

PETITION NO. 878

CARRIE L. LARSON
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ORIGINAL

December 15, 2008

Via Federal Express

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

RECEIVED
DEC 15 2008

CONNECTICUT
SITING COUNCIL

**Re: Petition for Declaratory Ruling re: Installation of Telecommunication
Equipment Crown Castle USA, Inc. Telecommunications Facility at
85 Plainfield Avenue, West Haven, Connecticut**

Dear Mr. Phelps:

Please be advised that Pullman & Comley, LLC represents Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket") in the above-referenced matter. Pocket is pleased to submit this Petition to install antennas and appurtenant equipment at the existing 138-foot monopole facility located at 85 Plainfield Avenue in West Haven, Connecticut. Please find attached twenty-five (25) copies a Petition for a Declaratory Ruling that No Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility, located at 85 Plainfield Avenue in the Town of the Town of West Haven ("Facility"). Specifically, Pocket seeks to install a ten foot extension on the existing monopole, increasing the overall height to 148 feet. The extension would accommodate the proposed installation of Pocket antennas at the 146 foot level on the proposed extension. A check in the amount of \$500 to cover the filing fee for this Petition is also enclosed. The chief elected official of West Haven, as well as the owners of the tower and the underlying property have been sent notice of this Petition by first class mail.

We believe this represents an opportunity to take advantage of an existing telecommunication facility thereby reducing thee need for additional wireless towers. We look forward to your review and are happy to answer any questions you may have.

Respectfully Submitted,



Carrie L. Larson

PULLMAN & COMLEY, LLC
ATTORNEYS AT LAW

cc: Acorn Technology Campus, LLC
Ms. Veronica Harris, Crown Castle USA, Inc.
John M. Picard, Mayor, City of West Haven

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

**RE: Petition of Youghioghny
Communications-Northeast, LLC,
for a Declaratory ruling that a
Modification to an Existing Crown Castle USA, Inc.
Telecommunications Facility at 85 Plainfield Avenue, West Haven,
Connecticut, Does Not Require a
Certificate of Environmental Compatibility and Public
Need as the Proposed Modification Will Not
Have a Substantial Adverse Environmental Effect**

PETITION NO. _____

DECEMBER 15, 2008

Introduction

Youghioghny Communications-Northeast, LLC, doing business as Pocket Communications (“Pocket”) hereby Petitions the Connecticut Siting Council (“Council”) for a Declaratory Ruling that a Certificate of Environmental Compatibility and Public Need (“Certificate”) is not required pursuant to Section 16-50 *et seq.* of the Connecticut General Statutes (“CGS”) for the modification of an existing telecommunications facility described herein. The modification involves the installation of a ten foot extension on the existing monopole, increasing the overall height an additional ten feet, from 138 feet to 148 feet. The extension would accommodate the proposed installation of Pocket antennas at the 146 foot level on the proposed extension. Pocket submits that no Certificate is required because the proposed modification, a ten foot height increase, will not have a substantial adverse environmental effect.

Pocket as Petitioner

Pocket is licensed by the Federal Communications Commission (“FCC”) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation.

Description of the Project

The existing facility includes a 138 foot self-supporting monopole and associated equipment building, located at 85 Plainfield Avenue, West Haven (the "Facility"). As shown in the site map attached hereto as Exhibit A, The Facility is in the northwestern corner of West Haven, approximately 350 feet west of Plainfield Avenue, roughly 800 feet south of Derby Avenue (Route 34) and roughly 3,600 feet west of Forest Road (Route 122) The coordinates for the site are **Lat: 41° -18-04" and Long: 72 ° -58' -37"**. The tower is located in a wooded area, which provides a substantial visual buffer, with open space to the north and west, and a residential neighborhood several hundred feet to the south southeast.

The tower currently supports Sprint antennas at the one hundred eighteen foot (118') level centerline AGL (above ground level) and Verizon antennas at the one hundred thirty six foot level (136') AGL. Pocket proposes to install a ten foot pipe-mount extension to the Facility in order to install three Kathrein 742-213 flush mount antennas on the tower at the one hundred forty six foot centerline (146') AGL, and a Nortel CDMA Micro BTS 3231 cabinet, mounted on an "H-Frame," contained within a six foot by six foot (6'-0" x 6'-0") lease area. A small GPS antenna will be mounted on the tower, lower than the existing equipment. An ice bridge will run from the lease area to the tower. As mentioned above and shown in the site plans attached hereto as Exhibit B, Pocket will need to install a ten foot extension on the tower, increasing the height from one hundred thirty eight feet (138') AGL, to from one hundred forty eight feet (148') AGL to attain the necessary coverage for it's antennas. Utilities will be run via a proposed underground conduit from an existing utility backboard, within the compound (See Design Drawings and Equipment Specifications, attached as Exhibits B and C respectively). A structural analysis of the monopole tower facility has been performed and is attached as Exhibit

D. The analysis confirms that the tower is structurally capable of safely supporting the proposed installation. The analysis also concludes that it is necessary to reinforce the tower foundation to comply with loading specifications and when modified, which Pocket is committed to doing. Therefore, the proposed new installation will not overstress any of the pole components.

Surrounding Land Uses

As discussed above and shown in Exhibit A, the proposed project area is in a primarily wooded area with open space to Derby Avenue (Route 34) to the north and over two thousand feet of open space to the west. The existing vegetation in the area serves as a visual buffer. As mentioned above, there are residential areas to the northeast and southeast. The closest residence is roughly 400 feet away, to both the northeast and southeast.

Proposed Service Area

As can be seen in the propagation maps attached hereto as Exhibit E, Pocket's antennas will be used to fill an existing gap in coverage in West Haven and New Haven along Route 15 (Merritt/Wilbur Cross Parkway) and the highly traveled areas of Derby Avenue (Route 34), Forest Road (Route 122) and areas ranging toward Route 1 to the south. The antennas will also enhance existing coverage for capacity and facilitate in-building coverage in the area. This area encompasses a number of commercial enterprises. This location is important to Pocket's system as Routes 5 and 15, 34, 122 and 1 are major transportation arteries of the state.

The Project Will Not Have a Substantial Adverse Environmental Effect

The project will not have a substantial adverse environmental effect:

- Pocket's installation will have no substantial adverse visual impact. The tower is located in an area in which a ten foot increase in height will have a minimal visual effect. While the Facility is visible from isolated areas along Plainfield Avenue, the addition of the

proposed extension and telecommunications equipment to the Facility will not create a significant visual impact. The extension is designed to blend in visually with the tower. As shown in the photo simulations, attached as Exhibit F, the tower is located in a wooded area in which a ten foot extension to the tower will have a minimal visual effect. In addition, Pocket's antennas will be flush-mounted, reducing the overall visibility even further. The associated equipment will be located directly underneath the Facility in the existing equipment cm. Visibility of the compound area will be blocked from the street by the woods. A chain-link fence will surround the compound. Pocket submits that the installation will have virtually no visual impact on the surrounding area.

- The project will involve limited construction activity and minor disturbance to the area. The area is currently an open area with no vegetation. No cutting or other vegetative removal will be necessary.
- Pocket's utility routing will be done via underground conduits within appropriate easements and therefore will have no substantial adverse effect.
- The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. The worst-case RF power density calculations for the proposed Pocket antennas would be 32.12% of the FCC standard (see general power density calculations table, attached as Exhibit G).
- Pocket's installation will have no impact on water flow, water quality, or air quality and will comply with relevant noise regulations.

Conclusion

Pocket will not have a need to construct a new telecommunications tower to provide coverage for the target area if the Council determines that no Certificate is required. This Project involves the installation of a ten foot monopole extension the existing tower facility, and involves virtually no new construction activity to the existing equipment compound. Pocket intends to use an H-Frame rather than an equipment building and its utility routing work will be minimal, with excavation entirely contained within the easement area. This Project is consistent with the legislative policy set forth in CGS 16-50g and 16-50aa that encourages the use of existing structures and seeks to avoid the unnecessary proliferation of towers in the State.

CGS 16-50k(a) provides that a Certificate of Environmental Compatibility and Public Need is not required for a proposed modification of a facility that the Council determines does not have a “substantial adverse environmental effect.” The environmental effects of this proposed antenna installation have been evaluated and will not result in a substantial adverse effect on the environment or ecology, nor will there be damage to the existing scenic, historical or recreational values. Accordingly, we request that the Council determine that the proposed modifications to an existing facility will have no such substantial adverse environmental effect and, therefore, that no Certificate is required.

Communications regarding this Petition for a Declaratory Ruling should be directed to:

Carrie L. Larson
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702
Telephone: (860) 424-4312
Fax: (860) 424-4370

Respectfully submitted,

YOUGHIOGHENY COMMUNICATIONS-
NORTHEAST, LLC, D/B/A POCKET
COMMUNICATIONS ("POCKET")

By  _____

Carrie L. Larson
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702
Telephone: (860) 424-4312
Fax: (860) 424-4370

Enclosure

cc: Acorn Technology Campus, LLC
Ms. Veronica Harris, Crown Castle USA, Inc.
John M. Picard, Mayor, City of West Haven

