

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@po.state.ct.us

www.ct.gov/csc

April 20, 2005

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-047-047A-129-164-050316** -Cellco Partnership d/b/a Verizon Wireless notice of intent to modify existing telecommunications facilities located at 15 Chamberlain Road, East Windsor (Broad Brook), 232 South Main Street, East Windsor; 599 Mantianuck Avenue, Windsor; and 126 Pioneer Heights Road, Somers, Connecticut.

Dear Attorney Baldwin:

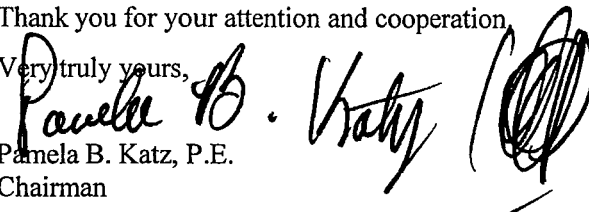
At a public meeting held on April 19, 2005, the Connecticut Siting Council (Council) acknowledged your notice to modify these existing telecommunications facilities, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated March 16, 2005, including the placement of all necessary equipment and shelters within the tower compounds. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to existing facility sites that would not increase tower heights, extend the boundaries of the tower sites, increase noise levels at the tower site boundaries by six decibels, and increase the total radio frequencies electromagnetic radiation power densities measured at the tower site boundaries to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on these towers.

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

Thank you for your attention and cooperation.

Very truly yours,


Pamela B. Katz, P.E.
Chairman

PBK/laf

- c: The Honorable Linda L. Roberts, First Selectman, Town of East Windsor
- Donald Poland, Town Planner, Town of East Windsor
- The Honorable David A. Pinney, First Selectman, Town of Somers
- Patrice Carson, Town Planner, Town of Somers
- The Honorable Donald Trinks, Mayor, Town of Windsor
- Mario Zavarella, Town Planner, Town of Windsor
- Jeffrey W. Barbadora, Crown Atlantic Company LLC
- Thomas J. Regan, Brown Rudnick Berlack Israels, LLP
- Stephen J. Humes, Esq., McCarter & English LLP
- Christopher B. Fisher, Esq., Cuddy & Feder, LLP
- Thomas F. Flynn III, Nextel Communications Inc.

EM-VER-047-047A-129-164-050316

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

March 16, 2005

Via Hand Delivery

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

Re: **Notice of Exempt Modification – Antenna Swap**
15 Chamberlain Road, East Windsor (Broad Brook), Connecticut
232 South Main Street, East Windsor, Connecticut
599 Mantianuck Avenue, Windsor, Connecticut
126 Pioneer Heights Road, Somers, Connecticut

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains a wireless telecommunications facility at each of the sites referenced above. As described below, Cellco now intends to modify each of these facilities.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the chief elected or appointed official in each affected municipality.

East Windsor (Broad Brook) Facility - 15 Chamberlain Road

Cellco’s existing Broad Brook facility consists of twelve (12) cellular antennas on a water tower owned by Crop Production Services. Cellco now intends to modify its facility by removing three (3) of its cellular antennas and installing six (6) PCS antennas, for a total of fifteen antennas. All antennas will be located at the same level on the water tower. Attached behind Tab 1 are specifications for the existing cellular antennas and the proposed PCS antennas for the Chamberlain Road facility, a new general power density table, and a structural analysis confirming that the tower can accommodate the existing and proposed antenna configuration.



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HART1-1242096-1

S. Derek Phelps
March 16, 2005
Page 2

East Windsor Facility - 232 South Main Street

Cellco's existing East Windsor facility consists of twelve (12) cellular antennas on a lattice tower owned by Balch Bridge Street Corporation. Cellco now intends to modify its facility by removing three (3) of its cellular antennas and installing six (6) PCS antennas for a total of fifteen (15) antennas. All antennas will be located at the same level on the tower. Attached behind Tab 2 are specifications for the existing cellular antennas and the proposed PCS antennas for the South Main Street facility, a new general power density table, and a structural analysis confirming that the tower can accommodate the proposed antenna configuration.

