

**EM-POCKET-083-081212**

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ORIGINAL

www.pullcom.com

December 11, 2008

**Via Federal Express**

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

RECEIVED  
DEC 12 2008

CONNECTICUT  
SITING COUNCIL

**Re: Notice of Exempt Modification  
AT&T Towers Telecommunications Facility  
290 Preston Avenue, Middletown, Connecticut**

Dear Mr. Phelps:

Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket"), intends to install antennas and appurtenant equipment at the existing 148-foot monopole facility owned by AT&T Towers and located at 290 Preston Avenue, Middletown, 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 Sebastian N. Giuliano, Mayor, City of Middletown.

The existing Facility consists of a 148-foot self-supporting monopole tower capable of supporting multiple carriers within a fenced compound. The coordinates for the Facility are **Lat: 41°-33'-26"** and **Long: 72°-44'-37"**. The tower is located in the western portion of Middletown, roughly 1,800 feet east of the Meriden town line. The tower is approximately 70 feet west of the southbound lanes of Interstate 92, roughly 1.6 miles north of it's intersection with Route 691 (see Site Map, attached as Exhibit A). The tower currently supports Verizon antennas at the one hundred ten foot level (110') level centerline AGL (above ground level), AGL, Nextel antennas at the one hundred twenty foot level (120') AGL, Sprint antennas at the one hundred thirty foot level (130') AGL, and AT&T antennas at the one hundred thirty seven foot level (137') AGL. As mentioned in the structural analysis, T-Mobile has abandoned this site and has removed it's antennas form the one hundred forty foot level (140') AGL. As part of this proposed installation, the Cingular antennas referenced in design drawing A-2 (Exhibit B)

Page 2

are to be removed. Pocket proposes to install three Kathrein 742-213 flush mount antennas on the tower at the ninety foot centerline (90') 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 on an abandoned AT&T concrete pad. A small GPS antenna will be mounted to the tower at the approximate seventy foot (70') level AGL. 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 Preston Avenue 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 90 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 48.84% 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 Middletown Facility constitutes an exempt modification under R.C.S.A. Section 16-50j-72(b)(2).

Page 3

Respectfully Submitted,



Carrie L. Larson

cc: Sebastian N. Giuliano, Mayor  
Ernest and Brenda Trumpold, underlying property owner

