PULLMAN & COMLI
ATTORNEYS AT LAW

EM-POCKET-006-090202

CARRIE L. LARSON
90 State House Square
Hartford, CT 06103-3702
p (860) 424-4312
f (860) 424-4370

www.pullcom.com

ORIGINAL

January 30, 2009

Via Federal Express

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

Re: Notice of Exempt Modification
Town of Beacon Falls Telecommunications Facility
139 Lopus Road, Beacon Falls, Connecticut

Dear Mr. Phelps:

Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket"), intends to install antennas and appurtenant equipment at the existing 150-foot monopole facility owned by the Town of Beacon Falls and located at 139 Lopus Road, Beacon Falls, Connecticut ("Facility"). Pocket Communications provides prepaid, flat rate wireless voice and data services to more than a quarter of a million subscribers. 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. This installation constitutes an exempt modification pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes Section 16-50g et. seq. (PUESA), and Section 16-50j-72(b)(2) of the Regulations of the Connecticut State Agencies adopted pursuant to PUESA. In accordance with R.C.S.A. Section 16-50j-73, a copy of this notice has been sent to Susan A. Cable, First Selectman, Town of Beacon Falls.

The existing Facility consists of a 150-foot self-supporting monopole tower capable of supporting multiple carriers within a fenced compound. The coordinates for the Facility are **Lat: 41°-26'-00" and Long: 73°–04'-13".** The tower is located in the southern portion of Beacon Falls, approximately 60 feet east of Lopus Road and roughly 800 feet west of Route 8 (see Site Map, attached as Exhibit A). The tower currently supports T-Mobile antennas at the one hundred thirty five foot (135') level centerline AGL (above ground level), and AT&T antennas at the one hundred forty five foot level (145') AGL. Pocket proposes to install three RFS APXV18-206517S-C flush mount antennas on the tower at the one hundred twenty five foot centerline (125') 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 to the H-Frame. An ice bridge will run from the lease area to the tower. 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).

For the following reasons, the proposed modifications to the Lopus Road Facility meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2):

1. The proposed modification will not increase the height of the tower as Pocket's antennas will be installed at a center line height of approximately 125 feet.

2. The installation of Pocket's equipment and shelter will not require an extension of the site boundaries.

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

4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the 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 14.19% of the FCC standard (see general power density calculations table, attached as Exhibit D).

Also attached, Exhibit E, is a structural analysis confirming that the tower can support the existing and proposed antennas and associated equipment.

For the foregoing reasons, Pocket respectfully submits that the proposed antenna installation and equipment at the Beacon Falls Facility constitutes an exempt modification under R.C.S.A. Section 16-50j-72(b)(2).

Respectfully Submitted,

Carrie L. Larson

cc: Susan A. Cable, First Selectman, Town of Beacon Falls
The Town is also the underlying property owner