Windsor Facility - 599 Mantianuck Avenue

Cellco's existing Windsor facility consists of twelve (12) cellular antennas on a monopole tower owned by Crown Atlantic Company, LLC. Cellco now intends to modify its facility by removing the existing antennas and installing nine (9) new cellular antennas and six (6) PCS antennas, for a total of fifteen (15) antennas. All antennas will be located at the same level on the tower. Attached behind Tab 3 are specifications for the proposed cellular and PCS antennas for the Mantianuck Avenue facility, a new general power density table, and a structural analysis confirming that the tower can accommodate the existing and proposed antenna configuration.

Somers Facility - 126 Pioneer Heights Road

Cellco's existing Somers facility consists of twelve (12) cellular antennas on a lattice tower owned by Crown Atlantic Company, LLC. Cellco now intends to modify its facility by replacing six (6) of its cellular antennas with six (6) PCS antennas at the same level on the tower. Attached behind Tab 4 are specifications for the existing cellular antennas and the proposed PCS antennas for the Pioneer Heights facility and a new general power density table.

The planned modifications to each of the facilities described above fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in the increase in the overall height of any of the existing structures.
2. The proposed modifications will not affect ground-mounted equipment and therefore, will not require the extension of the site boundaries.



S. Derek Phelps
March 16, 2005
Page 3

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

4. The proposed modifications will not result in radio frequency (RF) power density levels at the facility that exceed the Federal Communications Commission (FCC) adopted safety standard.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facilities constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

cc: Linda L. Roberts, Town of East Windsor First Selectman
Peter P. Souza, Town of Windsor Town Manager
David A. Pinney, Town of Somers First Selectman
Sandy M. Carter



ALP 9212-N

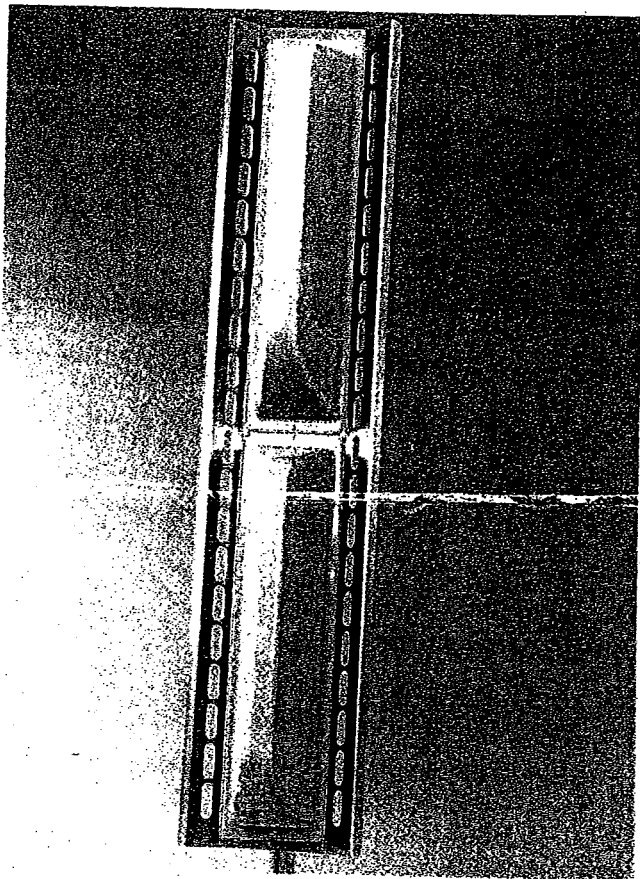
Log-Periodic Reflector Antenna

92 Degrees 12 dBd

Features:

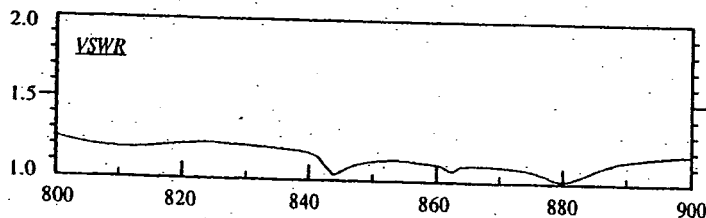
- Broadbanded. (800-900 MHz)
- Low backlobe radiation. Front-to-back ratio better than 28 dB
- Low Intermodulation Products.
- Low Wind-load.
- Low weight.
- Small size.
- Rugged design.

