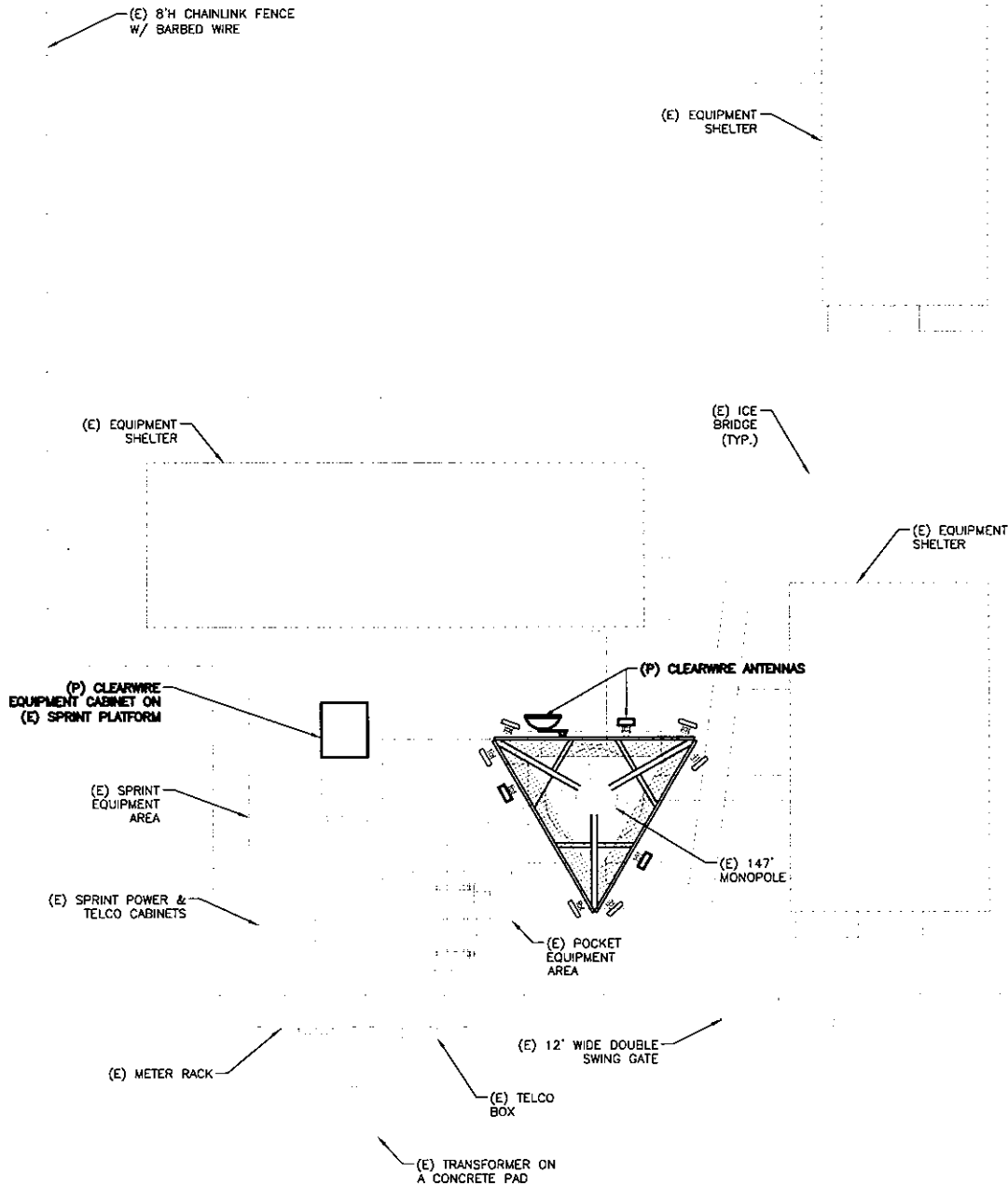
- 1) The emissions from Clearwire transmitters are in the (2496 – 2960) Frequency Band
- 2) The emissions from the Clearwire Microwave dishes are in the 11 GHz Frequency Band
- 3) The model number for Clearwire Antenna is Argus LLPX310R
- 4) The model number for the Microwave dish is Andrew VHLP2.5 with 30" Diameter.
- 5) The Clearwire Panel antenna centerline is 147 feet.
- 6) The Clearwire Microwave dish centerline is 147 feet.
- 7) The Maximum Transmit power from any Clearwire panel antenna is 251 Watts Effective Isotropic Radiated Power (EIRP) assuming 2 channels per sector.
- 8) The Maximum Transmit power from any Clearwire Microwave Dish is 346 Watts Effective Isotropic Radiated Power (EIRP) assuming 1 channel per dish.
- 9) All antennas are simultaneously transmitting and receiving 24 hours per day.
- 10) 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 used with the above information to perform the calculations.