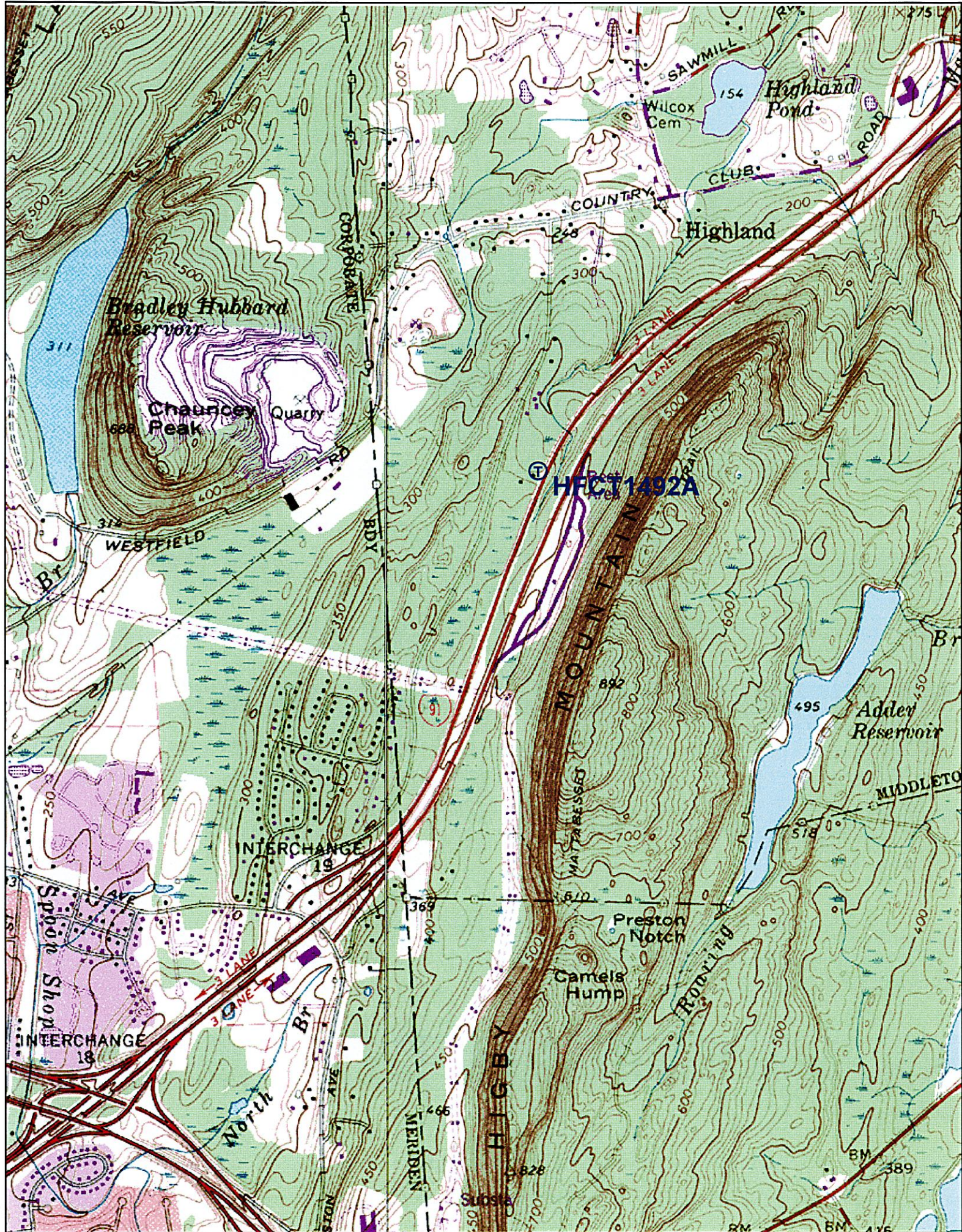
**Exhibit A**

**Site Map**

**Pocket Site HFCT1492A**

**290 Preston Avenue**

**Middletown, Connecticut**



**Exhibit B**

**Design Drawings**

**Pocket Site HFCT1492A**

**290 Preston Avenue**

**Middletown, Connecticut**



SITE NAME: AT&T 14635

SITE #: HFCT1492A

COUNTY: MIDDLESEX CITY

CONSTRUCTION DRAWINGS

NO.	DESCRIPTION	DATE	BY	CHKD BY
1	SUBMITTAL			

PROFESSIONAL STAMP

DRAWN BY: GJM  
CHECKED BY: JLN  
JOB #: CT-102  
SITE ADDRESS: 290 PRESTON AVE.  
MIDDLETOWN, CT 06457

SHEET TITLE: SITE PLAN

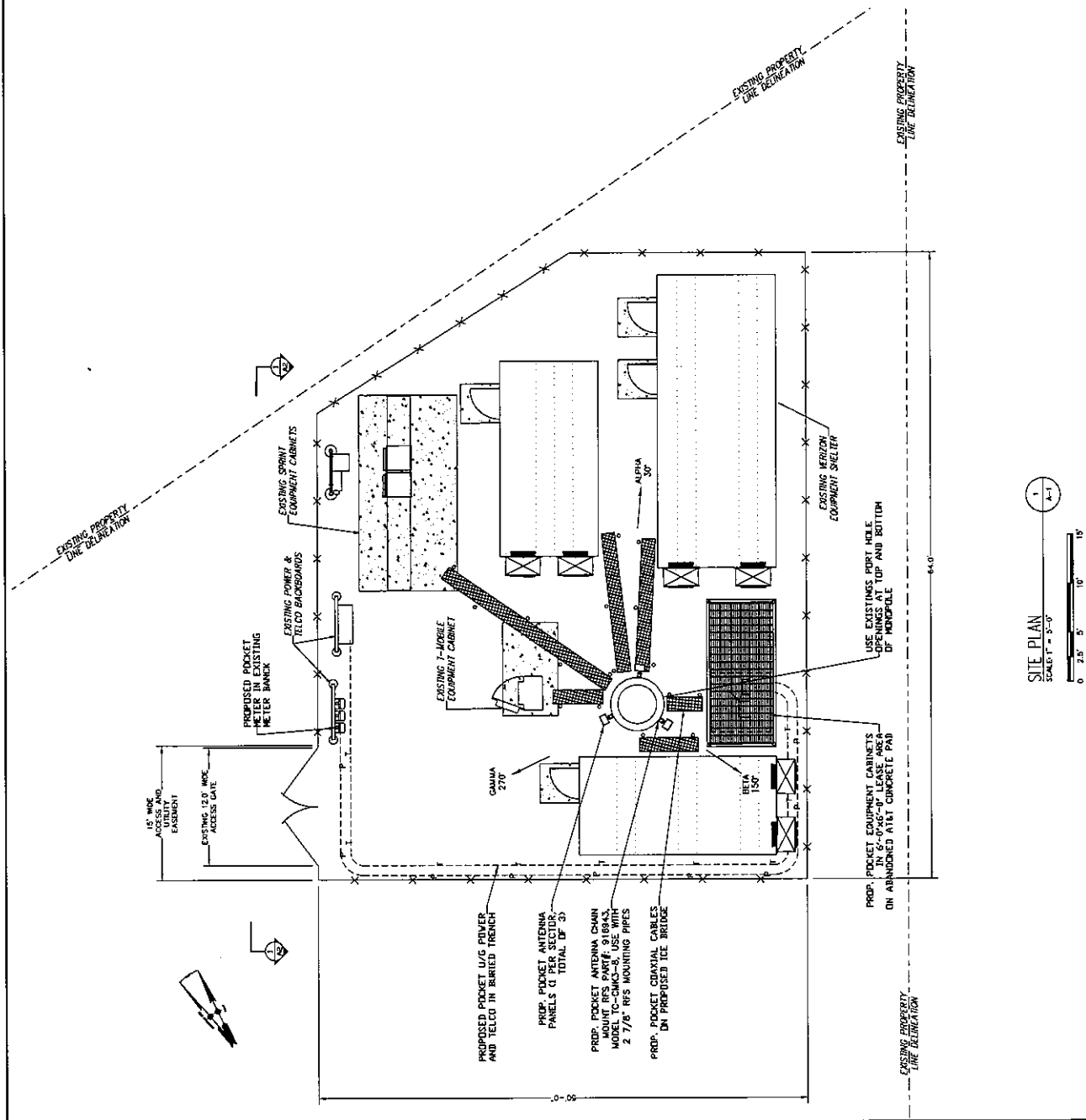
SHEET NUMBER: A-1

**GENERAL NOTES**

1. ALL ELECTRICAL HARDWARE, AND THE LOCATIONS OF ALL EQUIPMENT IN THE COMPANED ARE SHOWN IN ILLUSTRATIVE FASHION. THE CONTRACTOR SHALL VERIFY THE EXISTING ACTUAL HARDWARE DETAILS AND FINAL LOCATIONS MAY DIFFER SLIGHTLY FROM WHAT IS SHOWN.
2. THE DATE AND SECOND COMPANED IT IS REQUIRED BY THE STATE AND FEDERAL REGULATIONS. REQUIRE ANY WATER OR SANITARY SEWER SERVICE TO BE ADJUSTED TO CAUSE ANY DISCREPANCY TO BE CORRECTED PRIOR TO THE START OF CONSTRUCTION (1-800-332-4455).
3. THE CONTRACTOR SHALL CALL "NO SAFE" 72 HRS PRIOR TO THE START OF CONSTRUCTION TO REPORT ANY UTILITIES WHICH ARE LOCATED IN THE WORK AREA. ALL EXISTING RADIOTELEPHONE, TELEPHONE, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF WORK, SHALL BE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE CONTRACTOR. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE UTILITIES FOR EXISTING AND PROPOSED WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS FOR PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE UTILITIES FOR EXISTING AND PROPOSED WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS FOR PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE UTILITIES FOR EXISTING AND PROPOSED WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS FOR PROTECTION OF EXISTING UTILITIES.
4. ALL EXISTING RADIOTELEPHONE, TELEPHONE, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF WORK, SHALL BE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE CONTRACTOR. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE UTILITIES FOR EXISTING AND PROPOSED WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS FOR PROTECTION OF EXISTING UTILITIES.
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6. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWING AND SPECIFICATIONS PROJECT SUMMARY SHEETS AND OTHER REVISIONS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN AN APPROPRIATE MANNER.
7. ALL EXISTING RADIOTELEPHONE, TELEPHONE, GAS, ELECTRIC AND OTHER UTILITIES WHICH INTERFERE WITH THE EXECUTION OF WORK, SHALL BE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE CONTRACTOR. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE UTILITIES FOR EXISTING AND PROPOSED WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS FOR PROTECTION OF EXISTING UTILITIES.
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14. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE UTILITIES FOR EXISTING AND PROPOSED WORK. ALL WORK SHALL BE IN COMPLIANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS FOR PROTECTION OF EXISTING UTILITIES.

**SUPPLEMENTAL NOTES**

1. ALL MATERIALS, AS WELL AS METHODS AND PROCESSES USED IN THE PERFORMANCE OF THE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS AND THE GENERAL CONTRACTOR SHALL BECOME FAMILIAR WITH SUCH REQUIREMENTS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND STRUCTURES IN THE AREA OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND STRUCTURES IN THE AREA OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES AND STRUCTURES IN THE AREA OF THE WORK.
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**SITE PLAN**  
SCALE 1" = 5'-0"  
0 2.5' 5' 10' 15'





IT IS A VIOLATION OF LAW FOR ANY PERSON  
UNLESS THEY ARE LICENSED UNDER THE DIRECTOR  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ACT IN THIS MANNER.

SITE NAME: AT&T 14635

SITE #: HPCT1482A

COUNTY: MIDDLESEX CITY

CONSTRUCTION DRAWINGS

NO.	DESCRIPTION	DATE
1	SUBMITTAL	10/20/04
2	REVISED	11/10/04
3	REVISED	11/10/04
4	REVISED	11/10/04
5	REVISED	11/10/04
6	REVISED	11/10/04
7	REVISED	11/10/04
8	REVISED	11/10/04
9	REVISED	11/10/04
10	REVISED	11/10/04

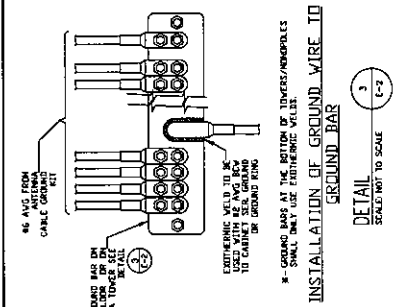
PROFESSIONAL STAMP

DESIGNED BY: GJM  
CHECKED BY: JLN  
JOB #: CT-1482

SITE ADDRESS:  
280 PRESTON AVE.  
MIDDLETOWN, CT 06457

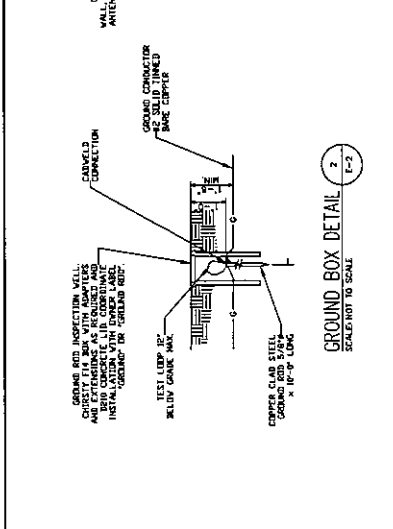
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GROUNDING DIAGRAM &  
DETAILS