Please see the following pages including radiation patterns/tables for ALP 9212-N.



Electrical Specifications:

Frequency range:	806-896 MHz
Impedance:	50 ohm
Connector:	N-female or 7/8" EIA
VSWR:	Typ. 1.3:1 max 1.5:1
Polarization:	Vertical
Gain:	12 dBd
Front to back ratio:	>28 dB
Side-lobe suppression:	>18 dB
Intermodulation: (2x25W):	IM3 >146 dB IM5 >153 dB IM7 & IM9 >163 dB
Power Rating:	500 W
H-Plane:	-3 dB 95°
E-Plane:	-3 dB 15°
Lightning Protection:	DC Grounded



Mechanical Specifications:

Overall Height:	52 in	(1320 mm)
Width:	11.4 in	(290 mm)
Depth:	11.4 in	(290 mm)
Weight including brackets:	26.7 lbs	(12 Kg)
Rated wind velocity:	113 mph	(180 Km/h)
Wind Area (CxA/Front):	3.9 sq.ft	(0.36 sq.m)
Lateral thrust at rated wind		
Worst case:	570 N	

Materials:

Radiating elements:	Aluminum
Element housing:	Grey PVC
Back-plate:	Aluminum
Mounting hardware	
clamps:	Hot dip galvanized steel
bolts:	Stainless steel

Manufactured by: Allgon System AB

DECIBEL
Base Station Antennas

948F85T2E-M

16.1 dBi, Directed Dipole Antenna
1850-1990 MHz

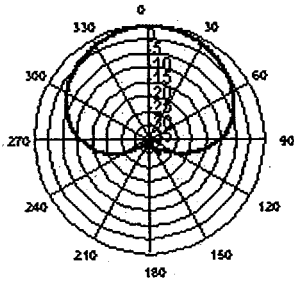
1850-1990 MHz

MaxFill™

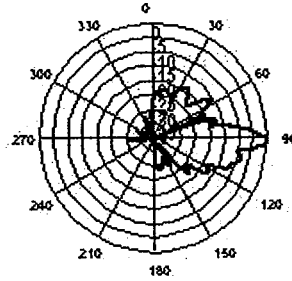
dB Director®

- Exceptional azimuth roll-off reducing soft hand-offs and improving capacity
- Excellent upper side lobe suppression
- Deep null filling below the horizon assures improved signal intensity
- Low profile appearance and low wind loading profile for easier zoning approvals

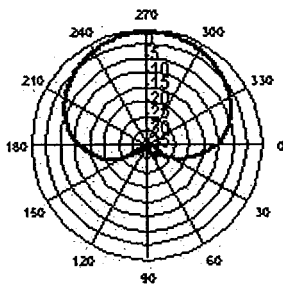
850



Azimuth 1850 MHz (Tilt=2)



Vertical 1850 MHz (Tilt=2)



Horizontal 1850 MHz (Tilt=2)



ELECTRICAL

MECHANICAL

Frequency (MHz):	1850-1990
Polarization:	Vertical
Gain (dBd/dBi):	14/16.1
Azimuth BW:	85°
Elevation BW:	8°
Beam Tilt:	2°
USLS* (dB):	>18
Null Fill* (dB):	15
Front-to-Back Ratio* (dB):	40
VSWR:	<1.33:1
IM Suppression - Two 20 Watt Carriers:	-150 dBc
Impedance:	50 Ohms
Max Input Power:	250 Watts
Lightning Protection:	DC Ground
Opt Electrical Tilt:	0°, 4°, 6°