Exhibit A

Site Map

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut

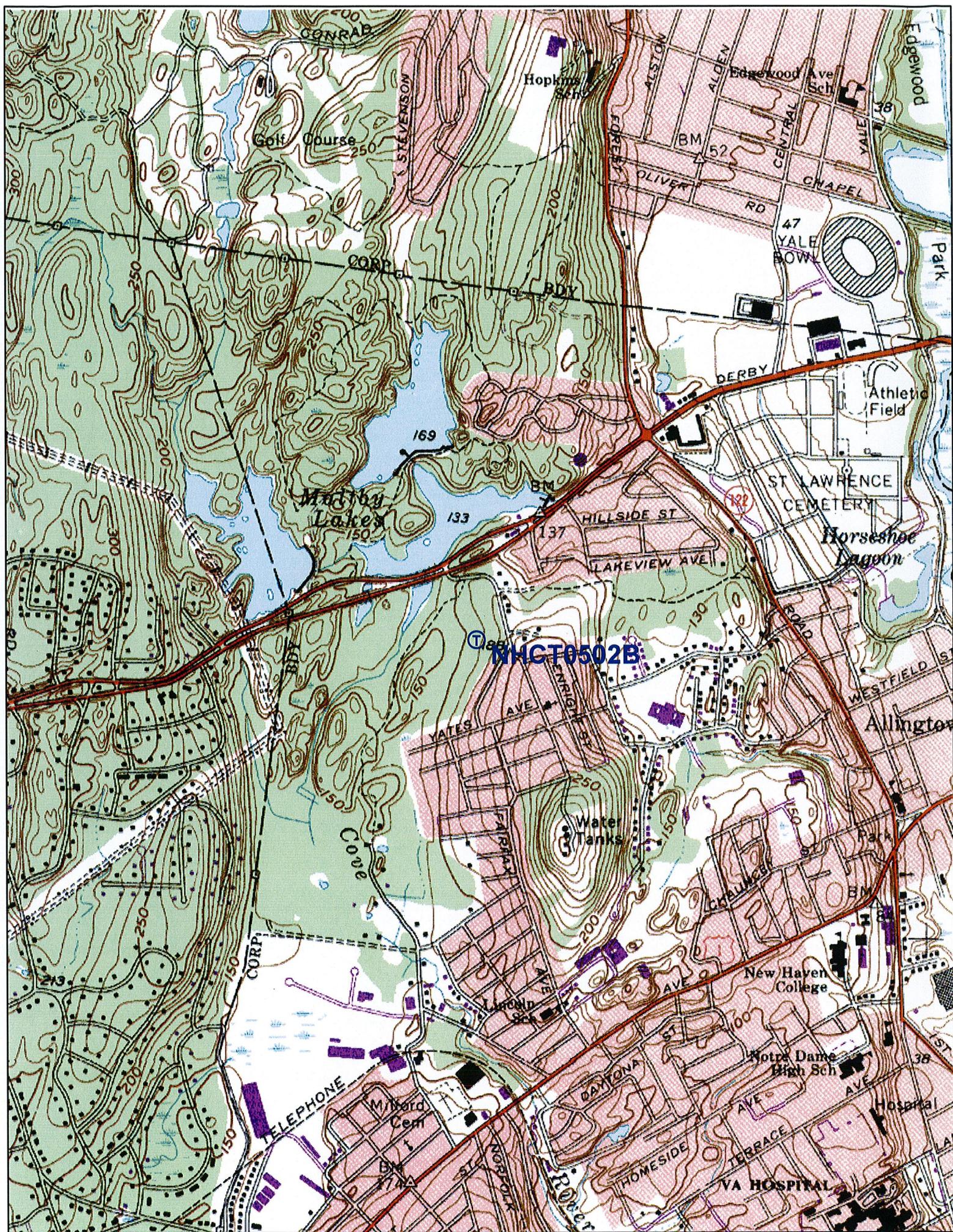


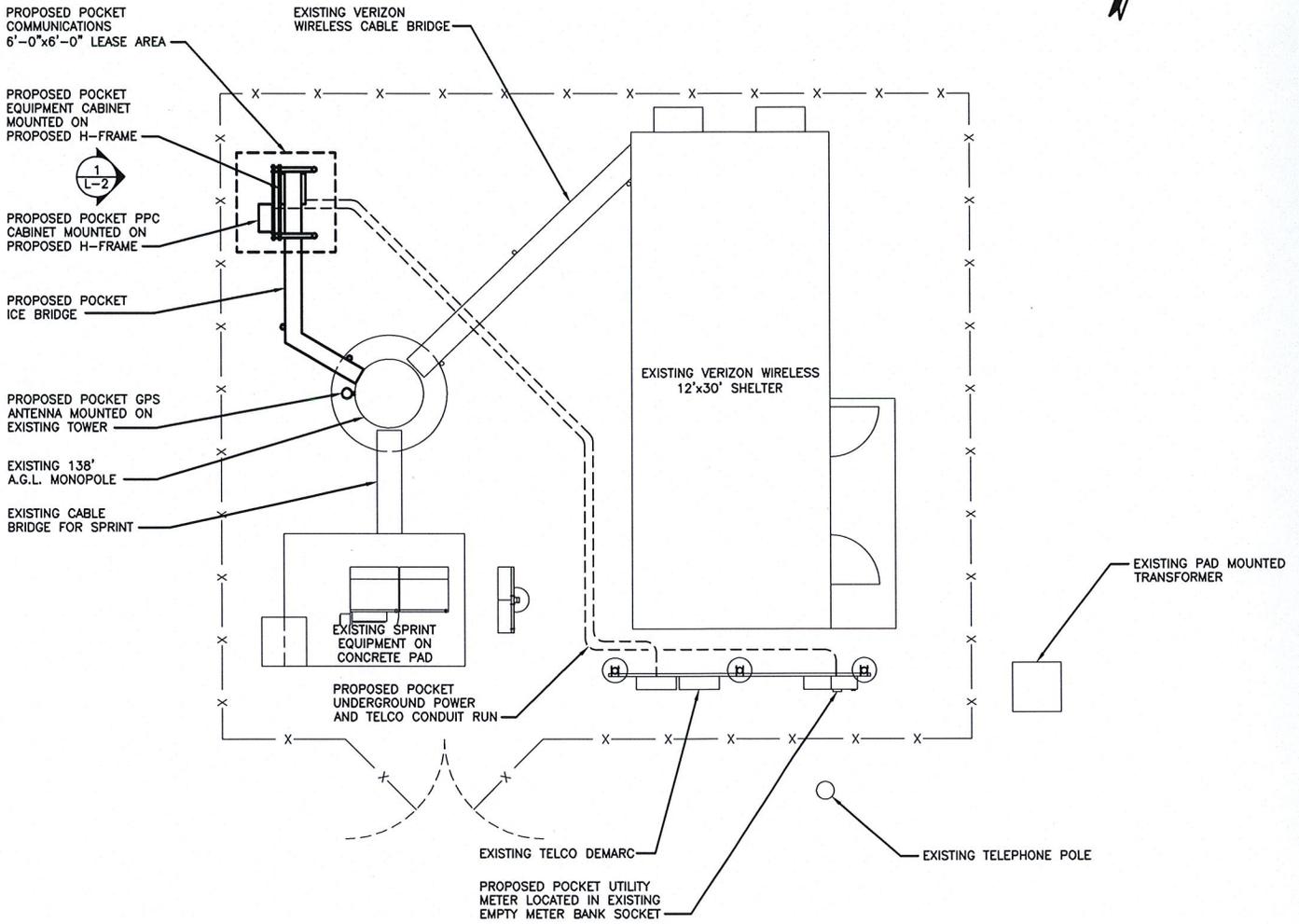
Exhibit B

Design Drawings

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut



APPROX. COAX RUN
180'

APPROVALS

SITE OWNER	DATE
CONSTRUCTION MANAGER	DATE
R.F. ENGINEER	DATE
SITE ACQUISITION	DATE

THE ABOVE PARTIES HEREBY APPROVE AND ACCEPT THESE CONDITIONS AND AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE CONTRACT TO PROCEED WITH THE CONSTRUCTION OF THE PROJECT. ALL COMMERCIAL PROVISIONS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES OR MODIFICATIONS THEY MAY MAKE.

SITE PLAN
SCALE: N.T.S.



MAXTON
50 Eastman St.
South Easton, MA 02375
Phone: (508) 936-6363
Fax: (508) 936-6365

BAY STATE DESIGN
Bay State Design Associates, Inc.
Architects • Engineers
70 Tower Office Park
Woburn, MA 01801
Phone: 781-932-2467
Fax: 781-932-9771

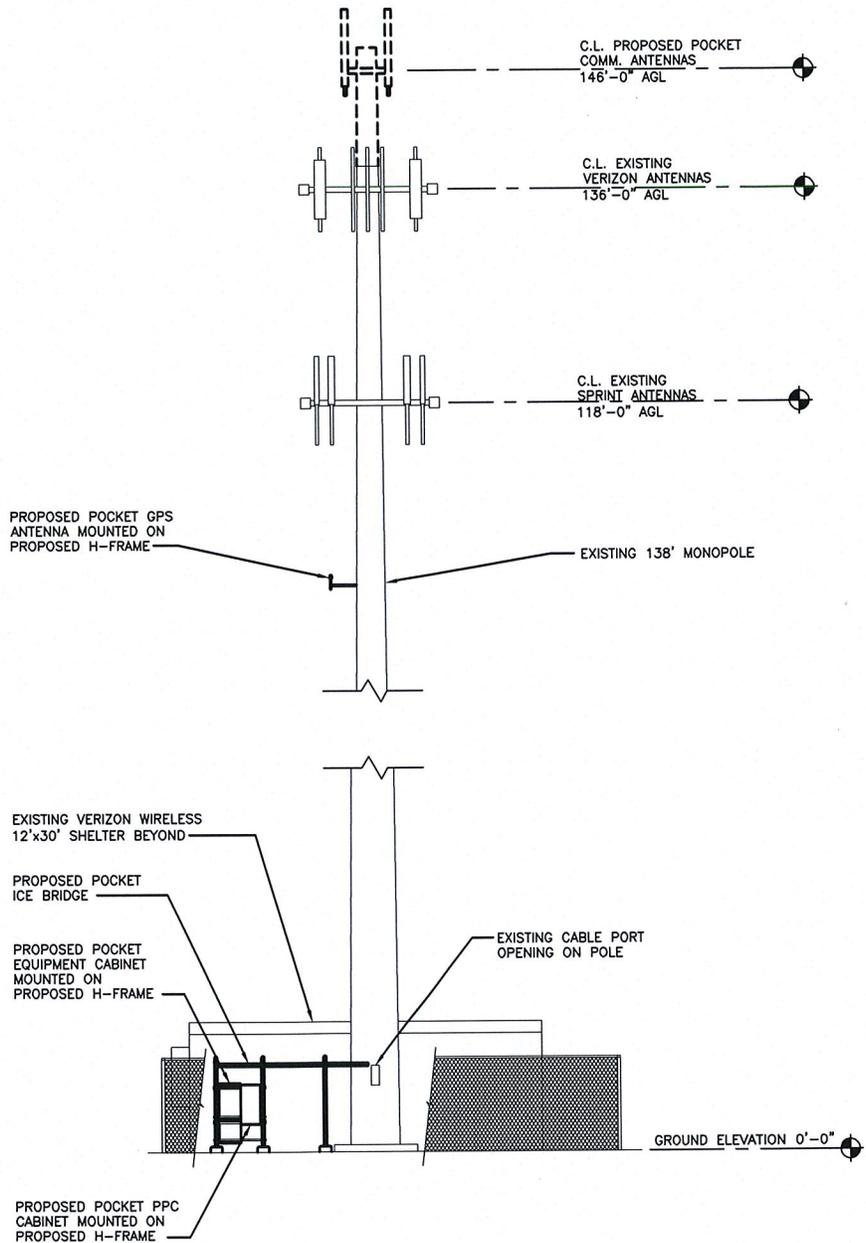
PREPARED FOR:

Pocket Communications
P.O. Box 5936
San Antonio, TX 78201

SITE NUMBER:	NHCT0502B
SITE NAME:	NHCT0502B WEST HAVEN, CT
SITE ADDRESS:	85 PLAINFIELD AVENUE WEST HAVEN, CT

DRAWN BY:	SM
CHECKED BY:	JP
DATE:	11/19/08

PROJECT NUMBER:	2882.084
SHEET:	L-1



ELEVATION

SCALE: N.T.S.