SHEET NUMBER  
E-2

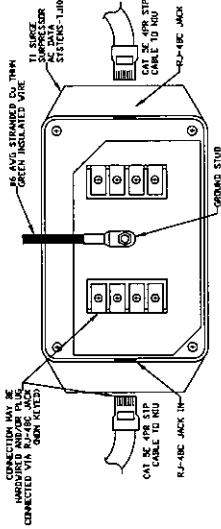


INSTALLATION OF GROUND WIRE TO GROUND BAR  
DETAIL  
SCALE: NOT TO SCALE

- NOTES:
1. VERIFY IT-TVS ARE ON EQUIPMENT FRAME MOUNTING ON THE WALL. VERIFY IT-A WASHER AND A LOCK WASHER ON THE IT-A ATTACHMENT. VERIFY IT-A IS NOT OVER THE EQUIPMENT FRAME. VERIFY IT-A IS NOT OVER THE EQUIPMENT FRAME. VERIFY IT-A IS NOT OVER THE EQUIPMENT FRAME.
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GROUND BOX DETAIL  
SCALE: NOT TO SCALE



# **Exhibit C**

## **Equipment Specifications**

**Pocket Site HFCT1492A**

**290 Preston Avenue**

**Middletown, Connecticut**

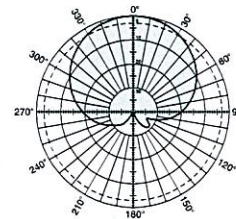
Kathrein's X-polarized adjustable electrical downtilt antennas offer the wireless carrier the ability to tailor polarization diversity sites for optimum performance. Using variable downtilt, only a few models need be procured to accommodate the needs of widely varying conditions. Remotely controlled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

- 0-6° downtilt range.
- UV resistant pultruded 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.

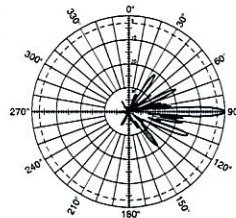
**General specifications:**

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 ft² (0.429 m²)
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



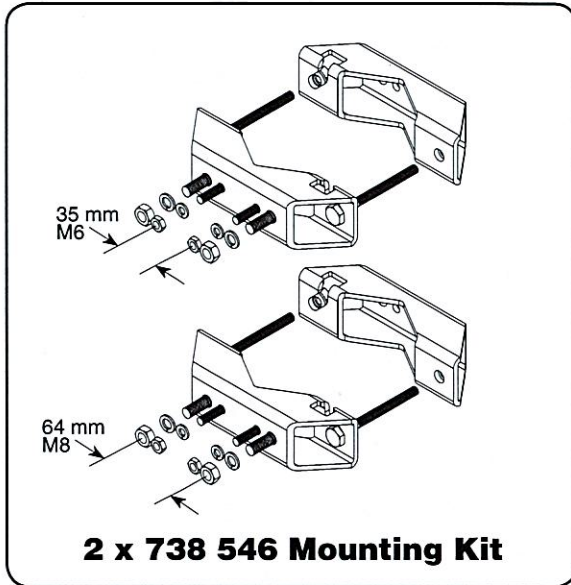
Vertical pattern  
±45° polarization



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

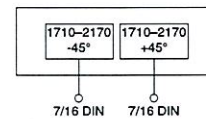
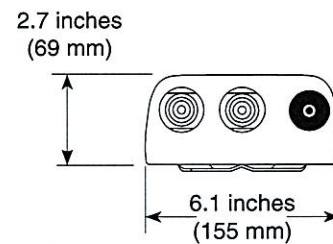
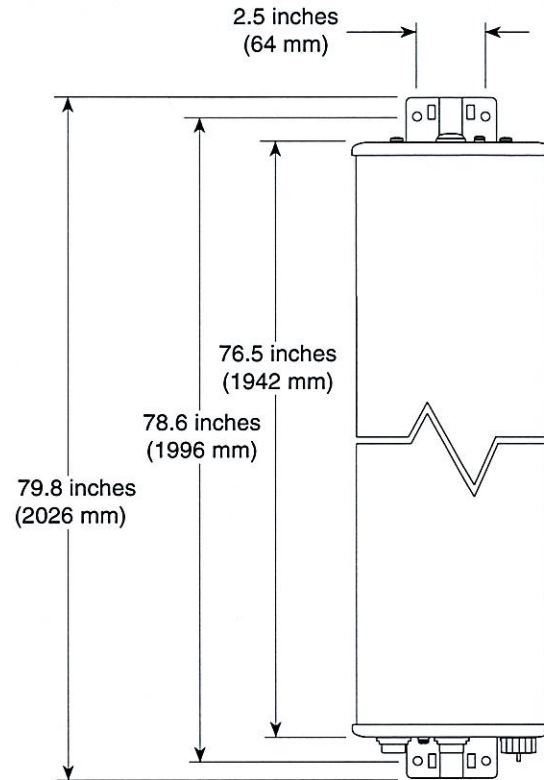


\* Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



**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.

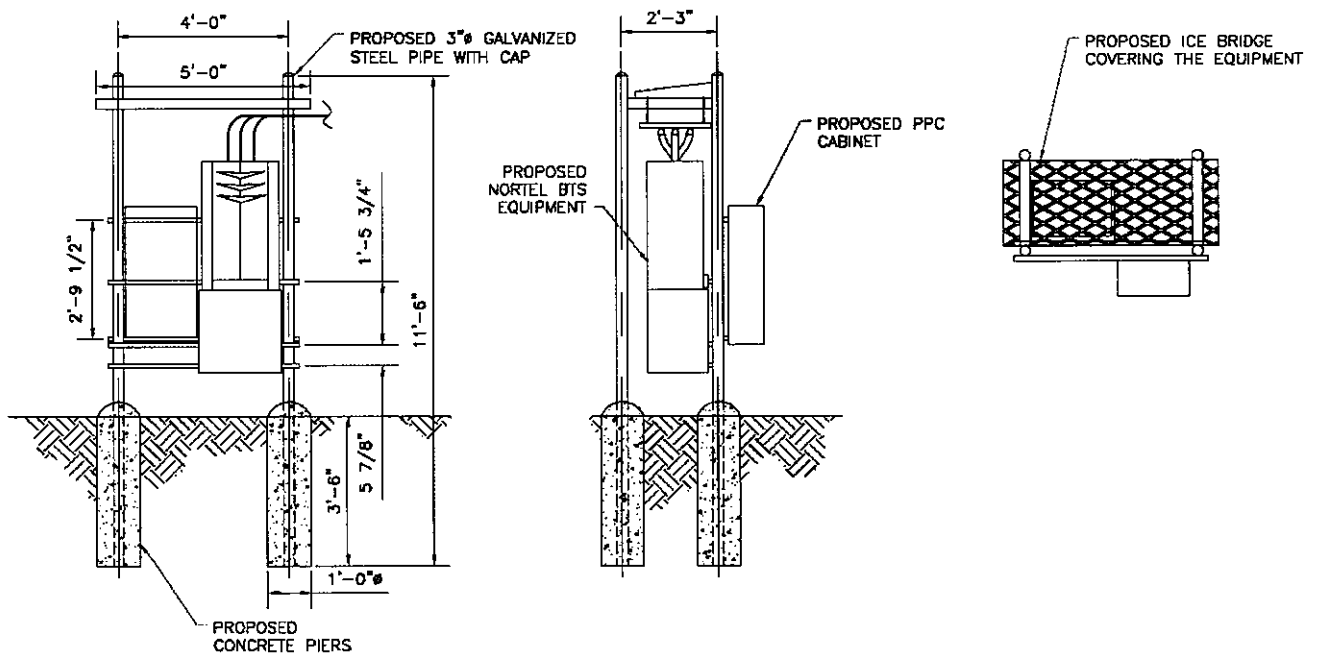


**Order Information:**

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](http://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](mailto:communications@kathrein.com) Internet: [www.kathrein-scala.com](http://www.kathrein-scala.com)