3: Conclusion:

Based on the above worst case assumptions, the power density calculation from the Clearwire antenna installation on a Steel Monopole at 55 Bright Meadow Rd, Enfield, CT, is 0.003592 mW/cm². This value represents 0.359% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm²) set forth in the FCC/ANSI/IEEE C95-1-1991. Furthermore, the proposed antenna location for Clearwire 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 all other carriers is 27.58%. The combined Power Density for this site is 27.939% of the M.P.E. standard.



COMPOUND PLAN

SCALE: N.T.S.

1

(E) EXISTING
(P) PROPOSED



241 BOSTON POST RD WEST
MARLBOROUGH, MA 01752
Phone: 508-228-4100
Fax: 508-485-5321

Bay State Design, Inc.
Architects - Engineers
241 BOSTON POST RD WEST
MARLBOROUGH, MA 01752
Phone: 508-228-4100
Fax: 508-485-5321

clearw're

5808 LAKE WASHINGTON BLVD.
NE SUITE 300
KIRKLAND, WA 98033

PROJECT LOCATION:
ENFIELD

CT-HFD0002

55 BRIGHT MEADOW BLVD.
ENFIELD, CT 06082

APPROVED BY:

SITE TYPE:

MONOPOLE
COLOCATION

PROJECT MANAGER:
JP

DRAWN BY:
PN

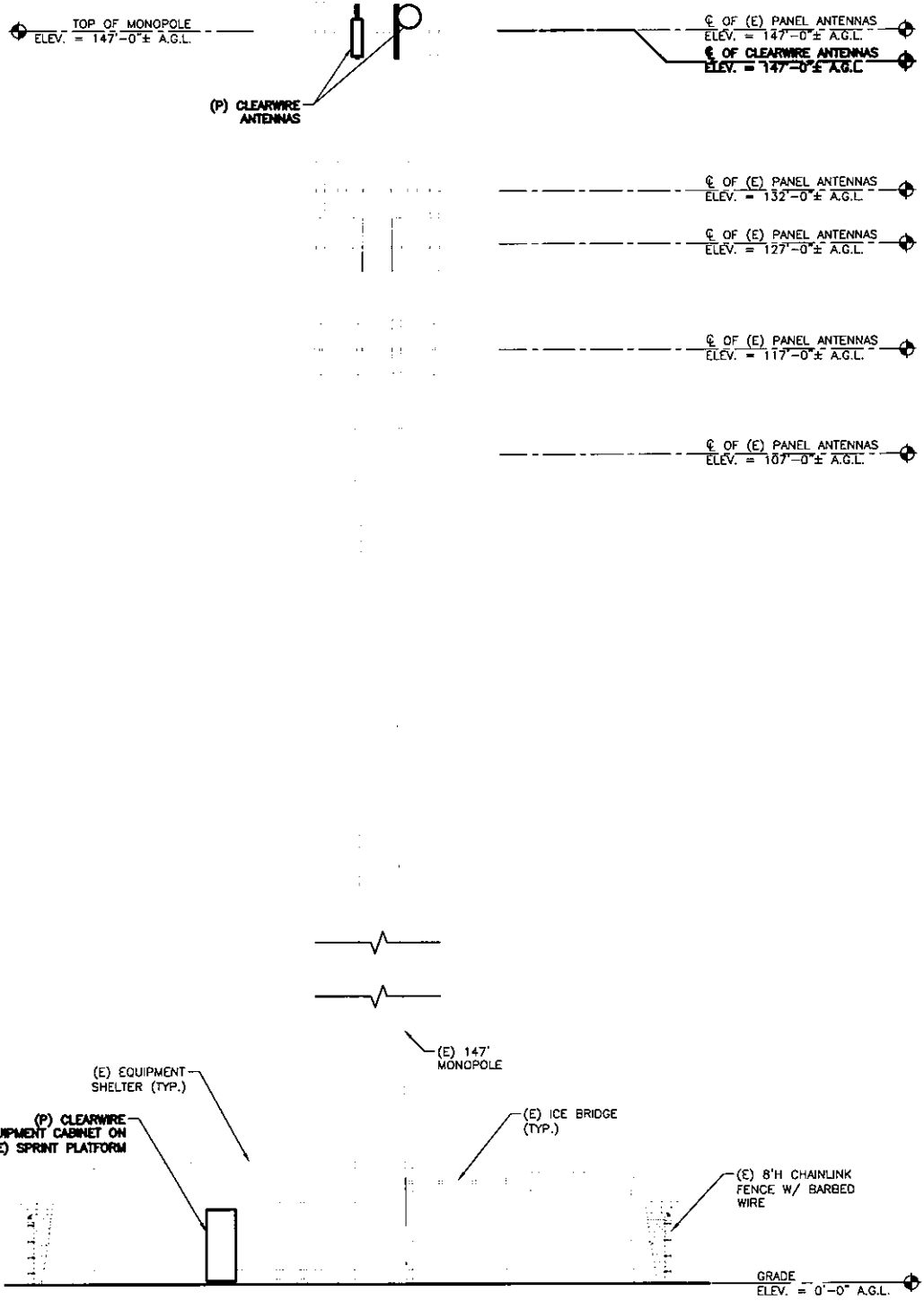
DATE:
09/25/09

REVISION:
2

ESDA PROJ. #: 2908.002

SHEET:

L1



ELEVATION
SCALE: N.T.S.

1

(E) EXISTING
(P) PROPOSED

MAXTON
BAY STATE DESIGN
241 BOSTON POST RD WEST
MARLBOROUGH, MA 01752
Phone: 508-228-4100