APPROVALS	
SITE OWNER _____	DATE _____
CONSTRUCTION MANAGER _____	DATE _____
R.F. ENGINEER _____	DATE _____
SITE ACQUISITION _____	DATE _____

THE ABOVE SIGNED PARTY APPROVE AND ACCEPT THESE DOCUMENTS AND ASSUME THE CONSEQUENCE TO PROCEED WITH THE CONSTRUCTION. SIGNATURES MUST BE ALL COMPANY OFFICIALS AND NOT TO BE USED BY THE LOCAL BUILDING DEPARTMENT AND ANY OWNERS OR REPRESENTATIVES THEY MAY EMPLOY.

MIXTON
30 Eastman St.
South Easton, MA 02375
Phone: (508) 836-6343
Fax: (508) 836-3305

BAY STATE DESIGN
Bay State Design Associates, Inc.
Architects • Engineers
70 Tower Office Park
Woburn, MA 01801
Phone: 781-932-2467
Fax: 781-932-9771

PREPARED FOR:



Pocket Communications
P.O. Box 5936
San Antonio, TX 78201

SITE NUMBER: NHCT0502B	DRAWN BY: SM	PROJECT NUMBER: 2882.084
SITE NAME: NHCT0502B WEST HAVEN, CT	CHECKED BY: JP	SHEET: L-2
SITE ADDRESS: 85 PLAINFIELD AVENUE WEST HAVEN, CT	DATE: 11/19/08	

Exhibit C

Equipment Specifications

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut

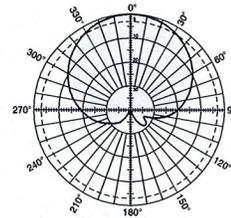
Kathrein's X-polarized adjustable electrical downtilt antennas offer the wireless carrier the ability to tailor polarization diversity sites for optimum performance. Using variable downtilt, only a few models need be procured to accommodate the needs of widely varying conditions. Remotely controlled downtilt is available as a retrofitable option.

- 0-6° downtilt range.
- UV resistant pulltruded fiberglass radome.
- DC Grounded metallic parts for impulse suppression.
- No moving electrical connections.
- Wideband vector dipole technology.
- Optional remote downtilt Control.
- Will accommodate future 3G / UMTS applications.

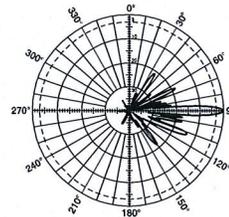
General specifications:

Frequency range	1710–2170 MHz
VSWR	< 1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° and -45°
Front-to-back ratio (180°±30°)	>30 dB (co-polar) >25 dB (total power)
Maximum input power	300 watts per input (at 50°C)
Electrical downtilt continuously adjustable	0–6 degrees
Connector	2 x 7/16 DIN female
Isolation	>30 dB
Cross polar ratio	
Main direction 0°	25 dB (typical)
Sector ±60°	>10 dB
Weight	22 lb (10 kg)
Dimensions	76.5 x 6.1 x 2.7 inches (1942 x 155 x 69 mm)
Equivalent flat plate area	4.62 ft ² (0.429 m ²)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	87.2 x 6.8 x 3.6 inches (2214 x 172 x 92 mm)
Shipping weight	24.3 lb (11 kg)
Mounting	Fixed and tilt mount options are available for 2 to 4.6 inch (50 to 115 mm) OD masts.

See reverse for order information.



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization



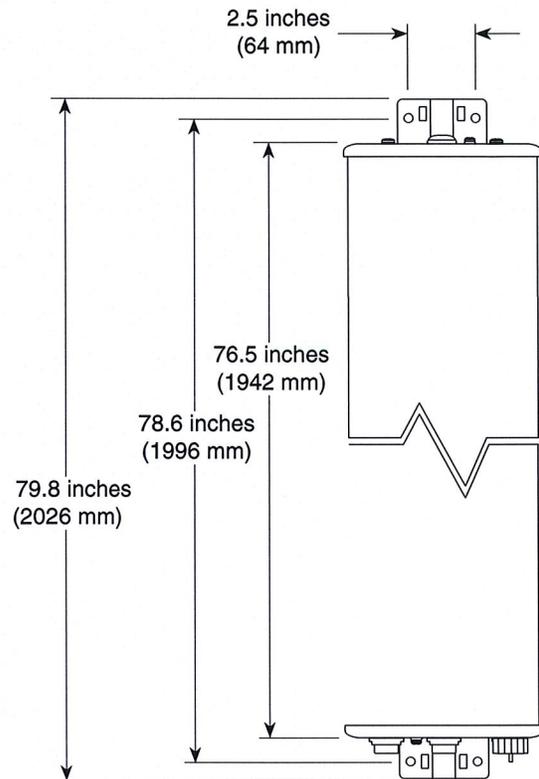
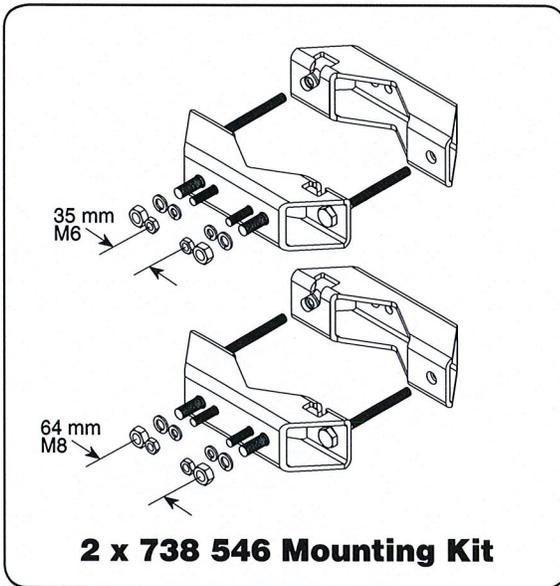
Specifications:	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain	19 dBi	19.2 dBi	19.5 dBi
+45° and -45° polarization horizontal beamwidth	67° (half-power)	65° (half-power)	63° (half-power)
+45° and -45° polarization vertical beamwidth	4.7° (half-power)	4.5° (half-power)	4.3° (half-power)
Vertical Pattern—sidelobe suppression for first side-lobe above main beam	0° 2° 4° 6° T 18 17 15 15 dB	0° 2° 4° 6° T 18 18 17 15 dB	0° 2° 4° 6° T 18 18 17 15 dB



10642-H
936.2074/h

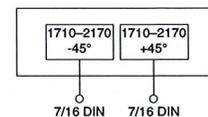
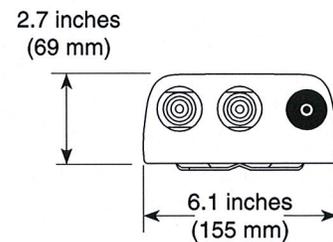


*Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



Mounting Options:

Model	Description
2 x 738 546	Mounting Kit for 2 to 4.6 inch (50 to 115 mm) OD mast.
737 978	Tilt Kit for use with the above mounting kit, 0–11 degrees downtilt angle. (requires 2 x 738 546 Mounting Kit)
742 263	Three-panel Sector Mounting Kit (120 deg. ea.) for 3.5 inch (89 mm) OD mast.