Pocket/Youghiogeny Communications – Northeast, LLC  
 Rack Detail



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

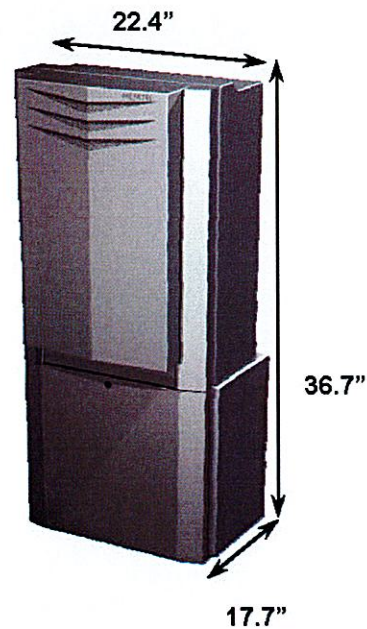
to transport to hard to reach locations such as the top of a high rise building.

### CDMA BTS 3231

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#### *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**

## **Power Density Calculations**

**Pocket Site HFCT1492A**

**290 Preston Avenue**

**Middletown, Connecticut**



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

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## Calculated Radio Frequency Emissions



HFCT1492

290 Preston Avenue, Middletown, CT

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## Table of Contents

1. Introduction .....	1
2. FCC Guidelines for Evaluating RF Radiation Exposure Limits .....	2
3. RF Exposure Prediction Methods .....	2
4. Calculation Results .....	3
5. Conclusion .....	3
6. Statement of Certification .....	4
Attachment A: References .....	5
Attachment B: FCC Limits For Maximum Permissible Exposure (MPE) .....	6

## List of Tables

Table 1: Proposed Carrier Information .....	3
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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 290 Preston Avenue, Middletown, 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 ( $\text{mW}/\text{cm}^2$ ). The number of  $\text{mW}/\text{cm}^2$  emitted is called the power density. The general population exposure limit for the cellular band is 0.567-0.593  $\text{mW}/\text{cm}^2$ , and the general population exposure limit for the PCS/AWS band is 1.0  $\text{mW}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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<sup>1</sup>.

Carrier	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Antenna Height (Feet)	Operating Frequency (MHz)	Total ERP (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	%MPE
Sprint	11	588.23	129	1962.5	6470.53	0.0001	1.0000	0.01%
Nextel	9	100	117.5	851	900	0.0234	0.5673	4.13%
Verizon	9	285	110	880	2565	0.0762	0.5867	12.99%
Verizon	3	400	110	1900	1200	0.0357	1.0000	3.57%
AT&T UMTS	1	500	137	1935	500	0.0096	1.0000	0.96%
AT&T	20	250	137	880	5000	0.0958	0.5867	16.33%
AT&T	3	427	137	1930	1281	0.0245	1.0000	2.45%
Pocket	3	631	90	2130-2133.75	1893	0.0840	1.0000	8.40%
							Total	48.84%

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 48.84% of the FCC limit.

Please note that as indicated 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.

<sup>1</sup> According to the structural analysis report submitted on Nov 13, 2008 by the engineering firm of GPD Associates, T-Mobile has abandoned this site and removed their antennas from 140' centerline. AT&T's antennas' centerline should be 137', in lieu of the 150' height listed on the CSC database. AT&T's %MPE value has been updated based on the lower height. T-Mobile's %MPE value has been removed from the composite analysis. (Note gray type denotes recommended updates for CSC database.)

## 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.



---

Daniel I. Goulet  
C Squared Systems, LLC

December 9, 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

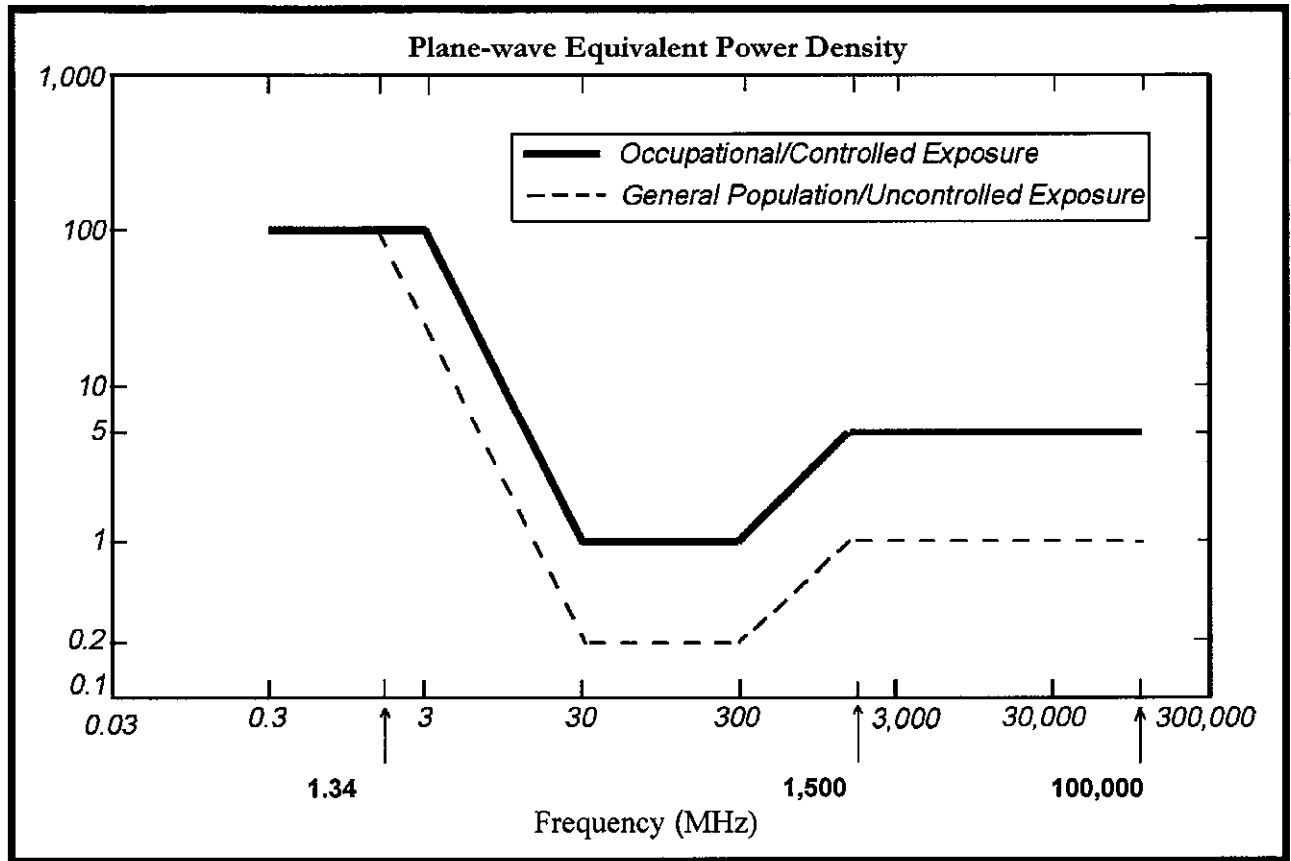
### (B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	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 HFCT1492A**

**290 Preston Avenue**

**Middletown, Connecticut**



**at&t**

Glynn Walker  
AT&T Mobility  
5405 Windward Pkwy  
Alpharetta, GA 30004  
(770) 708-6122