Exhibit A

Site Map

Pocket Site NHCT0493A

139 Lopus Road

Beacon Falls, Connecticut

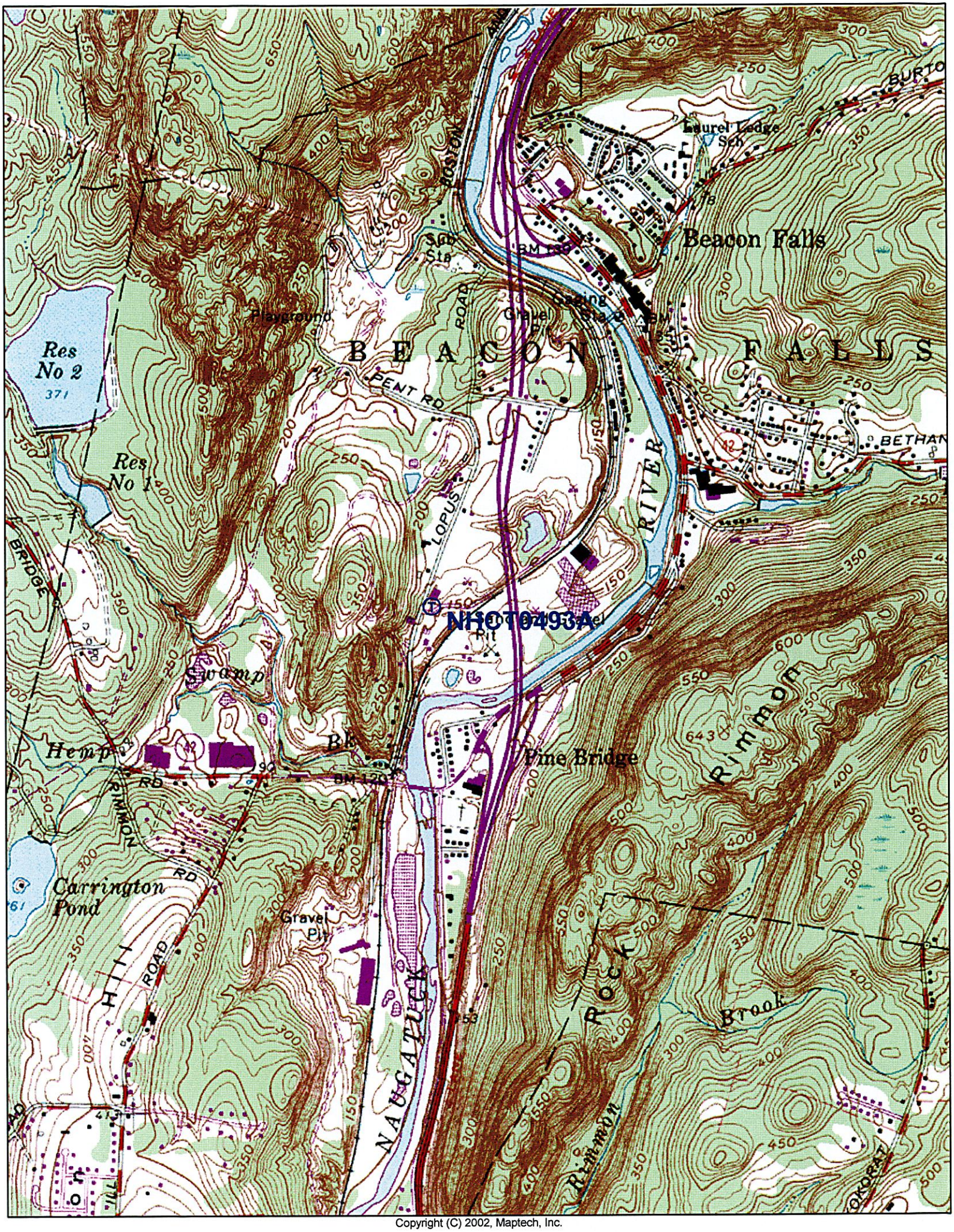


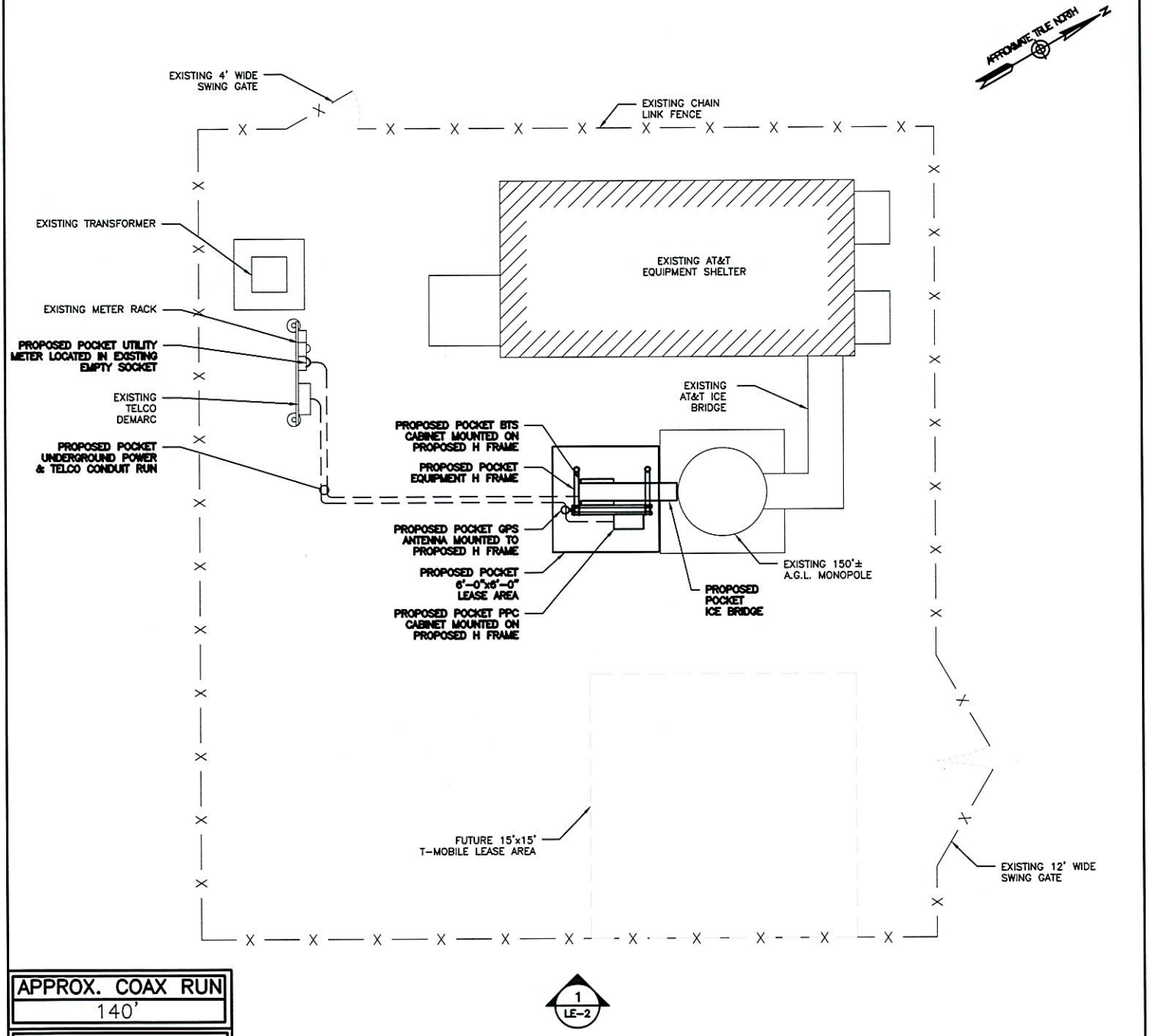
Exhibit B

Design Drawings

Pocket Site NHCT0493A

139 Lopus Road

Beacon Falls, Connecticut



COMPOUND PLAN (1)

SCALE: N.T.S.

APPROX. COAX RUN
140'

APPROVALS

SITE OWNER _____ DATE _____

CONSTRUCTION MANAGER _____ DATE _____

R.F 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 OFFICIALS AND ANY CHANGES OR MODIFICATIONS THEY MAY IMPOSE.

MAXTON
50 Eastman St.
South Easton, MA 02375
Phone: (508) 230-6393
Fax: (508) 238-6395