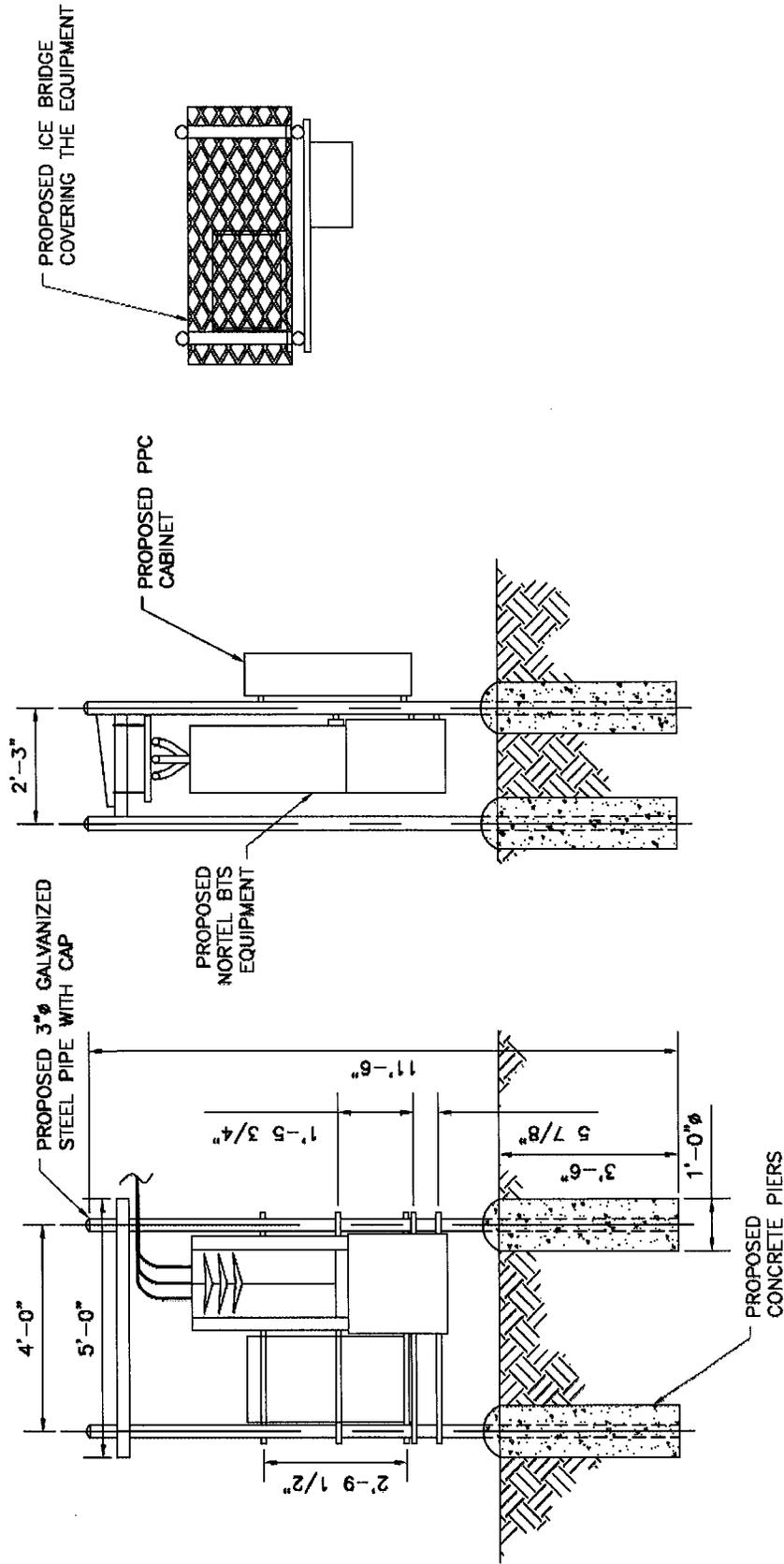


Order Information:

Model	Description
742 213	Antenna with 7/16 DIN connectors 0°–6° adjustable electrical downtilt

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com



Pocket/Youghiogheny Communications – Northeast, LLC
 Rack Detail



CDMA BTS 3231 AWS 1.7/2.1 GHz (Outdoor/Indoor)

to transport to hard to reach locations such as the top of a high rise building.

CDMA BTS 3231

Industry's Highest Capacity AWS Micro BTS

The CDMA BTS 3231 is the latest extension to Nortel Networks BTS (Base Transceiver Station) portfolio providing the ideal solution for urban, sub-urban and rural deployments. The CDMA BTS 3231 is a 3-carrier, 3-sector outdoor/indoor BTS operating at the AWS band of 1.7/2.1 GHz supporting IS-95, 1XRTT and 1xEV-DO simultaneously. BTS 3231 provides flexible deployments solutions including floor, rack, and wall mount options. The power consumption of BTS3231 is industry leading consuming only 630W for 3C3S. The BTS 3231 is also very light at 240lbs making it easy

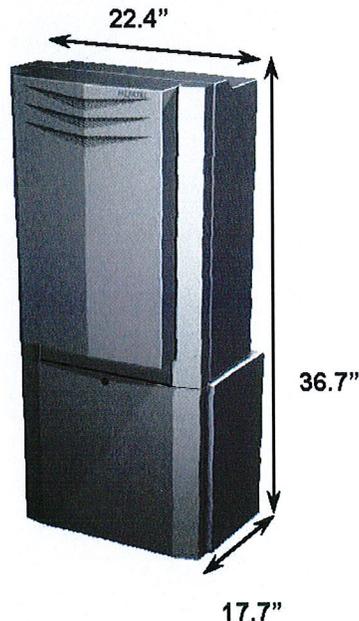


Exhibit D

Structural Analysis

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut



Date: **November 7, 2008**

Veronica Harris
Crown Castle USA, Inc.
1200 McArthur Blvd.
Mahwah, NJ 07430
(201) 236-9094

PSG Engineering, Ltd.
1006 Thompson Highway
Richmond, TX 77469
Phone: (281) 239-8490
Fax: (281) 239-8515

Subject: Structural Analysis Report

Carrier Designation

Youghiogheny Communications Co-Locate

Carrier Site Number: "NHCT0502A"

Carrier Site Name: "NHCT0502A"

Crown Castle Designation

Crown Castle BU Number: 876323

Crown Castle Site Name: HILLSIDE

Crown Castle JDE Job Number: 111834

Engineering Firm Designation

PSG Engineering Project Number: 0801F202-A060140

Site Data

85 Plainfield Avenue, West Haven, CT, New Haven County

Latitude 41° 18' 34.24", Longitude -72° 58' 36.83"

138 Foot - Monopole Tower w/10' Extension

Dear Ms. Harris,

PSG Engineering, Ltd. is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the aforementioned 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 310147, in accordance with application 70485, 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:

LC1: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table 1 and Table 2 for the proposed and existing/reserved loading.

The analysis has been performed in accordance with the TIA/EIA 222-F standard based upon a wind speed of 85 mph fastest mile (105 mph 3-second gust).

We at *PSG Engineering, Ltd.* 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,

Oscar Pedraza, P.E.
President



Date: November 7, 2008

Veronica Harris
Crown Castle USA, Inc.
1200 McArthur Blvd.
Mahwah, NJ 07430
(201) 236-9094

PSG Engineering, Ltd.
1006 Thompson Highway
Richmond, TX 77469
Phone: (281) 239-8490
Fax: (281) 239-8515

Subject: Structural Analysis Report

Carrier Designation Youghiogheny Communications Co-Locate
Carrier Site Number: "NHCT0502A"
Carrier Site Name: "NHCT0502A"

Crown Castle Designation Crown Castle BU Number: 876323
Crown Castle Site Name: HILLSIDE
Crown Castle JDE Job Number: 111834

Engineering Firm Designation PSG Engineering Project Number: 0801F202-A060140

Site Data 85 Plainfield Avenue, West Haven, CT, New Haven County
Latitude 41° 18' 34.24", Longitude -72° 58' 36.83"
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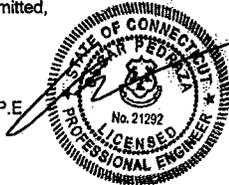
LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading.

The analysis has been performed in accordance with the TIA/EIA 222-F standard based upon a wind speed of 85 mph fastest mile (105 mph 3-second gust).

We at PSG Engineering, Ltd. 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,

Oscar Pedraza, P.E.
President



NOV 11 2008

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RISA Tower Output

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Base Level Drawing

1) INTRODUCTION

The tower superstructure analysis is based on the original tower design by Paul J. Ford and Company for Summit Manufacturing, Inc. dated June 5, 1997 (TIA/EIA-222-F: 90 mph and 78 with 1/2" radial ice). The tower substructure analysis is based on the original foundation design by Paul J. Ford and all information for the substructure review is based on information provided in Paul J. Ford's foundation drawing and supporting calculations.

2) ANALYSIS CRITERIA

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Deflections calculated using a wind speed of 50 mph.
- Feedline torque is considered.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333

Table Legend
Proposed = (P)
Reserved = (R)

Table 1 – Proposed (P) Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (inches)
148	3(P)	Kathrein	742 213	Flush Mount (3)	6(P) (Internal)	1 5/8

Table 2 – Installed and Reserved (R) Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (inches)
136	CASE A					
	6	Decibel	DB950F40T2E-M	Low Profile Platform (1)	6+6(R) (Internal)	1 5/8
	3(R)	KMW	AM-X-WM-17-65-00T		1(R) (Internal)	1/2
	3(R)	Communications	KMDAPS2050000			
	1(R)	Andrew	VHLP2-23-2WH			
*CASE B (Controlling Load Case)						
	9(R)	MLA	72"x12"x7"	Low Profile Platform (1)	9(R) (Internal)	1 5/8
120	6(R)	Antel	LPA-80063/6CF	Low Profile Platform (1)	12 (Internal)	1 5/8
	6(R)		LPA-185063/8CFx2			
90	1	Standard	GPS	Single Standoff (1)	1 (Internal)	1/2

*Note: Controlling Load Case results shown in Table 5 and Appendix A.

Table 3 – Original Tower Manufacturer Design Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (inches)
140	12	Decibel	DB980H PCS	Low Profile Platform (1)	Not Available (Internal)	
120	12	Swedcom	ALP-9212-N	Low Profile Platform (1)		
100	12	Swedcom	ALP-9212-N	Low Profile Platform (1)		
90	1	Standard	GPS	Pipe Mount (1)		

3) ANALYSIS PROCEDURE

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Original Tower Design	Summit	1615021	Crown Site Data Manager
Original Foundation Design		1614608	
CAD Level Drawing(s)	146',138',118' Level Drawing(s)	-	Crown CAD Department

3.1) Analysis Method

RISATower (Version 5.3.1.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/EIA/TIA 222F or the local building code requirements. 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 specifications.
3. The configuration of antennas, transmission cables, mounts, and other appurtenances are as specified in Tables 1 and 2 and the Level drawing(s) listed in Table 4.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222F.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and PSG Engineering should be allowed to review any new information to determine its effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 – Tower Component Stresses vs. Capacity – LC1

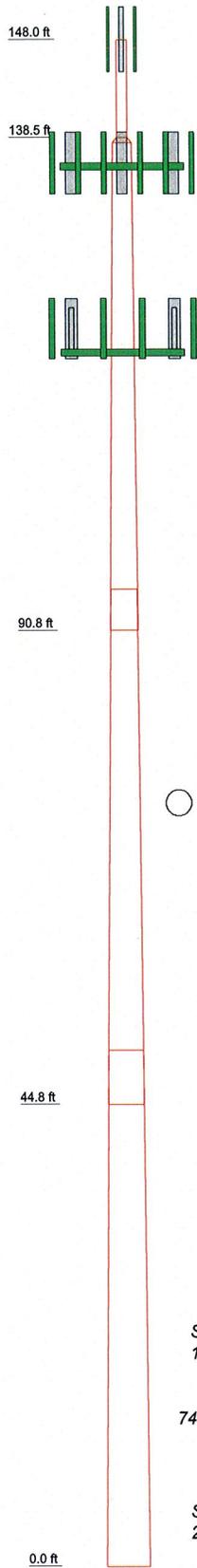
Notes	Component	Elevation (ft)	% Capacity	Pass/Fail
RISA Tower Analysis Summary:(Monopole)				
			Summary	
Notes:	Component	Elevation	% Capacity	Pass/Fail
	L1	148 – 138.5	4.3	Pass
	L2	138.5 – 138	4.2	Pass
	L3	138 - 90.75	57.4	Pass
	L4	90.75 - 44.75	72.5	Pass
	L5	44.75 - 0	71.8	Pass
Individual Components:				
Notes:	Component	Elevation	% Capacity	Pass/Fail
	Base Plate	-	44.3	Pass
	Anchor Bolts	-	80.6	Pass
	Base Foundation (Compared w/ Design Loads)	-	75.5	Pass
Structure Rating (max from all components) =				75.5%

4.1) Recommendations (if applicable)

No modifications are necessary.