GPD ASSOCIATES

Kevin Clements  
520 South Main St., Suite 2531  
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(330) 572-2195  
kclements@gpdgroup.com

GPD# 2008265.25  
November 13, 2008

**STRUCTURAL ANALYSIS REPORT**

**AT&T DESIGNATION:** Site USID: 14635  
Site Name: MIDDLETOWN SW  
Site FA #: 10035088

**POCKET DESIGNATION:** Site Name: Preston Ave  
Site Number: CT-1492

**ANALYSIS CRITERIA:** Codes: TIA/EIA-222-F & 2003 IBC  
85-mph with 0" ice  
74-mph with 1/2" ice

**SITE DATA:** 290 Preston Avenue, Middletown, CT 06457, Middlesex County  
Latitude 41° 33' 26.46"N, Longitude 72° 44' 35.807"W  
148' PJF Monopole

Mr. Walker,

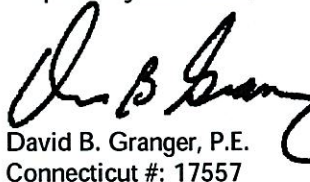
GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of this analysis is to determine the suitability of the tower with the addition of the following proposed loading configuration:

Elev. 90' (3) Kathrein 742-213 Antennas, pipe mounted, w/ (6) 1-5/8" external coax

Based on our analysis we have determined the tower and its foundation are sufficient for the proposed, existing, and reserved loadings as referenced in Appendix A.

We at GPD appreciate the opportunity of providing our continuing professional services to you and AT&T. If you have any questions please do not hesitate to call.

Respectfully submitted,

  
David B. Granger, P.E.  
Connecticut #: 17557



## SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by Pocket Communications to AT&T. This report was commissioned by Mr. Glynn Walker of AT&T.

### TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	102.5%*	Pass
Base Plate	69.2%	Pass
Anchor Rods	82.8%	Pass
Foundation	80.7%	Pass

\* Capacity is within customary engineering tolerances and is considered satisfactory.

## ANALYSIS METHOD

RISA Tower (Version 5.3.0.1), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being provided without the benefit of a site visit.

### DOCUMENTS PROVIDED

Document	Remarks	Source
Preliminary Tower Summary	Pocket Co-location document	G. Walker
Site Lease Application	Pocket Application, dated 7/24/08	G. Walker
Previous Structural Analysis	URS Corporation Project #: 36931082.00008, dated 6/21/07	Siterra

## ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the monopole. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The monopole shaft sizes and shape are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations. If no data is available, the foundation system is not verified. In the case of absent foundation data, it is the tower owner's responsibility to insure that the foundation system is adequate to support the structure with its new reactions.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
8. All prior structural modifications, if any, are assumed to be as per data supplied / available, to have been properly installed and to be fully effective.
9. All proposed coax is assumed to be external to the monopole.
10. Tower Mounted Amplifiers are assumed to be installed behind antennas.
11. All existing loading was obtained from the most recent structural analysis by URS Corporation Project # 36931082.00008, dated 6/21/07, tower photos and the submitted PTS and is assumed to be accurate.

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

## DISCLAIMER OF WARRANTIES

GPD ASSOCIATES has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD ASSOCIATES in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD ASSOCIATES does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD ASSOCIATES provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD ASSOCIATES, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD ASSOCIATES makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD ASSOCIATES will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD ASSOCIATES pursuant to this report will be limited to the total fee received for preparation of this report.

## APPENDIX A

### Tower Analysis Summary Form



## APPENDIX B

### RISA Tower Output File

<b>RISATower</b>  <b>GPD Group</b> 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (614) 210-0751 FAX: (614) 210-0752	<b>Job</b> 14635 MIDDLETOWN SW	<b>Page</b> 1 of 4
	<b>Project</b> 2008265.25	<b>Date</b> 14:48:36 11/13/08
	<b>Client</b> AT&T Mobility	<b>Designed by</b> kdavis

## 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 Middlesex 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.

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.

## Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>A</sub> A <sub>A</sub>		Weight
						No Ice	1/2" Ice	plf
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	137.00 - 8.00	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	130.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF5-50A (7/8 FOAM)	B	No	Inside Pole	120.00 - 8.00	10	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	110.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF4P-50A (1/2 FOAM)	C	No	Inside Pole	110.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	100.00 - 8.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	100.00 - 8.00	8	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	90.00 - 8.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	90.00 - 8.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF4-50A (1/2 FOAM)	C	No	CaAa (Out Of Face)	50.00 - 8.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
LDF4-50A (1/2 FOAM)	C	No	CaAa (Out Of Face)	75.00 - 50.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84

<b>RISA Tower</b>  <b>GPD Group</b> 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (614) 210-0751 FAX: (614) 210-0752	<b>Job</b> 14635 MIDDLETOWN SW	<b>Page</b> 2 of 4
	<b>Project</b> 2008265.25	<b>Date</b> 14:48:36 11/13/08
	<b>Client</b> AT&T Mobility	<b>Designed by</b> kdavis

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
12' LP Platform	C	None			0.0000	148.00	No Ice 25.00 1/2" Ice 30.00	25.00 30.00	1.50 1.75
12' LP Platform	C	None			0.0000	137.00	No Ice 25.00 1/2" Ice 30.00	25.00 30.00	1.50 1.75
(3) DUO1417-8686	A	From Centroid-Le g	3.00 0.00 0.00		0.0000	137.00	No Ice 6.53 1/2" Ice 6.94	4.20 4.57	0.02 0.06
(3) DUO1417-8686	B	From Centroid-Le g	3.00 0.00 0.00		0.0000	137.00	No Ice 6.53 1/2" Ice 6.94	4.20 4.57	0.02 0.06
(3) DUO1417-8686	C	From Centroid-Le g	3.00 0.00 0.00		0.0000	137.00	No Ice 6.53 1/2" Ice 6.94	4.20 4.57	0.02 0.06
(3) TMA	A	From Centroid-Le g	3.00 0.00 0.00		0.0000	137.00	No Ice 0.00 1/2" Ice 0.00	0.12 0.17	0.00 0.00
(3) TMA	B	From Centroid-Le g	3.00 0.00 0.00		0.0000	137.00	No Ice 0.00 1/2" Ice 0.00	0.12 0.17	0.00 0.00
(3) TMA	C	From Centroid-Le g	3.00 0.00 0.00		0.0000	137.00	No Ice 0.00 1/2" Ice 0.00	0.12 0.17	0.00 0.00
12' LP Platform	C	None			0.0000	130.00	No Ice 25.00 1/2" Ice 30.00	25.00 30.00	1.50 1.75
(3) DB980	A	From Centroid-Le g	3.00 0.00 0.00		0.0000	130.00	No Ice 3.90 1/2" Ice 4.28	2.29 2.65	0.01 0.03
(3) DB980	B	From Centroid-Le g	3.00 0.00 0.00		0.0000	130.00	No Ice 3.90 1/2" Ice 4.28	2.29 2.65	0.01 0.03
(3) DB980	C	From Centroid-Le g	3.00 0.00 0.00		0.0000	130.00	No Ice 3.90 1/2" Ice 4.28	2.29 2.65	0.01 0.03
12' LP Platform	C	None			0.0000	120.00	No Ice 25.00 1/2" Ice 30.00	25.00 30.00	1.50 1.75
(4) DB844H90E-XY	A	From Centroid-Le g	3.00 0.00 0.00		0.0000	120.00	No Ice 2.87 1/2" Ice 3.18	3.73 4.10	0.01 0.04
(4) DB844H90E-XY	B	From Centroid-Le g	3.00 0.00 0.00		0.0000	120.00	No Ice 2.87 1/2" Ice 3.18	3.73 4.10	0.01 0.04
(4) DB844H90E-XY	C	From Centroid-Le g	3.00 0.00 0.00		0.0000	120.00	No Ice 2.87 1/2" Ice 3.18	3.73 4.10	0.01 0.04
12' LP Platform	C	None			0.0000	110.00	No Ice 25.00 1/2" Ice 30.00	25.00 30.00	1.50 1.75
(2) LPA-80063/4CF	A	From Centroid-Le g	3.00 0.00 0.00		0.0000	110.00	No Ice 7.01 1/2" Ice 7.42	6.08 6.48	0.02 0.07
(2) LPA-80063/4CF	B	From Centroid-Le g	3.00 0.00 0.00		0.0000	110.00	No Ice 7.01 1/2" Ice 7.42	6.08 6.48	0.02 0.07
(2) LPA-80063/4CF	C	From Centroid-Le g	3.00 0.00 0.00		0.0000	110.00	No Ice 7.01 1/2" Ice 7.42	6.08 6.48	0.02 0.07