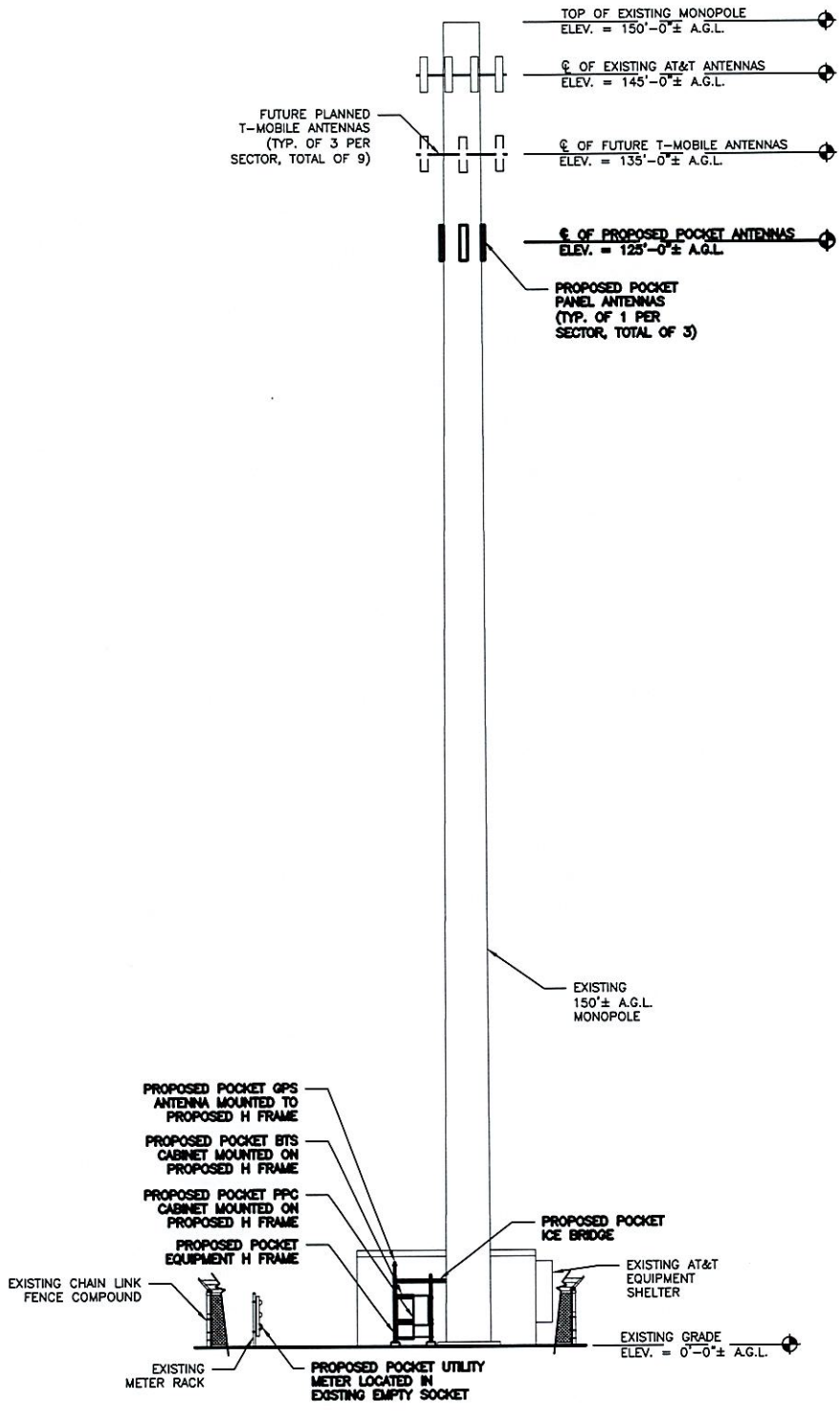
BAY STATE DESIGN
Bay State Design Associates, Inc.
Architects • Engineers
70 Tower Office Park
Woburn, MA 01801
Phone: 781-932-2467
Fax: 781-932-9771

PREPARED FOR:

pocket SMART WIRELESS

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

SITE NUMBER: NHCT0493A		DRAWN BY: DM	PROJECT NUMBER: 2882.079
SITE NAME: NHCT0493A BEACON FALLS CT		CHECKED BY: JP	SHEET: LE-1
SITE ADDRESS: 139 LOPUS ROAD BEACON FALLS, CT 06403		DATE: 01/23/09	



ELEVATION 1

SCALE: N.T.S.

APPROVALS

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

THE ABOVE PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION TOWARDS WHICH ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES OR MODIFICATIONS THEY MAY IMPOSE.

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 SMART WIRELESS

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

SITE NUMBER: NHCT0493A		DRAWN BY: DM	PROJECT NUMBER: 2882.079
SITE NAME: NHCT0493A BEACON FALLS CT		CHECKED BY: JP	SHEET: LE-2
SITE ADDRESS: 139 LOPUS ROAD BEACON FALLS, CT 06403		DATE: 01/23/09	

Exhibit C

Equipment Specifications

Pocket Site NHCT0493A

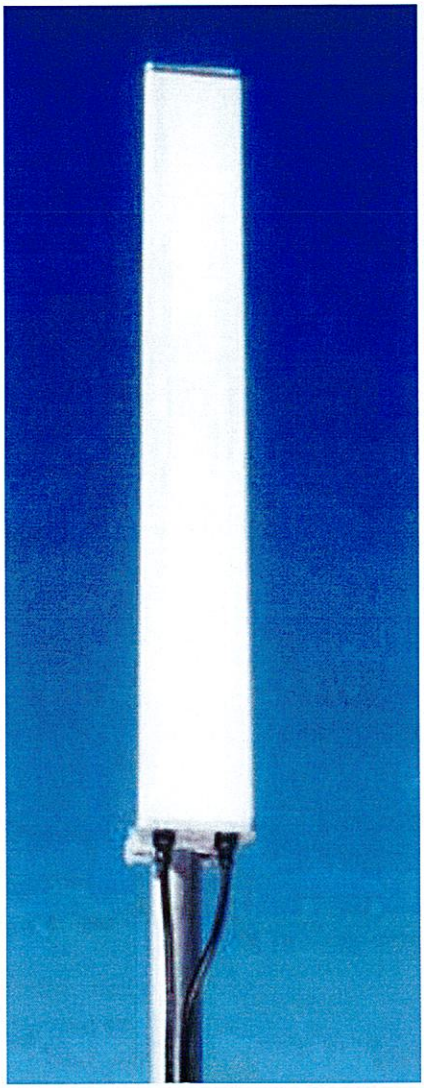
139 Lopus Road

Beacon Falls, Connecticut

Technical Data Sheet APXV18-206517S-C

Product Description

This variable tilt antenna provides exceptional suppression of all upper sidelobes at all downtilt angles. It also features null fill and a wide downtilt range with optional remote tilt.



Features/Benefits

- Variable electrical downtilt - provides enhanced precision in controlling intercell interference. The tilt is infield adjustable 0-10 deg.
- High Suppression of all Upper Sidelobes (Typically <-20dB).
- Optional remote tilt - can be retrofitted.
- Broadband design.
- Dual polarization.
- Low profile for low visual impact.