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Bay State Design, Inc.
Architects - Engineers
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MARLBOROUGH, MA 01752
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clearw're
5808 LAKE WASHINGTON BLVD.
NE SUITE 300
KIRKLAND, WA 98033

PROJECT LOCATION:
ENFIELD
CT-HFD0002
55 BRIGHT MEADOW BLVD.
ENFIELD, CT 06082
APPROVED BY:

SITE TYPE:
MONOPOLE
COLOCATION
PROJECT MANAGER:
JP
DATE:
09/25/09
DRAWN BY:
PN
REVISION:
2

BSDA PROJ. #:
2908.002
SHEET:
L2

Date: February 01, 2010

Eva Morales
Crown Castle
46 Broadway
Albany, NY 12204



Crown Castle USA Inc
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation:	Clearwire Corp Co-locate	
	Carrier Site Number:	CT-HFD0002
	Carrier Site Name:	Bright Meadow Rd
Crown Castle Designation:	Crown Castle BU Number:	876348
	Crown Castle Site Name:	ENFIELD
	Crown Castle JDE Job Number:	129400
	Crown Castle Work Order Number:	313068
Engineering Firm Designation:	Crown Castle USA Inc Project Number:	313068
Site Data:	Bright Meadow Blvd., ENFIELD, Hartford County, CT Latitude 42° 1' 14.91", Longitude -72° 35' 6.59" 147.5 Foot - Monopole Tower	

Dear Eva Morales,

Crown Castle USA Inc 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 313068, in accordance with application 92940, revision 2.