<b>RISATower</b>  <b>GPD Group</b> 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (614) 210-0751 FAX: (614) 210-0752	<b>Job</b>	14635 MIDDLETOWN SW	<b>Page</b>	3 of 4
	<b>Project</b>	2008265.25	<b>Date</b>	14:48:36 11/13/08
	<b>Client</b>	AT&T Mobility	<b>Designed by</b>	kdavis

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub> Front	C <sub>A</sub> A <sub>A</sub> Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
(2) DB950F85E-M	A	g	0.00						
		From	3.00		0.0000	110.00	No Ice	2.53	0.01
		Centroid-Le	0.00				1/2" Ice	2.90	0.03
(2) DB950F85E-M	B	g	0.00						
		From	3.00		0.0000	110.00	No Ice	2.53	0.01
		Centroid-Le	0.00				1/2" Ice	2.90	0.03
(2) DB950F85E-M	C	g	0.00						
		From	3.00		0.0000	110.00	No Ice	2.53	0.01
		Centroid-Le	0.00				1/2" Ice	2.90	0.03
GPS	C	g	0.00						
		From	3.00		0.0000	110.00	No Ice	0.17	0.00
		Centroid-Le	0.00				1/2" Ice	0.24	0.00
PiROD 13' Low Profile Platform (Monopole)	C	g	0.00						
		None			0.0000	100.00	No Ice	15.70	1.30
							1/2" Ice	20.10	1.76
(3) DUO1417-8686	A	g	0.00						
		From	3.00		0.0000	100.00	No Ice	6.53	0.02
		Centroid-Le	0.00				1/2" Ice	6.94	0.06
(3) DUO1417-8686	B	g	0.00						
		From	3.00		0.0000	100.00	No Ice	6.53	0.02
		Centroid-Le	0.00				1/2" Ice	6.94	0.06
(3) DUO1417-8686	C	g	0.00						
		From	3.00		0.0000	100.00	No Ice	6.53	0.02
		Centroid-Le	0.00				1/2" Ice	6.94	0.06
(2) TMA	A	g	0.00						
		From	3.00		0.0000	100.00	No Ice	0.00	0.00
		Centroid-Le	0.00				1/2" Ice	0.00	0.00
(2) TMA	B	g	0.00						
		From	3.00		0.0000	100.00	No Ice	0.00	0.00
		Centroid-Le	0.00				1/2" Ice	0.00	0.00
(2) TMA	C	g	0.00						
		From	3.00		0.0000	100.00	No Ice	0.00	0.00
		Centroid-Le	0.00				1/2" Ice	0.00	0.00
Diplexer	A	g	0.00						
		From	3.00		0.0000	100.00	No Ice	0.00	0.01
		Centroid-Le	0.00				1/2" Ice	0.00	0.01
Diplexer	B	g	0.00						
		From	3.00		0.0000	100.00	No Ice	0.00	0.01
		Centroid-Le	0.00				1/2" Ice	0.00	0.01
Diplexer	C	g	0.00						
		From	3.00		0.0000	100.00	No Ice	0.00	0.01
		Centroid-Le	0.00				1/2" Ice	0.00	0.01
742-213 w/Mount Pipe	A	g	0.00						
		From Face	0.50		30.0000	90.00	No Ice	5.42	0.05
			0.00				1/2" Ice	5.95	0.09
742-213 w/Mount Pipe	B	g	0.00						
		From Face	0.50		30.0000	90.00	No Ice	5.42	0.05
			0.00				1/2" Ice	5.95	0.09
742-213 w/Mount Pipe	C	g	0.00						
		From Face	0.50		30.0000	90.00	No Ice	5.42	0.05
			0.00				1/2" Ice	5.95	0.09
2'-0" - STANDOFF	A	g	0.00						
		From Face	1.00		0.0000	75.00	No Ice	1.36	0.02
			0.00				1/2" Ice	2.45	0.04
2'-0" - STANDOFF	B	g	0.00						
		From Face	1.00		0.0000	75.00	No Ice	1.36	0.02
			0.00				1/2" Ice	2.45	0.04

<b>RISATower</b>  <b>GPD Group</b> 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (614) 210-0751 FAX: (614) 210-0752	<b>Job</b> 14635 MIDDLETOWN SW	<b>Page</b> 4 of 4
	<b>Project</b> 2008265.25	<b>Date</b> 14:48:36 11/13/08
	<b>Client</b> AT&T Mobility	<b>Designed by</b> kdavis

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral	Vert					
GPS	A	From Face	2.00	0.0000	75.00	No Ice	0.17	0.17	0.00	
			0.00			1/2" Ice	0.24	0.24	0.00	
GPS	B	From Face	2.00	0.0000	75.00	No Ice	0.17	0.17	0.00	
			0.00			1/2" Ice	0.24	0.24	0.00	
2'-0" - STANDOFF	C	From Face	1.00	0.0000	50.00	No Ice	1.36	1.36	0.02	
			0.00			1/2" Ice	2.45	2.45	0.04	
GPS	C	From Face	2.00	0.0000	50.00	No Ice	0.17	0.17	0.00	
			0.00			1/2" Ice	0.24	0.24	0.00	

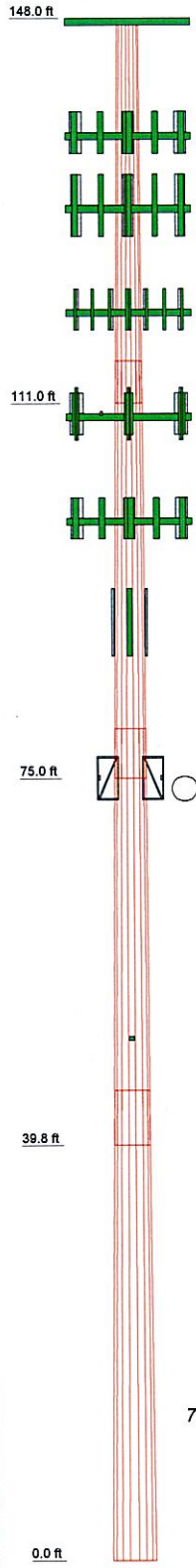
### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail	
L1	148 - 111	Pole	TP30.661x24x0.25	1	-7.85	1224.80	29.8	Pass	
L2	111 - 75	Pole	TP36.643x29.4409x0.25	2	-15.24	1465.99	86.3	Pass	
L3	75 - 39.75	Pole	TP42.489x35.2878x0.3125	3	-22.12	2126.08	100.1	Pass	
L4	39.75 - 0	Pole	TP49.02x40.9188x0.375	4	-33.39	3010.03	102.5	Pass	
							Summary		
							Pole (L4)	102.5	Pass
							<b>RATING =</b>	<b>102.5</b>	<b>Pass</b>