Technical Features

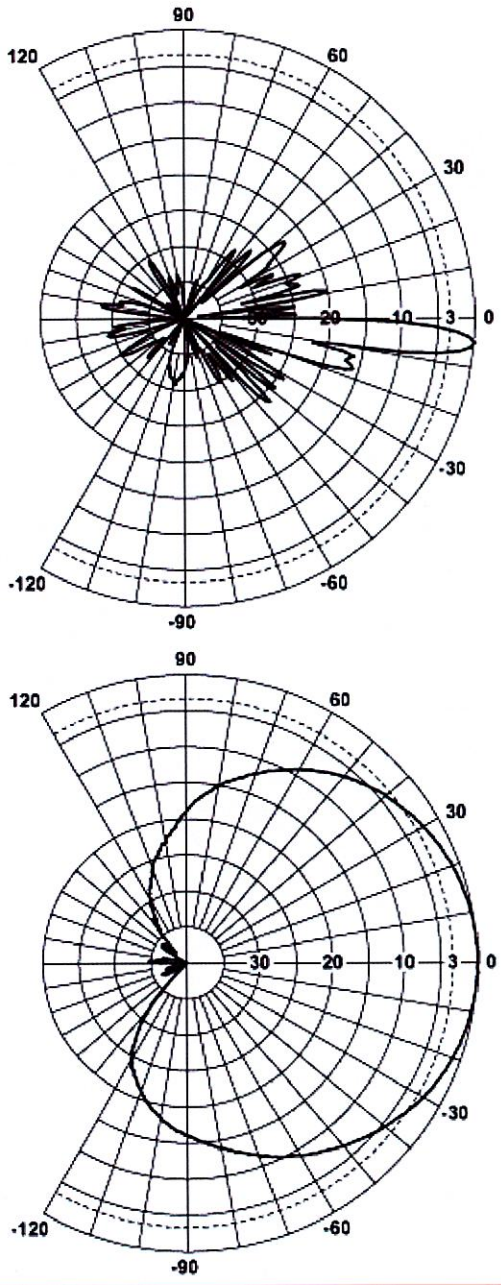
Frequency Band	3G/UMTS (Single, Broad, Dual and Triple-Band)
Horizontal Pattern	Directional
Antenna Type	Panel Dual Polarized
Electrical Down Tilt Option	Variable