APPENDIX A
RISA TOWER OUTPUT

Section	1	2	3	4	5	18.9
Length (ft)	9.50	0.50	47.25	50.00	50.00	18.9
Number of Sides	1	1	18	18	18	18.9
Thickness (in)	0.4060	0.4060	0.2500	0.3125	0.3750	18.9
Lap Splice (ft)					5.25	18.9
Top Dia (in)	12.7500	12.7500	22.0000	30.5839	39.3583	18.9
Bot Dia (in)	12.7500	22.0000	31.9240	41.0860	49.8600	18.9
Grade					A607-60	18.9
Weight (K)	0.5	0.0	3.4	6.0	9.0	18.9



DESIGNED APPURTENANCE LOADING

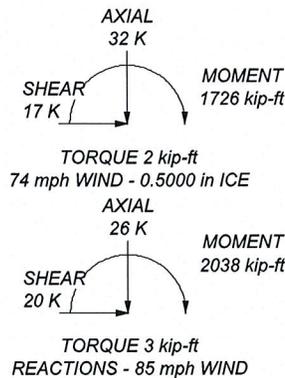
TYPE	ELEVATION	TYPE	ELEVATION
742 213 w/Mount Pipe	148	(2) LPA-80063/6CF w/Mount Pipe	120
742 213 w/Mount Pipe	148	(2) LPA-185063/8CFx2 w/Mount Pipe	120
742 213 w/Mount Pipe	148	(2) LPA-80063/6CF w/Mount Pipe	120
(3) 72"x12" MLA Antenna w/Mount Pipe	136	(2) LPA-185063/8CFx2 w/Mount Pipe	120
(3) 72"x12" MLA Antenna w/Mount Pipe	136	(2) LPA-80063/6CF_5 w/Mount Pipe	120
(3) 72"x12" MLA Antenna w/Mount Pipe	136	(2) LPA-80063/6CF w/Mount Pipe	120
(3) 72"x12" MLA Antenna w/Mount Pipe	136	PIROD 13' Low Profile Platform	118
PIROD 13' Low Profile Platform Top (Monopole)	136	GPS antenna w/ sidearm mount	90

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 80.6%



PSG Engineering, Ltd.
 1006 Thompson Highway
 Richmond, TX
 Phone: (281)-343-7099
 FAX: (281)-239-8515

Job: PSG Engineering Project Number: 0801F202-A06014			
Project: (876323) (HILLSIDE)			
Client: Crown Castle USA, Inc.	Drawn by: Gabe Hernandez	App'd:	
Code: TIA/EIA-222-F	Date: 11/07/08	Scale: NTS	
Path: K:\Production\Stage 2 (Production)\0801F202\876323.en	Dwg No. E-1		

RISATower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX Phone: (281)-343-7099 FAX: (281)-239-8515	Job PSG Engineering Project Number: 0801F202-A060140	Page 1 of 8
	Project (876323) (HILLSIDE)	Date 16:16:35 11/07/08
	Client Crown Castle USA, Inc.	Designed by Gabe Hernandez

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in New Haven County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 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.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	148.00-138.50	9.50	0.00	Round	12.7500	12.7500	0.4060		A607-60 (60 ksi)
L2	138.50-138.00	0.50	0.00	Round	12.7500	22.0000	0.4060		A607-60 (60 ksi)
L3	138.00-90.75	47.25	4.00	18	22.0000	31.9240	0.2500	1.0000	A607-60 (60 ksi)
L4	90.75-44.75	50.00	5.25	18	30.5839	41.0860	0.3125	1.2500	A607-60 (60 ksi)
L5	44.75-0.00	50.00		18	39.3583	49.8600	0.3750	1.5000	A607-60 (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	12.7500	15.7366	300.1140	4.3698	6.3750	47.0767	599.4105	7.8676	0.0000	0
	12.7500	15.7366	300.1140	4.3698	6.3750	47.0767	599.4105	7.8676	0.0000	0
L2	12.7500	15.7366	300.1140	4.3698	6.3750	47.0767	599.4105	7.8676	0.0000	0
	22.0000	27.5289	1606.6374	7.6443	11.0000	146.0579	3208.8979	13.7632	0.0000	0
L3	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	32.4165	25.1333	3185.6138	11.2443	16.2174	196.4319	6375.4192	12.5690	5.1786	20.714
L4	31.9088	30.0254	3476.0879	10.7463	15.5366	223.7353	6956.7498	15.0156	4.8328	15.465
	41.7198	40.4422	8494.3152	14.4746	20.8717	406.9779	16999.8075	20.2250	6.6811	21.38
L5	41.0851	46.3998	8908.6249	13.8391	19.9940	445.5648	17828.9719	23.2043	6.2671	16.712
	50.6292	58.8995	18222.0135	17.5672	25.3289	719.4165	36468.0040	29.4554	8.1154	21.641

RISATower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX Phone: (281)-343-7099 FAX: (281)-239-8515	Job PSG Engineering Project Number: 0801F202-A060140	Page 3 of 8
	Project (876323) (HILLSIDE)	Date 16:16:35 11/07/08
	Client Crown Castle USA, Inc.	Designed by Gabe Hernandez

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
FOAM)						1/2" Ice	0.00	0.82
*								
EL. 138' LEVEL								
LDF7-50A (1-5/8	A	No	Inside Pole	138.00 - 10.00	9	No Ice	0.00	0.82
FOAM)						1/2" Ice	0.00	0.82
*								
EL. 118' LEVEL								
AVA7-50 (1-5/8 LOW	B	No	Inside Pole	120.00 - 10.00	12	No Ice	0.00	0.72
DENSI. FOAM)						1/2" Ice	0.00	0.72
*								
EL. 90' LEVEL								
LDF4-50A (1/2 FOAM)	B	No	Inside Pole	90.00 - 10.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
*								
***TOWER								
HARDWARE***								
Climbing Ladder (Ar)	C	No	CaAa (Out Of Face)	138.00 - 10.00	1	No Ice	0.04	1.00
						1/2" Ice	0.14	1.53

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	148.00-138.50	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	138.50-138.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	138.00-90.75	A	0.000	0.000	0.000	0.000	0.58
		B	0.000	0.000	0.000	0.000	0.25
		C	0.000	0.000	0.000	1.772	0.05
L4	90.75-44.75	A	0.000	0.000	0.000	0.000	0.57
		B	0.000	0.000	0.000	0.000	0.40
		C	0.000	0.000	0.000	1.725	0.05
L5	44.75-0.00	A	0.000	0.000	0.000	0.000	0.43
		B	0.000	0.000	0.000	0.000	0.31
		C	0.000	0.000	0.000	1.303	0.03

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	148.00-138.50	A	0.500	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	138.50-138.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

RISATower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX Phone: (281)-343-7099 FAX: (281)-239-8515	Job PSG Engineering Project Number: 0801F202-A060140	Page 4 of 8
	Project (876323) (HILLSIDE)	Date 16:16:35 11/07/08
	Client Crown Castle USA, Inc.	Designed by Gabe Hernandez

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L3	138.00-90.75	A	0.500	0.000	0.000	0.000	0.000	0.58
		B		0.000	0.000	0.000	0.000	0.25
		C		0.000	0.000	0.000	6.497	0.07
L4	90.75-44.75	A	0.500	0.000	0.000	0.000	0.000	0.57
		B		0.000	0.000	0.000	0.000	0.40
		C		0.000	0.000	0.000	6.325	0.07
L5	44.75-0.00	A	0.500	0.000	0.000	0.000	0.000	0.43
		B		0.000	0.000	0.000	0.000	0.31
		C		0.000	0.000	0.000	4.778	0.05

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
EL. 138' LEVEL									
742 213 w/Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice	5.52 6.16	4.77 6.21	0.05 0.09
742 213 w/Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice	5.52 6.16	4.77 6.21	0.05 0.09
742 213 w/Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice	5.52 6.16	4.77 6.21	0.05 0.09
* *									
EL. 138' LEVEL									
(3) 72"x12" MLA Antenna w/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	0.08 0.14
(3) 72"x12" MLA Antenna w/Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	0.08 0.14
(3) 72"x12" MLA Antenna w/Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	0.08 0.14
PiROD 13' Low Profile Platform Top (Monopole)	C	None		0.0000	136.00	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1.30 1.76
* *									
EL. 118' LEVEL									
(2) LPA-80063/6CF w/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	10.33 10.90	10.43 11.48	0.05 0.14
(2) LPA-185063/8CFx2 w/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	3.23 3.62	3.94 4.55	0.03 0.06
(2) LPA-80063/6CF w/Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	10.33 10.90	10.43 11.48	0.05 0.14
(2) LPA-185063/8CFx2 w/Mount Pipe	B	From Leg	4.00 0.00	0.0000	120.00	No Ice 1/2" Ice	3.23 3.62	3.94 4.55	0.03 0.06

RISATower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX Phone: (281)-343-7099 FAX: (281)-239-8515	Job PSG Engineering Project Number: 0801F202-A060140	Page 5 of 8
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	Client Crown Castle USA, Inc.	Designed by Gabe Hernandez

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
			0.00							
(2) LPA-80063//6CF_5 w/Mount Pipe	C	From Leg	4.00		0.0000	120.00	No Ice 1/2" Ice	10.33 10.90	10.43 11.48	0.05 0.14
			0.00							
(2) LPA-80063/6CF w/Mount Pipe	C	From Leg	4.00		0.0000	120.00	No Ice 1/2" Ice	10.33 10.90	10.43 11.48	0.05 0.14
			0.00							
PIROD 13' Low Profile Platform	C	None			0.0000	118.00	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1.30 1.76
*										
EL. 90' LEVEL										
GPS antenna w/ sidearm mount	A	From Leg	1.00		0.0000	90.00	No Ice 1/2" Ice	2.00 2.50	2.00 2.50	0.05 0.75
			0.00							