## APPENDIX C

### Tower Elevation Drawing

Section	Length (ft)	Number of Sides	Thickness (in)	Lap Splice (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	37.00	18	0.2500	4.00	24.0000	30.6610	A607-65	2.7
2	40.00	18	0.2500	4.75	26.4409	36.6430	A607-65	3.5
3	40.00	18	0.3125	5.25	35.2878	42.4890	A607-65	5.2
4	45.00	18	0.3750	40.9188	49.0200		A607-65	8.1
								19.6



### DESIGNED APPURTENANCE LOADING

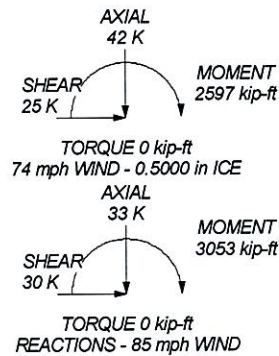
TYPE	ELEVATION	TYPE	ELEVATION
12' LP Platform	148	(2) DB950F85E-M	110
12' LP Platform	137	GPS	110
(3) DUO1417-8686	137	PIROD 13' Low Profile Platform (Monopole)	100
(3) DUO1417-8686	137	(3) DUO1417-8686	100
(3) TMA	137	(3) DUO1417-8686	100
(3) TMA	137	(3) DUO1417-8686	100
(3) TMA	137	(2) TMA	100
12' LP Platform	130	(2) TMA	100
(3) DB980	130	(2) TMA	100
(3) DB980	130	Diplexer	100
(3) DB980	130	Diplexer	100
12' LP Platform	120	Diplexer	100
(4) DB844H90E-XY	120	742-213 w/Mount Pipe	90
(4) DB844H90E-XY	120	742-213 w/Mount Pipe	90
(4) DB844H90E-XY	120	742-213 w/Mount Pipe	90
12' LP Platform	110	2'-0" - STANDOFF	75
(2) LPA-80063/4CF	110	2'-0" - STANDOFF	75
(2) LPA-80063/4CF	110	GPS	75
(2) LPA-80063/4CF	110	GPS	75
(2) DB950F85E-M	110	2'-0" - STANDOFF	50
(2) DB950F85E-M	110	GPS	50


### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Middlesex 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. TOWER RATING: 102.5%

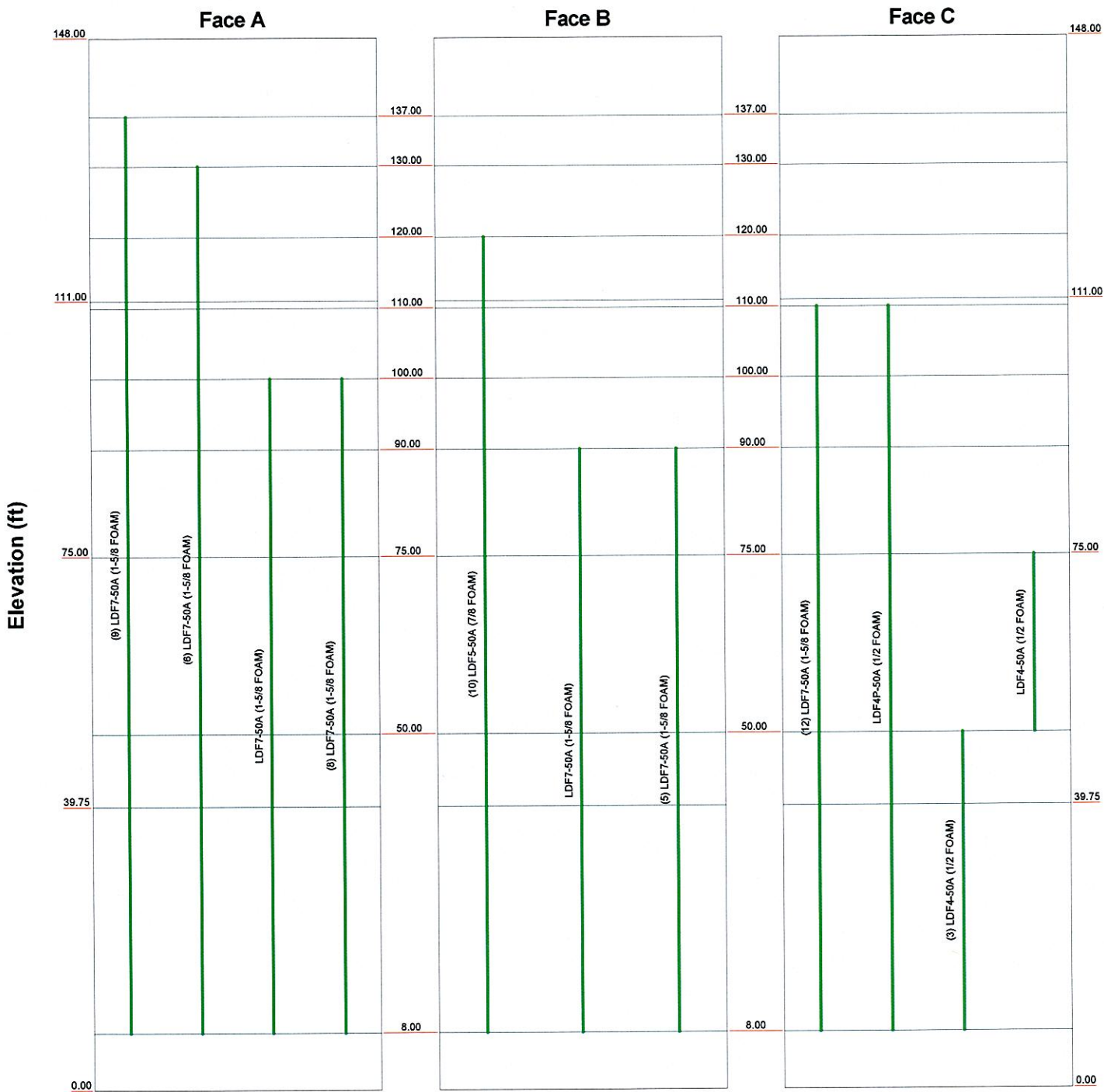


 <b>GPD Group</b> 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (614) 210-0751 FAX: (614) 210-0752	<b>Job: 14635 MIDDLETOWN SW</b> Project: 2008265.25		
	Client: AT&T Mobility	Drawn by: kdavis	App'd:
	Code: TIA/EIA-222-F	Date: 11/13/08	Scale: NTS
	Path: G:\Telecom\2008265\25\RISA\14635 Middletown SW.er	Dwg No. E-1	