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:

LC5: Existing + 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 local code requirements based upon a wind speed of 80 mph fastest mile.

All 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 Crown Castle USA Inc 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.

Structural analysis prepared by: Reza Jenabzadeh, Engineer II/JCM

Respectfully submitted by:

Douglas K. Pineo

Douglas K. Pineo, PE
Manager Structural Design



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1) INTRODUCTION

This tower is a 147.5 ft Monopole tower designed by SUMMIT in September of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

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, 28.1 mph with 1 inch ice thickness and 50 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
147	152	2	dragonwave	A-ANT-18G-2-C	3 3 3 1	1/4 1/2 5/8 5/16	-
	147	2	dragonwave	HORIZON COMPACT			
		3	kathrein	840 10054 w/ Mount Pipe			
		1	motorola	TIMING 2000			
		3	samsung telecommunications	WIMAX DAP HEAD			

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
147	147	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Platform Mount [LP 712-1]			
132	134	6	antel	WPA-80090/4CF w/ Mount Pipe	12	1-5/8	1
		6	decibel	DB948F85T2E-M w/ Mount Pipe			
	132	1	tower mounts	Platform Mount [LP 712-1]			
127	129	12	decibel	DB844H90E-XY w/ Mount Pipe	12	7/8	1
	127	1	tower mounts	Platform Mount [LP 712-1]			
117	119	3	powerwave technologies	7770.00 w/ Mount Pipe	9	1-5/8	1
	117	6	powerwave technologies	LGP21401			
		9	tower mounts	6' x 2" Mount Pipe			
		1	tower mounts	Platform Mount [LP 712-1]			
107	107	1	tower mounts	Pipe Mount [PM 501-3]	-	-	1
		3	rfs celwave	APXV18-206517S-C w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
49	50	1	symmetricom	58532A	1	1/2	1
	49	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment

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)
147.5	147.5	1	-	14' Low profile platform	-	-
		12	Decibel	DB980H PCS		
132	132	1	-	14' Low profile platform	-	-
		12	-	Panel Antennas		
117	117	1	-	14' Low profile platform	-	-
		12	-	Panel Antennas		
50	50	1	-	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
TOWER MANUFACTURER DRAWINGS	Summit/Paul J. Ford	1613591	CCISITES
TOWER FOUNDATION DRAWINGS	Summit/Paul J. Ford	1613614	CCISITES
GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E., P.C. Geotechnical Engineering	1532963	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. Crown Castle USA Inc 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	147.5 - 108.5	Pole	TP29.4x22x0.25	1	-8.70	1082.89	46.4	Pass
L2	108.5 - 72.25	Pole	TP35.7x28.188x0.25	2	-13.51	1427.51	86.7	Pass
L3	72.25 - 35.75	Pole	TP42.2x34.355x0.313	3	-20.02	2108.11	88.8	Pass
L4	35.75 - 0	Pole	TP48.4x40.57x0.375	4	-29.87	2971.67	84.4	Pass
							Summary	
						Pole (L3)	88.8	Pass
						Rating =	88.8	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	90.0	Pass
1	Base Plate	0	81.1	Pass
1	Base Foundation Soil Interaction	0	92.3	Pass

Structure Rating (max from all components) =	92.3%
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