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service

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Comb. No.	Description
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 138.5	26.413	35	1.4861	0.0087
L2	138.5 - 138	23.465	35	1.4735	0.0087
L3	138 - 90.75	23.311	35	1.4732	0.0087
L4	94.75 - 44.75	11.044	35	1.1322	0.0044
L5	50 - 0	2.986	35	0.5538	0.0014

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	742 213 w/Mount Pipe	35	26.413	1.4861	0.0087	42689
136.00	(3) 72"x12" MLA Antenna w/Mount Pipe	35	22.695	1.4712	0.0087	22468
120.00	(2) LPA-80063/6CF w/Mount Pipe	35	17.876	1.4007	0.0076	9039
118.00	PIROD 13' Low Profile Platform	35	17.293	1.3858	0.0074	8393
90.00	GPS antenna w/ sidearm mount	35	9.920	1.0660	0.0038	4481

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 138.5	76.356	10	4.2993	0.0251
L2	138.5 - 138	67.839	10	4.2627	0.0251
L3	138 - 90.75	67.394	10	4.2619	0.0251
L4	94.75 - 44.75	31.950	10	3.2759	0.0125
L5	50 - 0	8.643	10	1.6028	0.0039

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	742 213 w/Mount Pipe	10	76.356	4.2993	0.0251	42689
136.00	(3) 72"x12" MLA Antenna w/Mount Pipe	10	22.695	1.4712	0.0087	22468
120.00	(2) LPA-80063/6CF w/Mount Pipe	10	17.876	1.4007	0.0076	9039
118.00	PIROD 13' Low Profile Platform	10	17.293	1.3858	0.0074	8393
90.00	GPS antenna w/ sidearm mount	10	9.920	1.0660	0.0038	4481

RISA Tower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX Phone: (281)-343-7099 FAX: (281)-239-8515	Job PSG Engineering Project Number: 0801F202-A060140	Page 7 of 8
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	Client Crown Castle USA, Inc.	Designed by Gabe Hernandez

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
148.00	742 213 w/Mount Pipe	10	76.356	4.2993	0.0251	14876
136.00	(3) 72"x12" MLA Antenna w/Mount Pipe	10	65.614	4.2558	0.0250	7847
120.00	(2) LPA-80063/6CF w/Mount Pipe	10	51.691	4.0425	0.0218	3157
118.00	PiROD 13' Low Profile Platform	10	50.008	3.9978	0.0212	2931
90.00	GPS antenna w/ sidearm mount	10	28.700	3.0973	0.0110	1561

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Bolt Compression K	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
in		in						
3.0000	12	2.2500	140.91	145.18	26.471		Bolt T	1.07
			131.21	217.81	45.000			✓
			1.07	0.67	0.59			

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P/P _a
	ft		ft	ft		ksi	in ²	K	K	
L1	148 - 138.5 (1)	TP12.75x12.75x0.406	9.50	0.00	0.0	36.000	15.7366	-0.62	566.52	0.001
L2	138.5 - 138 (2)	TP22x12.75x0.406	0.50	0.00	0.0	36.000	15.7366	-0.62	566.52	0.001
L3	138 - 90.75 (3)	TP31.924x22x0.25	47.25	0.00	0.0	36.000	24.4667	-7.68	880.80	0.009
L4	90.75 - 44.75 (4)	TP41.086x30.5839x0.3125	50.00	0.00	0.0	36.000	39.3484	-14.61	1416.54	0.010
L5	44.75 - 0 (5)	TP49.86x39.3583x0.375	50.00	0.00	0.0	36.000	58.8995	-25.64	2120.38	0.012

Pole Bending Design Data

Section No.	Elevation	Size	Actual M _x	Actual f _{bx}	Allow. F _{bx}	Ratio f _{bx} /F _{bx}	Actual M _y	Actual f _{by}	Allow. F _{by}	Ratio f _{by} /F _{by}
	ft		kip-ft	ksi	ksi		kip-ft	ksi	ksi	
L1	148 - 138.5 (1)	TP12.75x12.75x0.406	8.65	-2.206	39.600	0.056	0.00	0.000	39.600	0.000
L2	138.5 - 138 (2)	TP22x12.75x0.406	8.59	-2.191	39.600	0.055	0.00	0.000	39.600	0.000
L3	138 - 90.75 (3)	TP31.924x22x0.25	422.20	-27.223	36.000	0.756	0.00	0.000	36.000	0.000
L4	90.75 - 44.75 (4)	TP41.086x30.5839x0.3125	1104.91	-34.423	36.000	0.956	0.00	0.000	36.000	0.000
L5	44.75 - 0 (5)	TP49.86x39.3583x0.375	2038.42	-34.001	36.000	0.944	0.00	0.000	36.000	0.000

RISATower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX Phone: (281)-343-7099 FAX: (281)-239-8515	Job PSG Engineering Project Number: 0801F202-A060140	Page 8 of 8
	Project (876323) (HILLSIDE)	Date 16:16:35 11/07/08
	Client Crown Castle USA, Inc.	Designed by Gabe Hernandez

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			P	f_{bx}	f_{by}			
			P_a	F_{bx}	F_{by}			
L1	148 - 138.5 (1)	TP12.75x12.75x0.406	0.001	0.056	0.000	0.057	1.333	H1-3 ✓
L2	138.5 - 138 (2)	TP22x12.75x0.406	0.001	0.055	0.000	0.056	1.333	H1-3 ✓
L3	138 - 90.75 (3)	TP31.924x22x0.25	0.009	0.756	0.000	0.765	1.333	H1-3 ✓
L4	90.75 - 44.75 (4)	TP41.086x30.5839x0.3125	0.010	0.956	0.000	0.967	1.333	H1-3 ✓
L5	44.75 - 0 (5)	TP49.86x39.3583x0.375	0.012	0.944	0.000	0.957	1.333	H1-3 ✓

Section Capacity Table

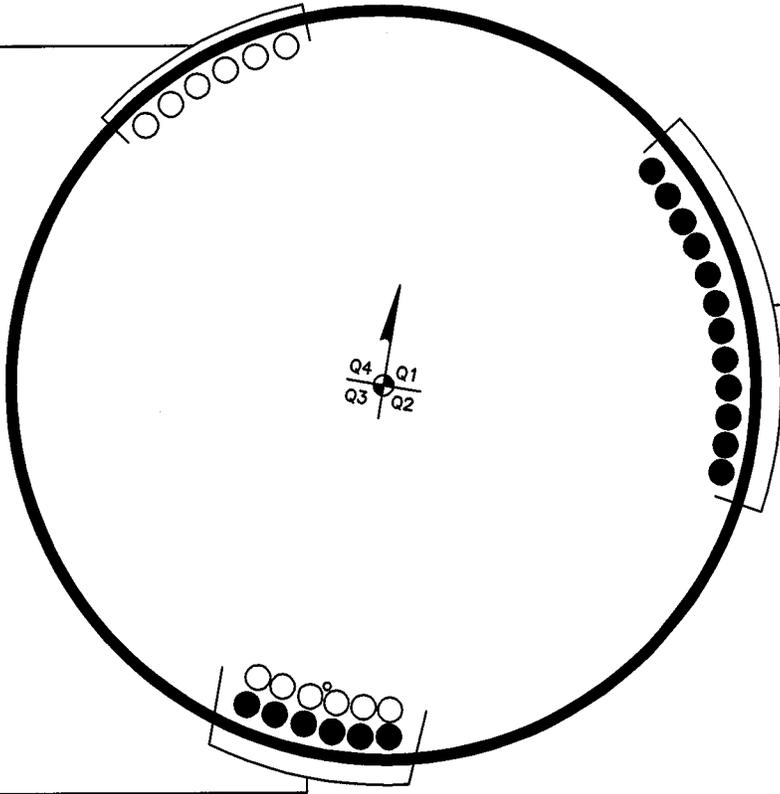
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
L1	148 - 138.5	Pole	TP12.75x12.75x0.406	1	-0.62	755.17	4.3	Pass
L2	138.5 - 138	Pole	TP22x12.75x0.406	2	-0.62	755.17	4.2	Pass
L3	138 - 90.75	Pole	TP31.924x22x0.25	3	-7.68	1174.11	57.4	Pass
L4	90.75 - 44.75	Pole	TP41.086x30.5839x0.3125	4	-14.61	1888.25	72.5	Pass
L5	44.75 - 0	Pole	TP49.86x39.3583x0.375	5	-25.64	2826.47	71.8	Pass
Summary								
Pole (L4)							72.5	Pass
Base Plate							80.6	Pass
RATING =							80.6	Pass

*Crown Castle USA, Inc.
138 Ft Monopole Tower
PSG Project Number 0801F202-A060140*

*November 7, 2008
CCI BU No. 876323
Application 70485, Revision 2*

APPENDIX B
BASE LEVEL DRAWING

(PROPOSED)
(6) 1-5/8" TO 146 FT LEVEL



(INSTALLED)
(12) 1-5/8" TO 118 FT LEVEL

(MLA)
(9) 1-5/8" TO 136 FT LEVEL
(PROPOSED)
(1) 1/2" TO 136 FT LEVEL
(6) 1-5/8" TO 136 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 136 FT LEVEL