Weight:	8.5 lbs (3.9 kg)
Dimensions (LxWxD):	48 X 3.5 X 7 in (1219 X 89 X 178 mm)
Max. Wind Area:	1.18 ft ² (0.11 m ²)
Max. Wind Load (@ 100mph):	65 lbf (289 N)
Max. Wind Speed:	125 mph (201 km/h)
Radiator Material:	Low Loss Circuit Board
Reflector Material:	Aluminum
Radome Material:	ABS, UV Resistant
Mounting Hardware Material:	Galvanized Steel
Connector Type:	7-16 DIN - Female (Bottom)
Color:	Light Gray
Standard Mounting Hardware:	DB390 Pipe Mount Kit, included
Downtilt Mounting Hardware:	DB5098, optional
Opt. Mounting Hardware:	DB5094-AZ Azimuth Wall Mount



Andrew Corporation
8635 Stemmons Freeway
Dallas, Texas U.S.A 75247-3701
Tel: 214.631.0310

Fax: 214.631.4706
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

Date: 4/29/2004
* - Indicates Typical Values

dbtech@andrew.com

General Power Density

Site Name: Broadbrook, CT
 Tower Height: 116 ft rad center

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure (mW/cm ²)	Fraction of MPE (%)
Verizon	869	9	200	1800	116	0.0481	0.5793	8.30%
Verizon	1900	3	200	600	116	0.0160	1	1.60%
Total Percentage of Maximum Permissible Exposure								9.91%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz

mW/cm² = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case scenario, maximum values used.





NATCOMM, LLC

Consulting Engineers

March 8, 2005

Ms. Esther McNany
Verizon Wireless
99-101 East River Road
East Hartford, CT 06108

*Re.: EVDO Upgrades @ Broadbrook
Structural Evaluation of Existing Elevated Water Tank Structure
15 Chamberlain Road
East Windsor, Connecticut*

Project No.: 05031.CO2

Dear Esther,

We have completed our structural analysis of the existing Verizon antenna installation at the above referenced site. The purpose of the review is to determine the adequacy of the 124-foot elevated water tank structure to support the proposed reconfiguration of antennas from 4 per sector to 5 per sector. CSB Communications and Natcomm personnel on 2/15/05 prepared a detailed inventory of the existing structure.

Attached is drawing SK-1 dated 3/08/05, which provides an elevation and plan view of the tank and Verizon's proposed antenna configuration.

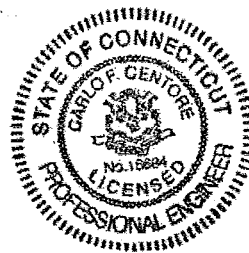
The existing steel tank structure was found to be in sound structural condition. Verizon's antennas are mounted with pipe mounts to the surface of the tank wall. Sprint has antennas mounted to the catwalk railing. The impact of the proposed antenna installation in conjunction with the existing Sprint antennas is insignificant when considering the service loads induced on the tank structure (a conservative increase of less than 1% in overall tank surface area). In conclusion, the existing elevated tank structure located at 15 Chamberlain Road in East Windsor, Connecticut is adequate to support the proposed Verizon antennas.