# Feedline Distribution Chart

## 0' - 148'

— Round   
 — Flat   
 — App In Face   
 — App Out Face   
 — Truss Leg

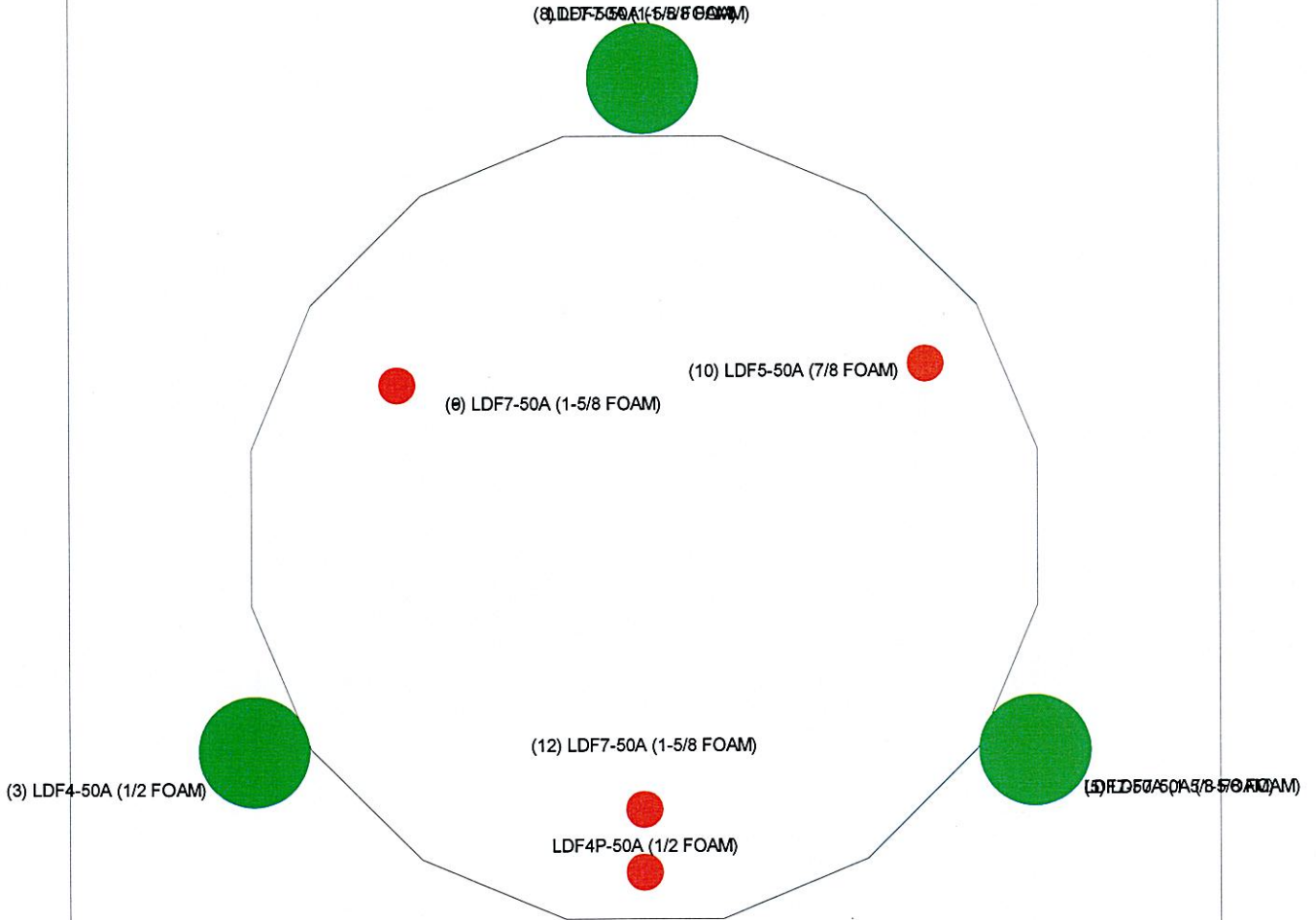


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	Client: AT&T Mobility	Drawn by: kdavis	App'd:
	Code: TIA/EIA-222-F	Date: 11/13/08	Scale: NTS
	Path: G:\Telecom\2008265\25\RS\14635 Middletown SW.dwg	Dwg No. E-7	

# Feedline Plan 39'9"

— Round   
 — Flat   
 — App In Face   
 — App Out Face

Section @ 39'9"



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	Project: 2008265.25		Client: AT&T Mobility	Drawn by: kdavis	App'd:
	Code: TIA/EIA-222-F		Date: 11/13/08	Scale: NTS	
	Path: G:\Telecom\200826525\RISA\14635 Middletown SW.er		Dwg No. E-7		

## APPENDIX D

### Anchor Rod & Base Plate Analysis

**Anchor Rod and Base Plate Stresses**  
**14635 MIDDLETOWN SW**

Overturning Moment =	3052.57	k*ft
Axial Force =	33.39	k
Shear Force =	29.66	k

<b>Anchor Rods</b>		
Pole Diameter =	49.02	in
Number of Rods =	16	
Rod Grade (Fy) =	75	ksi
Rod Circle =	56	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in <sup>2</sup>
<b>0 Degrees</b>		
Max Tension on Rod =	113.55	klps
Max Compression on Rod =	117.72	klps
<b>45 Degrees</b>		
Max Tension on Rod =	161.44	klps
Max Compression on Rod =	165.62	klps
Allow. Rod Force =	195.00	klps
Anchor Rod Capacity =	82.8%	<b>OK</b>

<b>Base Plate</b>		
Plate Strength (Fy) =	55	ksi
Plate Thickness =	3	in
Plate Width =	56	in
Est. Dist. b/w Rods =	18	in
w <sub>calc</sub> =	27.46	in
e =	2.365	in
w <sub>max</sub> =	30.18	in
w =	27.46	in
S =	41.19	in <sup>3</sup>
fb =	38.04	ksi
Fb =	55	ksi
Base Plate Capacity =	69.2%	<b>OK</b>

## APPENDIX E

### Foundation Analysis

**PAD & PIER DESIGN - Monopole**  
**14635 MIDDLETOWN SW**

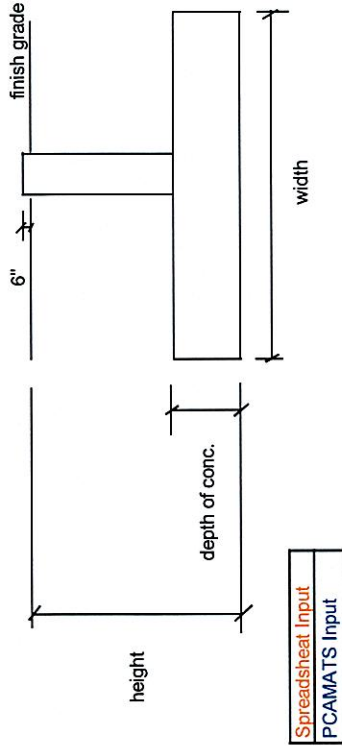
**TOWER REACTIONS**

total overturning moment = 3052.57 Kip-ft  
 total shear = 29.66 Kip  
 axial = 33.39 Kip  
 ground water table = Below ft

**PAD DIMENSIONS**

width = 22 ft  
 height = 8 ft  
 depth of conc = 3 ft  
 $\gamma_{soil}$  = 0.100 kcf  
 $\gamma_{conc}$  = 0.150 kcf

$M_r$  = 6138.96 k-ft  
 $M_{ot}$  = 3304.68 k-ft  
 $P$  = 493.19 K  
 $W_{wedge}$  = 15.88 K  
 Allowable Bearing = 6 ksf



Spreadsheet Input  
 PCAMATS Input

F.S. OVERTURNING = 1.8576569 ok > 1.5  
 F.S. OVERTURNING / F.S. ALLOWABLE = 80.7%

**LOAD PERPENDICULAR TO PAD**

$Q_{MAX}$  = P/A+M/S = 2.88112885  
 $Q_{MIN}$  = P/A-M/S = -0.84315364  
 $Q_{MAX}$  = P/A+M/S = 3.65702104  
 $Q_{MIN}$  = P/A-M/S = -1.61904583

$M_x$  = 2336.762  
 $M_y$  = 2336.762  
 $e_x$  = 4.738  
 $e_y$  = 4.738  
 $e_x/W$  = 0.215 NG ( $e/W > 1/6$ ) use  $Q_{max}$   
 $e_y/W$  = 0.215 NG ( $e/W > 1/6$ ) use  $Q_{max}$

IF  $M/P > width/6$   
 $Q_{max}$  = 3.476 ksf  
 $Q_{min}$  = 0.000 ksf  
 $Q_{MAX}/Q_{ALL}$  = 57.9% OK

width/6 = 3.67 M/P = 6.70  
 NG ( $width/6 < M/P$ ), use  $Q_{max}$

Verify max pressure in PCAMATS for this load case

IF  $e/W > 1/6$   
 $B_1$  = 18.79 ft  
 $L_1$  = 18.79 ft

$Q_{ALL}$  = 1058.7 kips  
 $Q_{MAX}$  = 645.29 kips  
 $Q_{MAX}/Q_{ALL}$  = 61.0% OK

Foundation Capacity: 80.7% OK