BUSINESS UNIT: 876323 TOWER ID: C_BASELEVEL

Exhibit E

Propagation Maps

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut

Exhibit 1: New Haven - Pocket Network Design Coverage Plan without Proposed Site

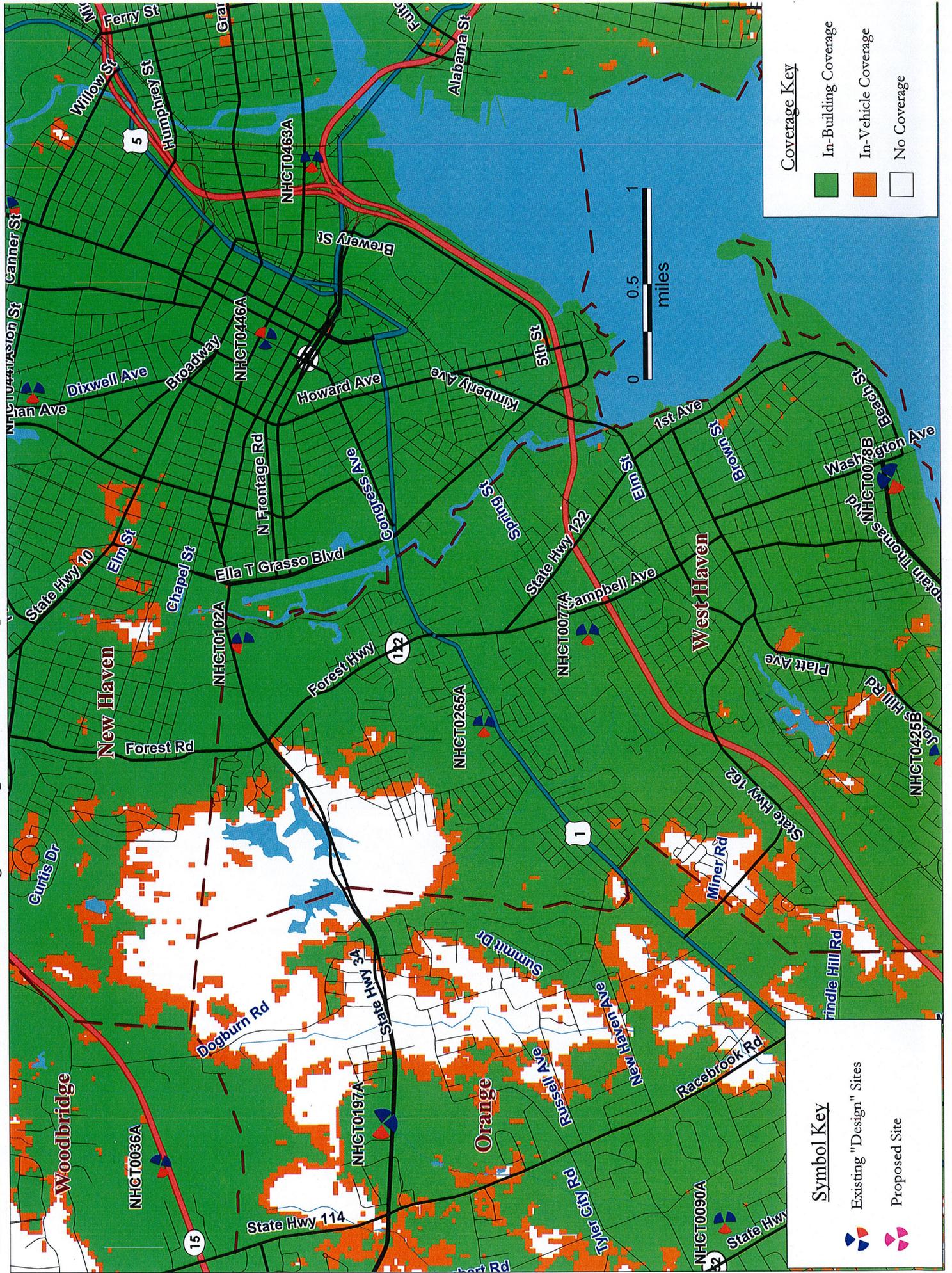
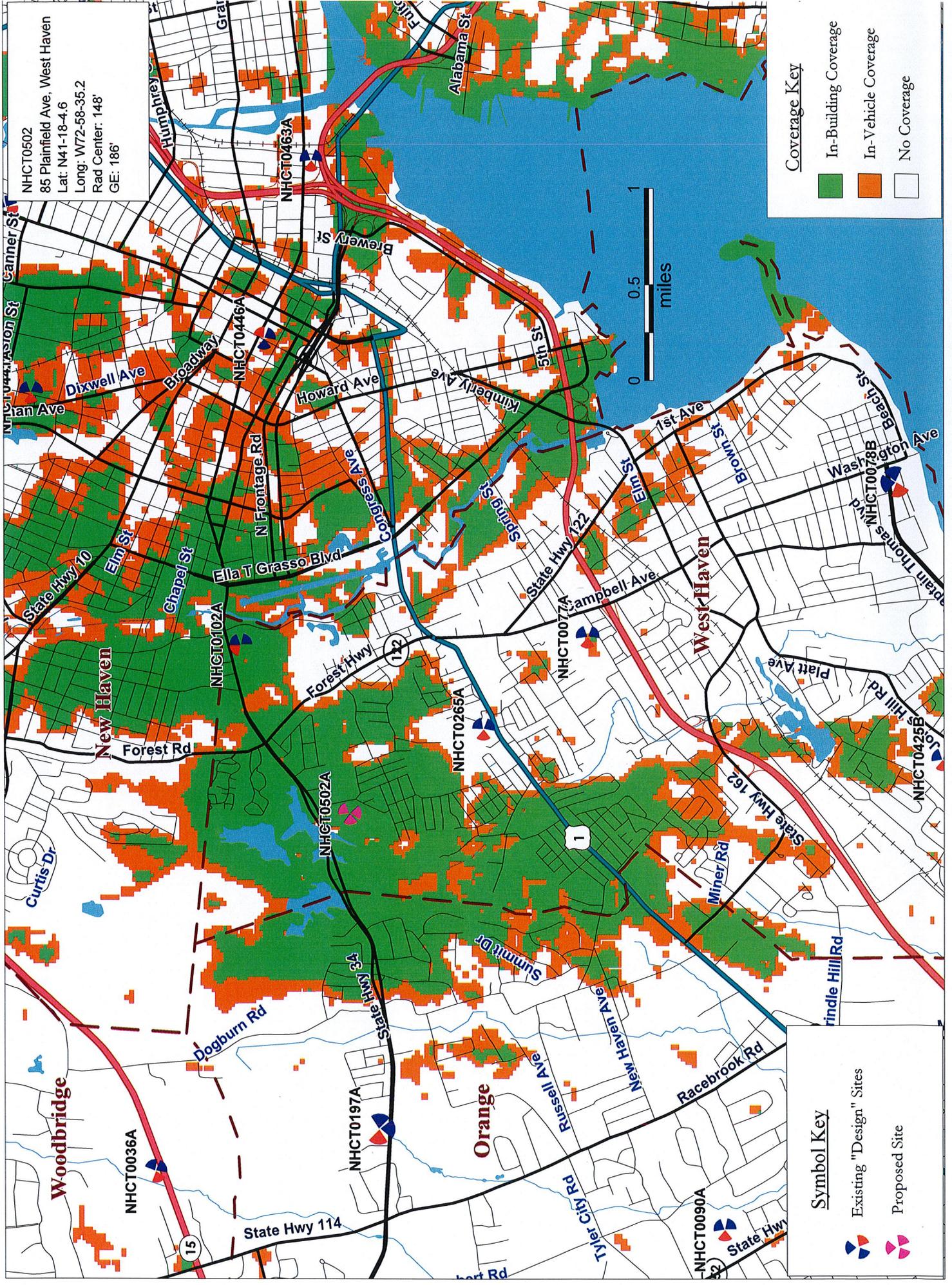


Exhibit 2: New Haven - Isolated Coverage of Proposed Pocket Site NHCT0502



NHCT0502
 85 Plainfield Ave, West Haven
 Lat: N41-18-4.6
 Long: W72-58-35.2
 Rad Center: 148'
 GE: 186'

Coverage Key

- In-Building Coverage (Green)
- In-Vehicle Coverage (Orange)
- No Coverage (White)

Symbol Key

- Existing "Design" Sites (Blue Star)
- Proposed Site (Pink Star)

Exhibit F

Photo Simulations

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut

VISUAL ANALYSIS

Prepared For:



PROPOSED WIRELESS
TELECOMMUNICATIONS INSTALLATION

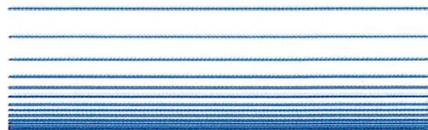
NHCT0502B

Provided By:

Bay State Design, Inc.

DECEMBER 2008

**BAY STATE
DESIGN**



Site Number: NHCT0502B
85 Plainfield Avenue
West Haven, CT

Prepared For:



Provided By:

Bay State Design, Inc.
70 Tower Office Park
Woburn, MA 01801

ph. 781| 932.2467

fax 781| 932.9771

ISSUED: 12/10/08
REV 1:
REV 2:
DRAWN BY: AL
CHECKED BY: JP

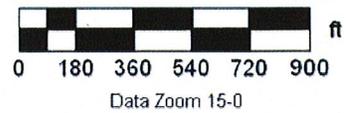
Note: These photo simulations are intended to represent modifications relative to a person observing the aesthetics of the proposed telecommunications installation. Therefore, they are inherently approximate in nature and should not be used as an exact, scaled, engineering drawing.

VISIBILITY MAP



● view location

● not visible



VIEW 1



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EXISTING CONDITIONS | LOOKING NORTH FROM 1 TIMBERLAND DRIVE

VIEW 1



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PROPOSED ANTENNAS | LOOKING NORTH FROM 1 TIMBERLAND DRIVE

VIEW 2



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EXISTING CONDITIONS | LOOKING WEST FROM 100 PLAINFIELD AVE.

VIEW 2



PROPOSED ANTENNAS | LOOKING WEST FROM 100 PLAINFIELD AVE

VIEW 3



Copyright © 2008 Bay State Design, Inc.