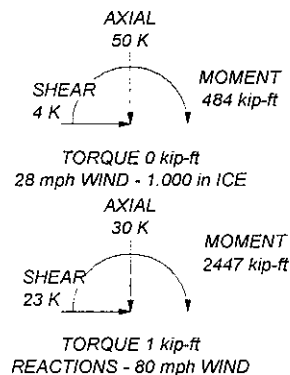
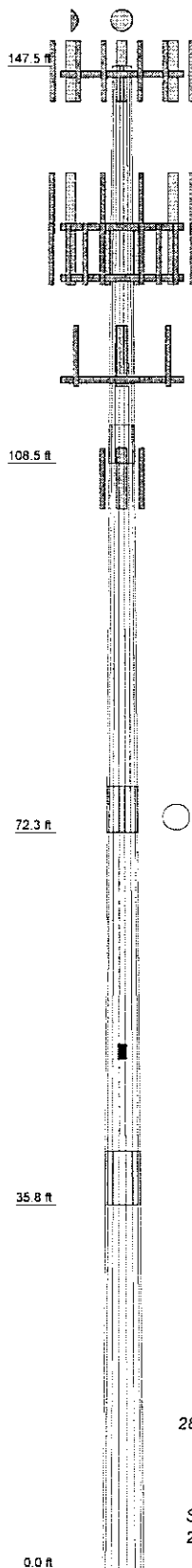
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

Post-Twist and Sway (with the proposed equipment)

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
152.00	A-ANT-18G-2-C	31	39.377	2.2419	0.0026	28746

APPENDIX A
RISA TOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Lap Splice (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	39.00	18	0.250	3.75	22.000	29.400	A572-60	2.7
2	40.00	18	0.250	4.50	28.188	35.700	A572-60	3.4
3	41.00	18	0.313	5.25	34.355	42.200	A572-65	5.3
4	41.00	18	0.375		40.570	48.400		7.3
								18.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980H90E-M w/ Mount Pipe	147	(2) DB948F85T2E-M w/ Mount Pipe	132
HORIZON COMPACT	147	(4) DB844H90E-XY w/ Mount Pipe	127
840 10054 w/ Mount Pipe	147	Platform Mount [LP 712-1]	127
TIMING 2000	147	(4) DB844H90E-XY w/ Mount Pipe	127
WIMAX DAP HEAD	147	(4) DB844H90E-XY w/ Mount Pipe	127
(2) DB980H90E-M w/ Mount Pipe	147	7770.00 w/ Mount Pipe	117
840 10054 w/ Mount Pipe	147	(2) LGP21401	117
WIMAX DAP HEAD	147	7770.00 w/ Mount Pipe	117
(2) DB980H90E-M w/ Mount Pipe	147	(2) LGP21401	117
HORIZON COMPACT	147	Platform Mount [LP 712-1]	117
840 10054 w/ Mount Pipe	147	(3) 6' x 2" Mount Pipe	117
WIMAX DAP HEAD	147	(3) 6' x 2" Mount Pipe	117
Platform Mount [LP 712-1]	147	(3) 6' x 2" Mount Pipe	117
A-ANT-18G-2-C	147	7770.00 w/ Mount Pipe	117
A-ANT-18G-2-C	147	(2) LGP21401	117
(2) WPA-80090/4CF w/ Mount Pipe	132	APXV18-206517S-C w/ Mount Pipe	107
(2) DB948F85T2E-M w/ Mount Pipe	132	Pipe Mount [PM 501-3]	107
(2) WPA-80090/4CF w/ Mount Pipe	132	APXV18-206517S-C w/ Mount Pipe	107
(2) DB948F85T2E-M w/ Mount Pipe	132	APXV18-206517S-C w/ Mount Pipe	107
Platform Mount [LP 712-1]	132	58532A	49
(2) WPA-80090/4CF w/ Mount Pipe	132	Side Arm Mount [SO 701-1]	49

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi	A572-65	65 ksi	80 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 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 88.8%

CROWN CASTLE
Shaping The Wireless World

Crown Castle USA Inc
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2254

Job: **BU# 876348**

Project: **Crown Castle International**
Client: **Crown Castle International**
Code: **TIA/EIA-222-F**
Path: **R:\SA Models - Letters\Work Area\Jenabzaden\876348\BU 876348\CS.dwg**
Drawn by: **RJenabzaden**
Date: **02/01/10**
Scale: **NTS**
App'd:
Dwg No: **E-1**