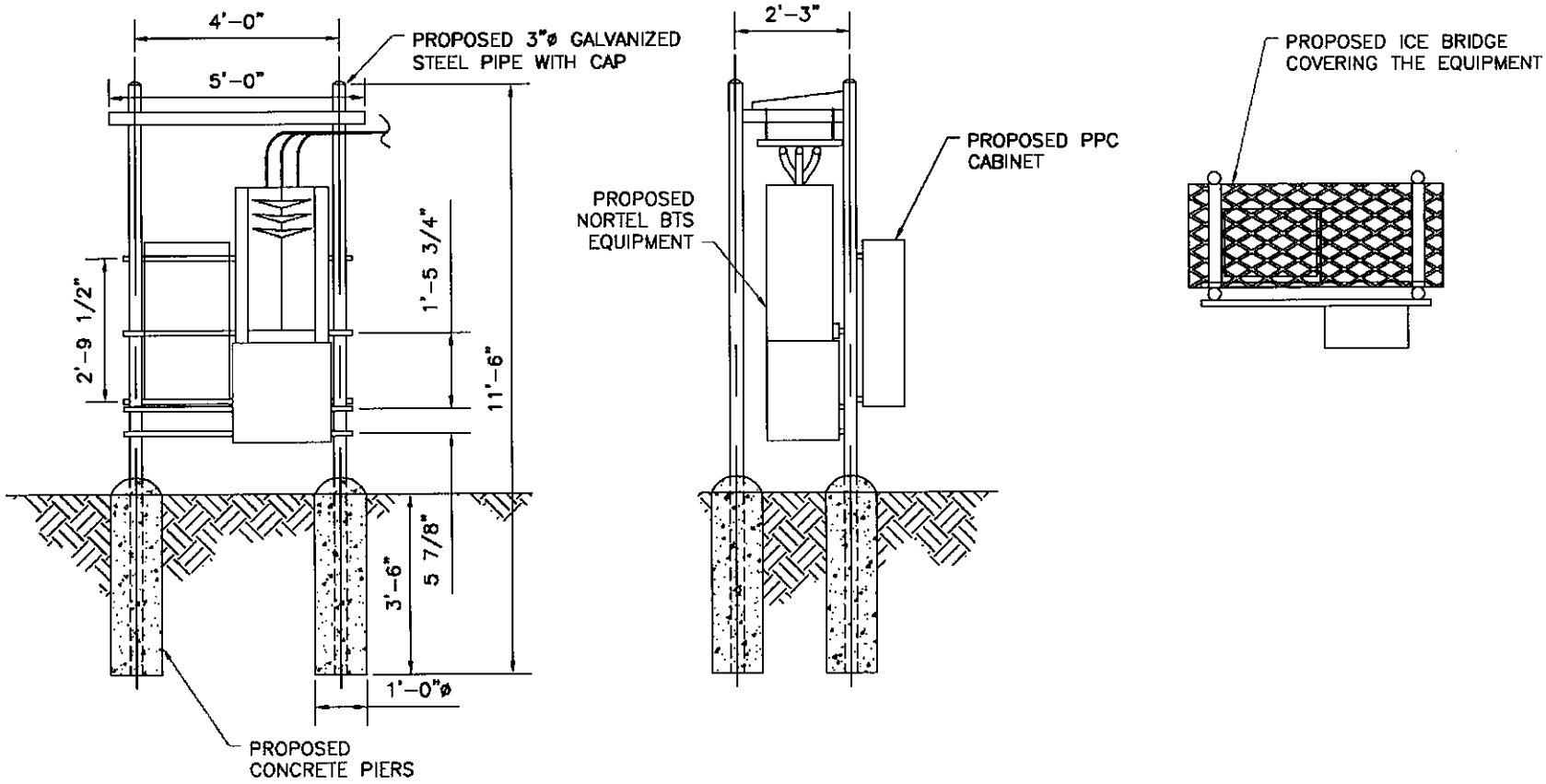
Technical Data Sheet	APXV18-206517S-C

Gain, dBi (dBd)	18.8 (16.7) , 19.0 (16.9)
Frequency Range, MHz	1710-1900, 1900-2170
Connector Type	(2) 7-16 DIN Female
Connector Location	Bottom
Mount Type	Downtilt
Electrical Downtilt, deg	0-10
Horizontal Beamwidth, deg	67 , 63
Mounting Hardware	APM40-2
Rated Wind Speed, km/h (mph)	160 (100)
VSWR	< 1.5:1
Vertical Beamwidth, deg	5.0 , 4.6
Upper Sidelobe Suppression, dB	>17 , >18 all (Typically >20)
Polarization	Dual pol +/-45°
Front-To-Back Ratio, dB	>30
Maximum Power Input, W	300
Isolation between Ports, dB	>30
Lightning Protection	Direct Ground
3rd Order IMP @ 2 x 43 dBm, dBc	>150
7th Order IMP @ 2x46 dBm, dBc	>170
Impedance, Ohms	50
Overall Length, m (ft)	1.85 (6.06)
Mounting Hardware Weight, kg (lb)	3.4 (7.5)
Dimensions - HxWxD, mm (in)	1850 x 175 x 80 (72.0 x 6.8 x 3.15)
Weight w/o Mtg Hardware, kg (lb)	12 (26.4)
Weight w/ Mtg Hardware, kg (lb)	14.8 (32.5)
Radiating Element Material	Brass
Radome Color	Light Grey RAL7035
Radome Material	Fiberglass
Mounting Hardware Material	Diecasted Aluminum
Reflector Material	Aluminum
Max Wind Loading Area, m^2 (ft^2)	0.31 (3.3)
Survival Wind Speed, km/h (mph)	200 (125)
Maximum Thrust @ Rated Wind, N (lbf)	558 (125)
Front Thrust @ Rated Wind, N (lbf)	558 (125)
Shipping Weight, kg (lb)	18.3 (39.8)
Packing Dimensions, HxWxD, mm (in)	2021 x 260 x 200 (79.5 x 10.2 x 7.8)
Packing Dimensions - HxWxD, m (ft)	2.0 x 0.26 x 0.2 (6.6 x 0.85 x 0.65)

Notes

For additional mounting information please click "External Document Link" below.





Pocket/Youghiogheny Communications – Northeast, LLC

Rack Detail

>BUSINESS MADE **SIMPLE**

NORTEL

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

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

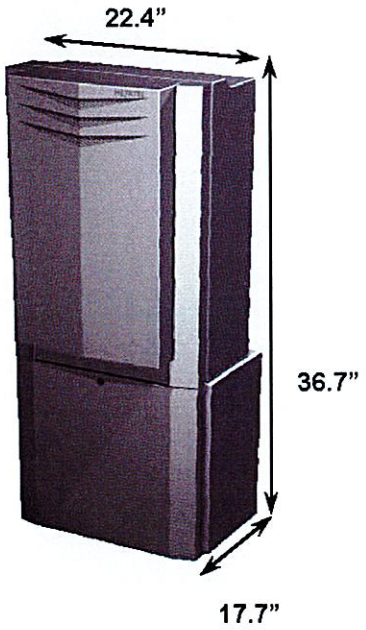


Exhibit D

Power Density Calculations

Pocket Site NHCT0493A

139 Lopus Road

Beacon Falls, Connecticut

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

Calculated Radio Frequency Emissions

NHCT0493A

139 Lopus Road, Beacon Falls, CT

Table of Contents

List of Tables

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 monopole at 139 Lopus Road, Beacon Falls, 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/ cm2). The number of mW/cm2 emitted is called the power density. The general population exposure limit for the cellular band is 0.567-0.593 mW/ cm2, and the general population exposure limit for the PCS/AWS band is 1.0 mW/ cm2. 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, except where otherwise noted.[1]

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
Cingular	6	296	145	880	1776	0.0145	0.5866667	5.18%
Cingular	3	427	145	1930	1281	0.0613	1.0000	2.19%
Town of Beacon Falls								
T-Mobile	8	128	135	1935	1024	0.0896	1.0000	2.02%
Pocket	3	631	125	2130-2133.75	1893	0.0481	1.0000	4.81%
							Total	14.19%

Table 1: Proposed Carrier Information

[1]Unspecified antenna space on the tower has been reserved by the Town of Beacon Falls for future use.

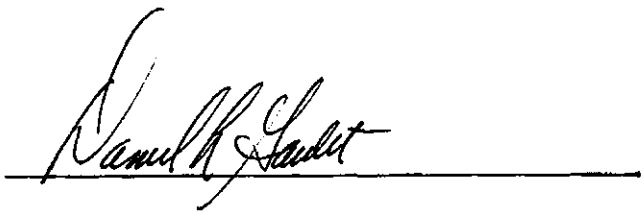
5. Conclusion

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 14.19% 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.