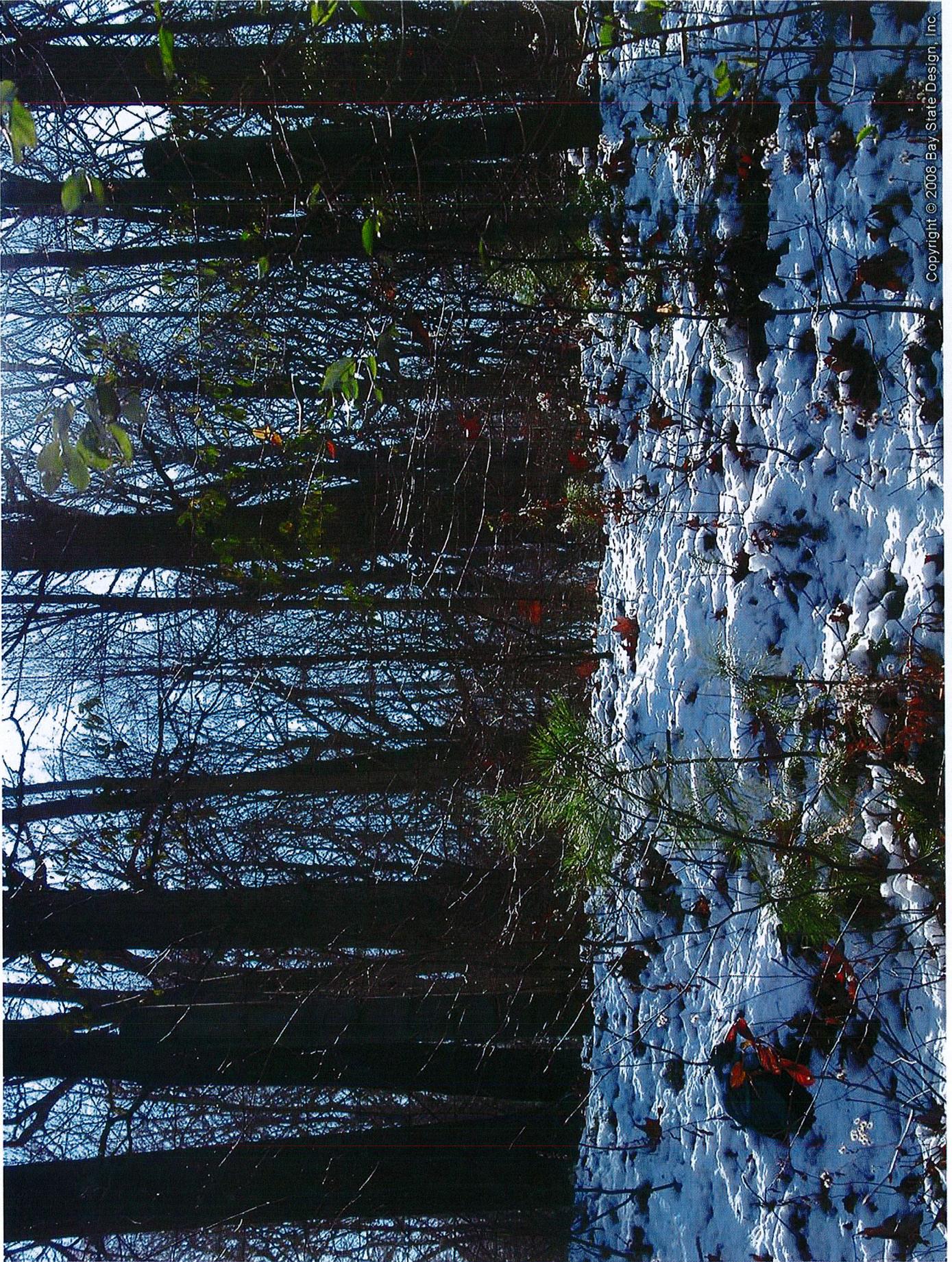
EXISTING CONDITIONS | LOOKING SOUTHWEST FROM 60 PLAINFIELD AVE.

VIEW 3



PROPOSED ANTENNAS | LOOKING SOUTHWEST FROM 60 PLAINFIELD AVE.

VIEW 4



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EXISTING CONDITIONS | LOOKING SOUTH FROM PLAINFIELD AVE.

VIEW 4



Copyright © 2008 Bay State Design, Inc.

PROPOSED ANTENNAS | LOOKING SOUTH FROM PLAINFIELD AVE.

Exhibit G

Power Density Calculations

Pocket Site NHCT0502B

85 Plainfield Avenue

West Haven, Connecticut



C Squared Systems, LLC
920 Candia Road
Manchester, NH 03109
Phone: (603) 657 9702
E-mail:

support@csquaredsystems.com

Calculated Radio Frequency Emissions



NHCT0502

85 Plainfield Avenue, West Haven, CT

Table of Contents

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Pocket antennas to be installed on the existing tower at 85 Plainfield Avenue, West Haven, CT.

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are much more conservative (higher) than the actual signal levels will be from the finished installation.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (mW/cm^2). The number of mW/cm^2 emitted is called the power density. The general population exposure limit for the cellular band is 0.567-0.593 mW/cm^2 , and the general population exposure limit for the PCS/AWS band is 1.0 mW/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.

The FCC general population / uncontrolled limits set the maximum exposure to which most people may be subjected. General population / uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Higher exposure limits are permitted under the occupational / controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure (through training), and they must be able to exercise control over their exposure. General population / uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals.”

The FCC describes exposure to radio frequency (RF) energy in terms of percentage of maximum permissible exposure (MPE) with 100% being the maximum allowed. Rather than the FCC presenting the user specification in terms of complex power density figures over a specified surface area, this MPE measure is particularly useful, and even more so when considering that power density limits actually vary by frequency because of the different absorptive properties of the human body at different frequencies.

MPE limits are specified as time-averaged exposure limits. This means that exposure can be averaged over 30 minutes for general population / uncontrolled exposure (or 6 minutes for occupational / controlled exposure). However, for the case of exposure of the general public, time averaging is usually not applied because of uncertainties over exact exposure conditions and difficulty in controlling time of exposure. Therefore, the typical conservative approach is to assume that any RF exposure to the general public will be continuous.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population / uncontrolled exposure and for occupational / controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include limits for Maximum Permissible Exposure (MPE) for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit. As shown in these excerpts, each frequency band has different exposure limits, requiring power density to be reported as a percent of Maximum Permissible Exposure (MPE) when dealing with carriers transmitting in different frequency bands.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{EIRP}{\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from bottom of antenna

Off Beam Loss is determined by the selected antenna patterns

4. Calculation Results

Table 1 below outlines the power density information for the site. All information for carriers other than Pocket was obtained from current CSC database.

Carrier	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Antenna Height (Feet)	Operating Frequency (MHz)	Total ERP (Watts)	Power Density (mw/cm ²)	Limit	%MPE
Verizon	9	377	120	880	3,393	0.0847	0.5867	14.44%
Verizon PCS	3	343	120	1,900	1,029	0.0257	1.0000	2.57%
Sprint Nextel CDMA	11	411	138	1,963	4,521	0.0854	1.0000	8.54%
Sprint Nextel WiMAX	3	562	138	2,657	1,686	0.0318	1.0000	3.18%
Sprint Nextel Microwave	2	4.42	138	22,500	9	0.0002	1.0000	0.02%
Pocket	3	631	148	2130-2133.75	1,893	0.0338	1.0000	3.38%
							Total	32.12%

Table 1: Proposed Carrier Information

5. Conclusion

The above analysis verifies that emissions from the proposed site will be well below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 32.12% of the FCC limit.

As noted in the introduction, obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished installation.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.


Tony Wells
C Squared Systems

November 19, 2008
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

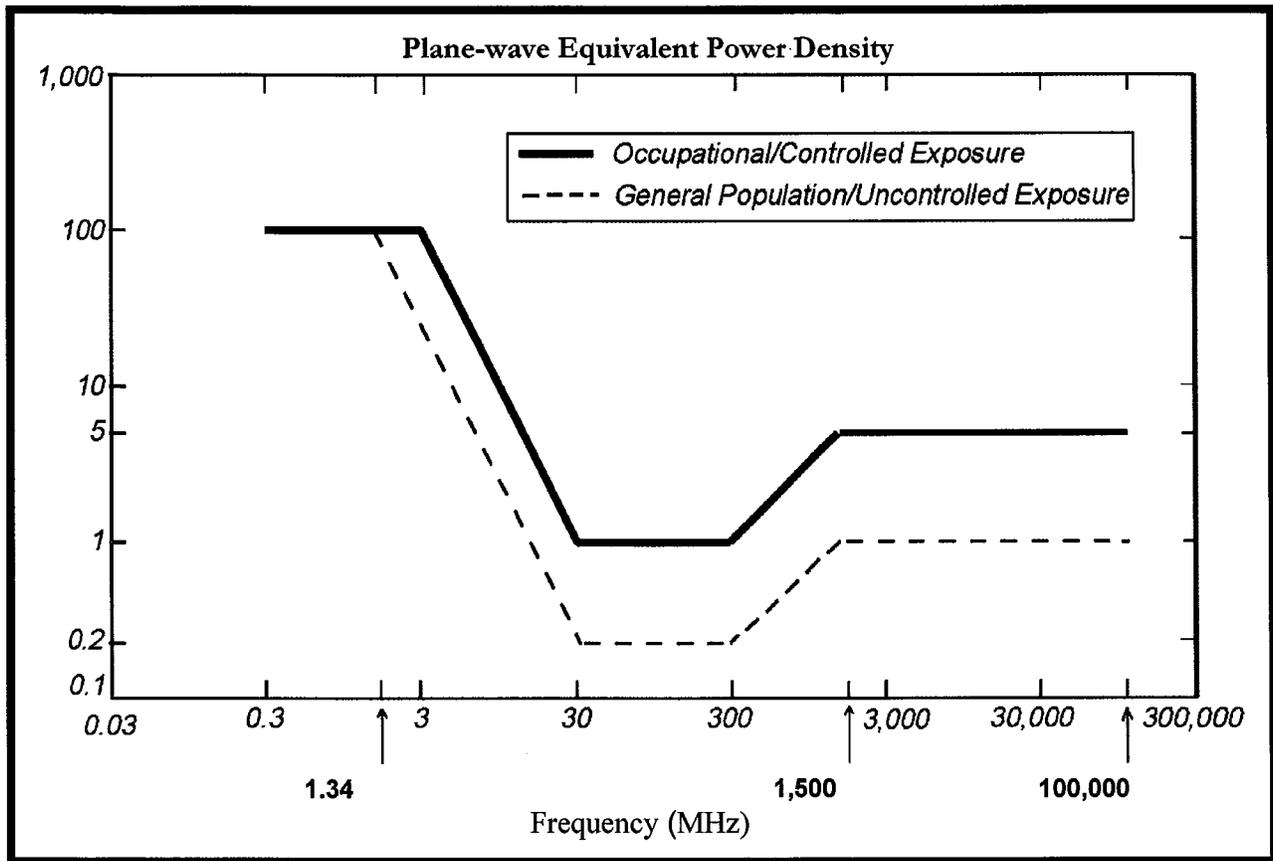
(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



• FCC Limits for Maximum Permissible Exposure (MPE)