January 15, 2009
Date

Daniel l. Goulet
C Squared Systems, LLC

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

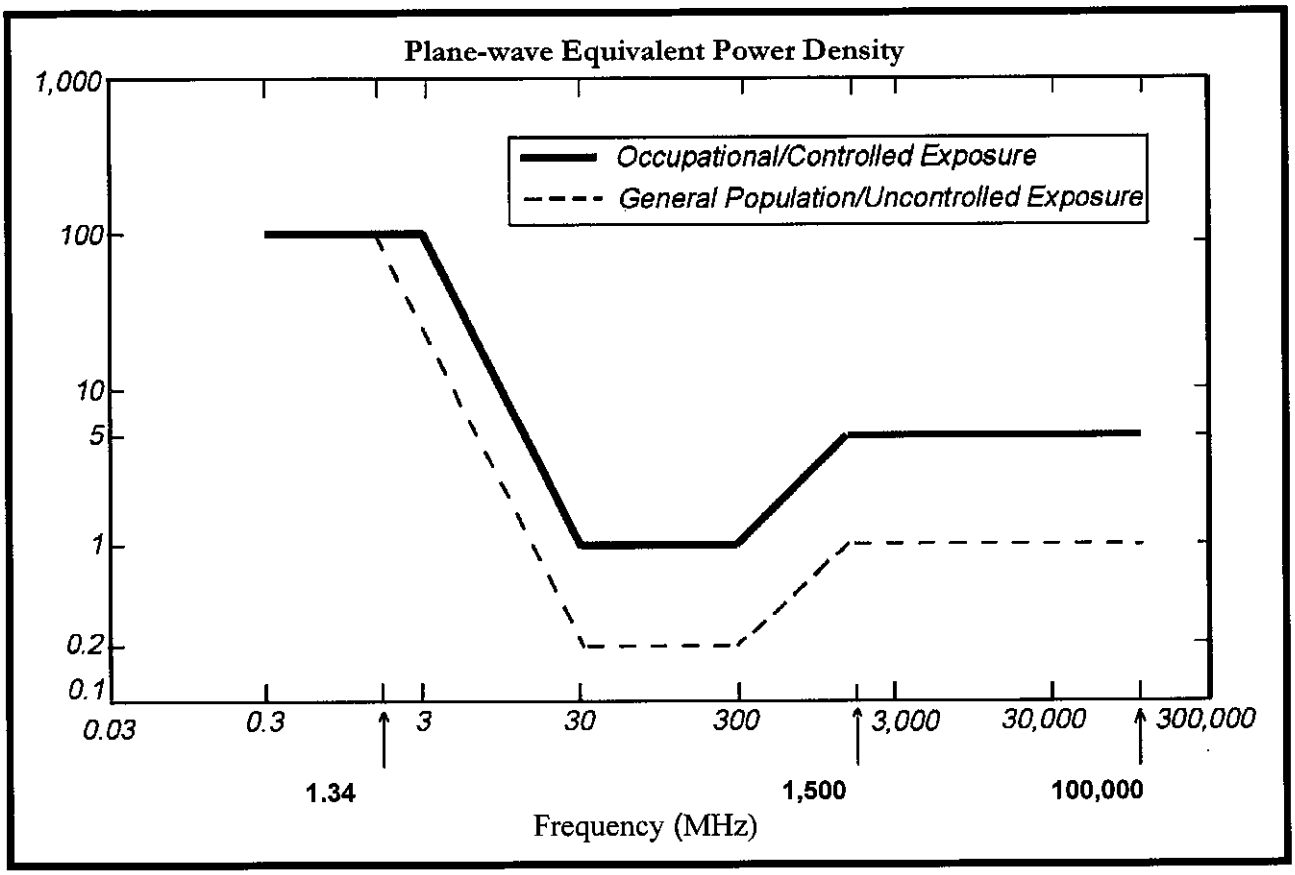
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(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)

Exhibit E

Structural Analysis
Pocket Site NHCT0493A
139 Lopus Road
Beacon Falls, Connecticut

BAY STATE
DESIGN

January 16, 2009

Mr. Thomas F. Flynn III
Site Acquisition Manager
Maxton Technology, Inc.
50 Eastman Street
Easton, MA 02375

Ref: Pocket Communications Site ID NHCT0493A
139 Lopus Road
Beacon Falls, CT 06403

Dear Mr. Flynn:

As requested a structural analysis was performed for the addition of three APXV18-206517S panel type antennas (one per sector) at elevation 125' on the subject 150' high monopole tower. The new antennas are assumed to be flush mounted to the monopole shaft. The analysis was conducted in accordance with TIA/EIA-222F and included an 85 mph wind speed (measured based upon fastest mile wind speed) and ½ radial ice loadings. The calculations also meet the standards of the Connecticut State Building Code. Tower geometry and existing appurtenance loadings were obtained from the original tower design analysis and recent tower photographs. The tower is assumed to be in good condition and free from structural defects.

The analysis shows that the existing monopole tower is adequate to support the additional antenna array in accordance with the TIA/EIA-222F specifications. The maximum peak stress ratio was calculated to be approximately 50%. The foundation and anchor bolts were also determined to be adequate by the analysis. The addition of the proposed antenna array at elevation 125' is therefore structurally acceptable.

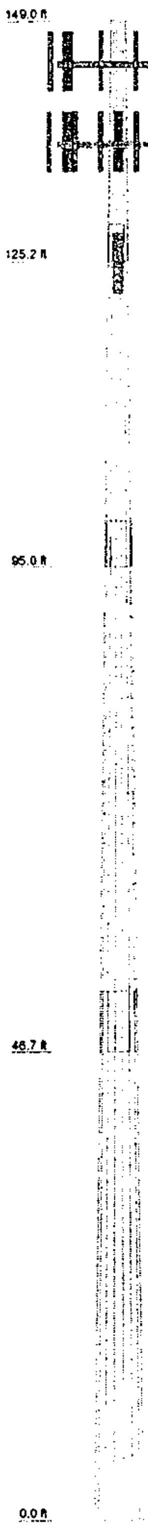
Sincerely yours,

Bay State Design, Inc.

Gordon Govalet, P.E.
Vice President
Bay State Design, Inc.

STATE OF CONNECTICUT
GORDON E. GOVALET
No. 18430
LICENSED
PROFESSIONAL ENGINEER

Section (top to bottom)	Length (ft)	Number of Sides	Thickness (in)	Lap Splice (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
149.0 ft – 125.2 ft	23.83	18	0.1875	3.67	18.5000	24.8200	A572-65	1036.2
125.2 ft – 95.0 ft	33.88	18	0.2500	4.58	23.4717	32.3300	A572-65	2529.5
95.0 ft – 46.7 ft	52.83	18	0.3750	6.08	30.8317	44.4900	A572-65	7956.7
46.7 ft – 0.0 ft	52.79	18	0.4375		42.1451	56.0000	A572-65	12132.4
Total								23654.8



DESIGNED APPURTENANCE LOADING

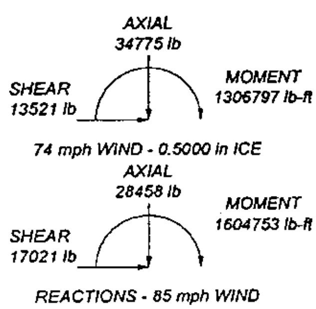
TYPE	ELEVATION	TYPE	ELEVATION
EEI 12' Low Profile Platform	145	EEI 12' Low Profile Platform	137
(2) 7770	145	(3) RR90-17-DP	137
(2) 7770	145	(3) RR90-17-DP	137
(2) 7770	145	(3) RR90-17-DP	137
(2) TMA	145	APXV18-206517LS w/Mount Pipe	125
(2) TMA	145	APXV18-206517LS w/Mount Pipe	125
(2) TMA	145	APXV18-206517LS w/Mount Pipe	125

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 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 60 mph wind.
5. Weld together tower sections have flange connections.
6. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
7. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
8. Welds are fabricated with ER-70S-6 electrodes.



	Job: Beacon Falls, CT		
	Project: 139 Lopus Rd, Beacon Falls, CT		
	Client: Pocket Communications	Drawn by:	App'd:
Phone:	Code: TIA/EIA-222-F	Date: 01/16/09	Scale: NTS
FAX:	Path:		Dwg No. E-1

RISATower	Job: Beacon Falls, CT	Page: 1 of 6
	Project: 139 Lopus Rd, Beacon Falls, CT	Date: 13:27:13 01/16/09
Phone: FAX:	Client: Pocket Communications	Designed by:

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 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
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	
√ 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		

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	149.00-125.17	23.83	3.67	18	18.5000	24.8200	0.1875	0.7500	A572-65 (65 ksi)
L2	125.17-94.96	33.88	4.58	18	23.4717	32.3300	0.2500	1.0000	A572-65 (65 ksi)
L3	94.96-46.71	52.83	6.08	18	30.6317	44.4900	0.3750	1.5000	A572-65

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
L4	46.71-0.00	52.79		18	42.1451	56.0000	0.4375	1.7500	(65 ksi) A572-65 (65 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^3	w in	w/t
L1	18.7854	10.8982	461.7305	6.5009	9.3980	49.1307	924.0685	5.4501	2.9260	15.605
	25.2029	14.6594	1123.7537	8.7445	12.6086	89.1262	2248.9860	7.3311	4.0383	21.538
L2	24.8081	18.4264	1255.3500	8.2437	11.9236	105.2827	2512.3519	9.2149	3.6910	14.764
	32.8287	25.4555	3309.6911	11.3884	16.4236	201.5199	6623.7371	12.7302	5.2501	21
L3	32.3250	36.0131	4165.2510	10.7411	15.5609	267.6739	8335.9828	18.0100	4.7312	12.616
	45.1763	52.5079	12910.2452	15.6608	22.6009	571.2265	25837.4780	26.2589	7.1702	19.121
L4	44.4155	57.9162	12728.2341	14.8062	21.4097	594.5075	25473.2163	28.9636	6.6475	15.194
	56.8639	77.1555	30093.1580	19.7247	28.4480	1057.8304	60225.9133	38.5851	9.0860	20.768

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 149.00-125.17				1	1	1		
L2 125.17-94.96				1	1	1		
L3 94.96-46.71				1	1	1		
L4 46.71-0.00				1	1	1		

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	20
Embedment length	84.0000 in
f'_c	3 ksi
Grout space	3.0000 in
Base plate grade	A572-60
Base plate thickness	2.5000 in
Bolt circle diameter	65.0000 in
Outer diameter	71.0000 in
Inner diameter	47.0000 in
Base plate type	Plain Plate

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
EEI 12' Low Profile Platform	C	None			0.0000	145.00	No Ice	15.00	15.00	2100.00
							1/2" Ice	18.00	18.00	3250.00
(2) 7770	C	From Leg	4.00	0.00	0.0000	145.00	No Ice	5.88	2.93	35.00
			0.00				1/2" Ice	6.31	3.27	67.63
(2) 7770	B	From Leg	4.00	0.00	0.0000	145.00	No Ice	5.88	2.93	35.00
			0.00				1/2" Ice	6.31	3.27	67.63
(2) 7770	A	From Leg	4.00	0.00	0.0000	145.00	No Ice	5.88	2.93	35.00
			0.00				1/2" Ice	6.31	3.27	67.63
(2) TMA	C	From Leg	4.00	0.00	0.0000	145.00	No Ice	0.63	0.29	12.00
			0.00				1/2" Ice	0.74	0.38	16.38
(2) TMA	B	From Leg	4.00	0.00	0.0000	145.00	No Ice	0.63	0.29	12.00
			0.00				1/2" Ice	0.74	0.38	16.38
(2) TMA	A	From Leg	4.00	0.00	0.0000	145.00	No Ice	0.63	0.29	12.00
			0.00				1/2" Ice	0.74	0.38	16.38
APXV18-206517LS w/Mount Pipe	C	None			0.0000	125.00	No Ice	5.29	4.67	53.05
							1/2" Ice	5.85	5.83	94.80
APXV18-206517LS w/Mount Pipe	B	None			0.0000	125.00	No Ice	5.29	4.67	53.05
							1/2" Ice	5.85	5.83	94.80
APXV18-206517LS w/Mount Pipe	A	None			0.0000	125.00	No Ice	5.29	4.67	53.05
							1/2" Ice	5.85	5.83	94.80
EEI 12' Low Profile Platform	C	None			0.0000	137.00	No Ice	15.00	15.00	2100.00
							1/2" Ice	18.00	18.00	3250.00
(3) RR90-17-DP	C	From Leg	4.00	0.00	0.0000	137.00	No Ice	4.36	1.97	18.00
			0.00				1/2" Ice	4.77	2.31	40.42
(3) RR90-17-DP	A	From Leg	4.00	0.00	0.0000	137.00	No Ice	4.36	1.97	18.00
			0.00				1/2" Ice	4.77	2.31	40.42
(3) RR90-17-DP	B	From Leg	4.00	0.00	0.0000	137.00	No Ice	4.36	1.97	18.00
			0.00				1/2" Ice	4.77	2.31	40.42

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 90 deg - No Ice
4	Dead+Wind 180 deg - No Ice
5	Dead+Ice+Temp
6	Dead+Wind 0 deg+Ice+Temp
7	Dead+Wind 90 deg+Ice+Temp
8	Dead+Wind 180 deg+Ice+Temp
9	Dead+Wind 0 deg - Service

Comb. No.	Description
10	Dead+Wind 90 deg - Service
11	Dead+Wind 180 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	5	34774.74	0.00	0.00
	Max. H_x	11	28457.91	0.00	-8480.98
	Max. H_z	2	28457.87	0.00	17020.88
	Max. M_x	2	1604753.25	0.00	17020.88
	Max. M_z	3	1604753.25	-17020.88	0.00
	Max. Torsion	10	0.00	-8480.98	0.00
	Min. Vert	3	28457.87	-17020.88	0.00
	Min. H_x	3	28457.87	-17020.88	0.00
	Min. H_z	4	28457.87	0.00	-17020.88
	Min. M_x	4	-1604753.25	0.00	-17020.88
	Min. M_z	1	0.00	0.00	0.00
	Min. Torsion	7	0.00	-13521.24	0.00

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	28457.93	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice	28457.87	0.00	-17020.88	-1604753.25	0.00	0.00
Dead+Wind 90 deg - No Ice	28457.87	17020.88	0.00	0.00	-1604753.25	0.00
Dead+Wind 180 deg - No Ice	28457.87	0.00	17020.88	1604753.25	0.00	0.00
Dead+Ice+Temp	34774.74	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp	34774.73	0.00	-13521.24	-1306796.57	0.00	0.00
Dead+Wind 90 deg+Ice+Temp	34774.73	13521.24	0.00	0.00	-1306796.57	0.00
Dead+Wind 180 deg+Ice+Temp	34774.73	0.00	13521.24	1306796.57	0.00	0.00
Dead+Wind 0 deg - Service	28457.91	0.00	-8480.98	-799754.18	0.00	0.00
Dead+Wind 90 deg - Service	28457.91	8480.98	0.00	0.00	-799754.18	0.00
Dead+Wind 180 deg - Service	28457.91	0.00	8480.98	799754.18	0.00	0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-28457.93	0.00	0.00	28457.93	0.00	0.000%
2	0.00	-28457.93	-17023.08	0.00	28457.87	17020.88	0.007%
3	17023.08	-28457.93	0.00	-17020.88	28457.87	0.00	0.007%
4	0.00	-28457.93	17023.08	0.00	28457.87	-17020.88	0.007%
5	0.00	-34774.74	0.00	0.00	34774.74	0.00	0.000%
6	0.00	-34774.74	-13521.68	0.00	34774.73	13521.24	0.001%
7	13521.68	-34774.74	0.00	-13521.24	34774.73	0.00	0.001%
8	0.00	-34774.74	13521.68	0.00	34774.73	-13521.24	0.001%
9	0.00	-28457.93	-8482.09	0.00	28457.91	8480.98	0.004%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
10	8482.09	-28457.93	0.00	-8480.98	28457.91	0.00	0.004%
11	0.00	-28457.93	8482.09	0.00	28457.91	-8480.98	0.004%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	13	0.00010875	0.00012350
3	Yes	13	0.00010875	0.00012350
4	Yes	13	0.00010875	0.00012350
5	Yes	6	0.00000001	0.00000001
6	Yes	15	0.00000001	0.00007336
7	Yes	15	0.00000001	0.00007336
8	Yes	15	0.00000001	0.00007336
9	Yes	13	0.00010994	0.00007278
10	Yes	13	0.00010994	0.00007278
11	Yes	13	0.00010994	0.00007278

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual / Allowable Ratio Bolt Tension lb	Actual / Allowable Ratio Bolt Compression lb	Actual / Allowable Ratio Plate Stress ksi	Actual / Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
2.5000	20	2.2500	57829.81 131210.58 0.44	60675.04 217809.56 0.28	29.798 45.000 0.66		Plate	0.66 ✓

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	149 - 125.17 (1)	TP24.82x18.5x0.1875	23.83	149.00	212.9	3.295	14.0802	-8300.86	46395.90	0.179
L2	125.17 - 94.96 (2)	TP32.33x23.4717x0.25	33.88	149.00	163.1	5.614	24.5046	-7696.82	137570.00	0.056
L3	94.96 - 46.713 (3)	TP44.49x30.6317x0.375	52.83	149.00	118.5	10.643	50.6096	-15070.50	538634.00	0.028
L4	46.713 - 0 (4)	TP56x42.1451x0.4375	52.79	149.00	90.6	18.096	77.1555	-28452.30	1396200.00	0.020

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Phone: FAX:	Client: Pocket Communications	Designed by:

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	149 - 125.17 (1)	TP24.82x18.5x0.1875	64397.50	-9.402	39.000	0.241	0.00	0.000	39.000	0.000
L2	125.17 - 94.96 (2)	TP32.33x23.4717x0.25	310906.67	-19.984	39.000	0.512	0.00	0.000	39.000	0.000
L3	94.96 - 46.713 (3)	TP44.49x30.6317x0.375	820388.33	-18.557	39.000	0.476	0.00	0.000	39.000	0.000
L4	46.713 - 0 (4)	TP56x42.1451x0.4375	1604750.00	-18.204	39.000	0.467	0.00	0.000	39.000	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	149 - 125.17 (1)	TP24.82x18.5x0.1875	0.179	0.241	0.000	0.420 ✓	1.333	H1-3 ✓
L2	125.17 - 94.96 (2)	TP32.33x23.4717x0.25	0.056	0.512	0.000	0.568 ✓	1.333	H1-3 ✓
L3	94.96 - 46.713 (3)	TP44.49x30.6317x0.375	0.028	0.476	0.000	0.504 ✓	1.333	H1-3 ✓
L4	46.713 - 0 (4)	TP56x42.1451x0.4375	0.020	0.467	0.000	0.487 ✓	1.333	H1-3 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	149 - 125.17	Pole	TP24.82x18.5x0.1875	1	-8300.86	61845.73	31.5	Pass
L2	125.17 - 94.96	Pole	TP32.33x23.4717x0.25	2	-7696.82	183380.80	42.6	Pass
L3	94.96 - 46.713	Pole	TP44.49x30.6317x0.375	3	-15070.50	717999.09	37.8	Pass
L4	46.713 - 0	Pole	TP56x42.1451x0.4375	4	-28452.30	1861134.52	36.5	Pass
							Summary	
						Pole (L2)	42.6	Pass
						Base Plate	49.7	Pass
						RATING =	49.7	Pass