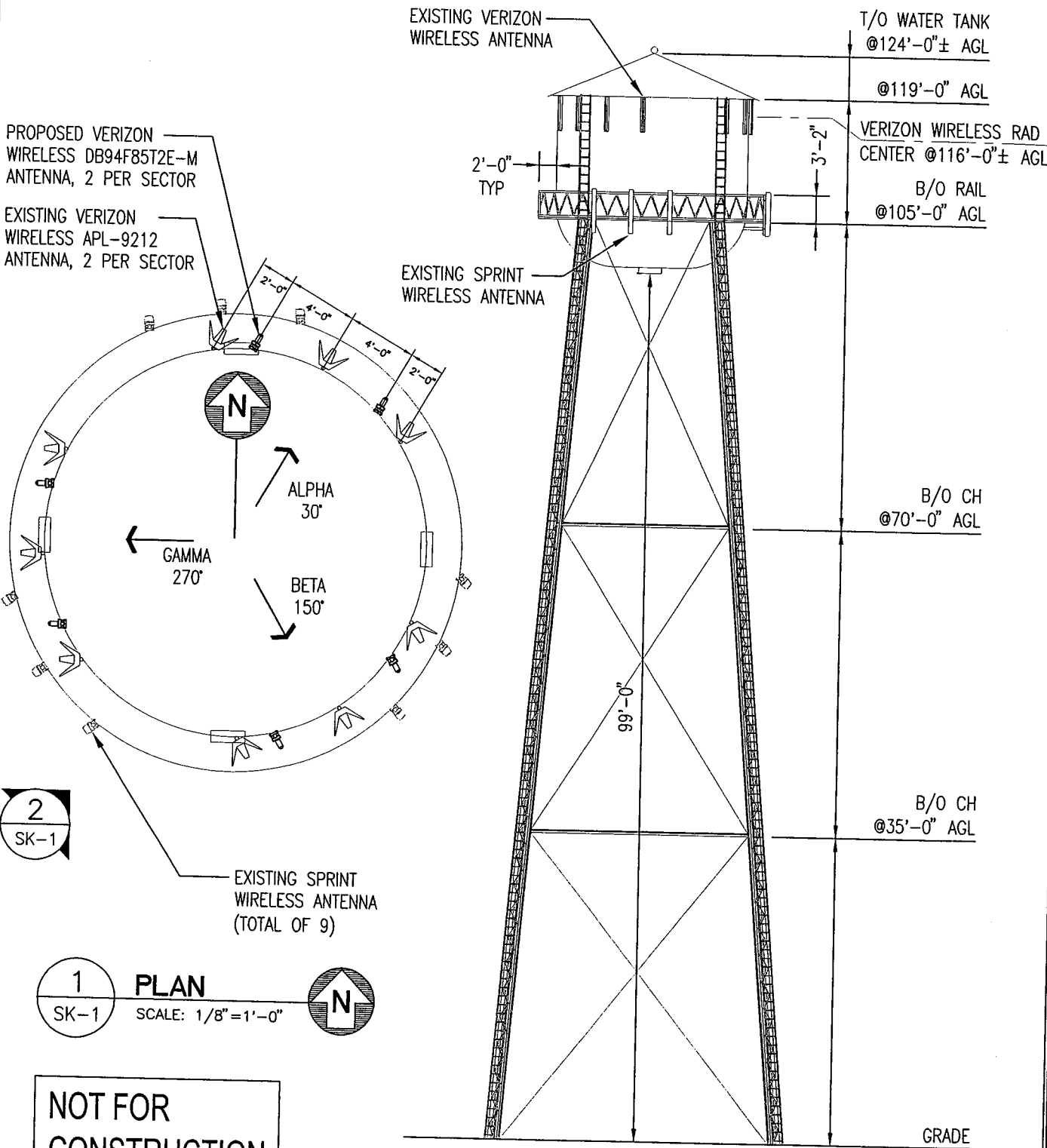
If there are any questions regarding this matter, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Centore".

Carlo F. Centore, P.E.
Senior Project Manager





PROPOSED VERIZON WIRELESS DB94F85T2E-M ANTENNA, 2 PER SECTOR

EXISTING VERIZON WIRELESS APL-9212 ANTENNA, 2 PER SECTOR

EXISTING VERIZON WIRELESS ANTENNA

T/O WATER TANK @124'-0"± AGL

@119'-0" AGL

VERIZON WIRELESS RAD CENTER @116'-0"± AGL

B/O RAIL @105'-0" AGL

EXISTING SPRINT WIRELESS ANTENNA

B/O CH @70'-0" AGL

B/O CH @35'-0" AGL

GRADE

2 SK-1

1 PLAN SK-1 SCALE: 1/8" = 1'-0"

2 ELEVATION SK-1 SCALE: 1/16" = 1'-0"

NOT FOR CONSTRUCTION

REVISIONS		
NO	DATE	EXHIBIT
0	03/08/05	EXHIBIT

Natcomm, LLC
 63-2 North Branford Road
 Branford, Connecticut 06405
 Tel: (203) 488-0580
 Fax: (203) 488-8587
 Consulting Engineers - Project Management
 Civil - Structural - Mechanical - Electrical

BROADBROOK
 15 CHAMBERLAIN ROAD
 EAST WINDSOR, CT 06016

PROJECT NO: 05031.Co2
 DRAWN BY: TMS
 CHECKED BY: CFC
 SCALE: AS SHOWN
 DATE: 03/08/05

Cellco Partnership
 d.b.a.
verizon wireless

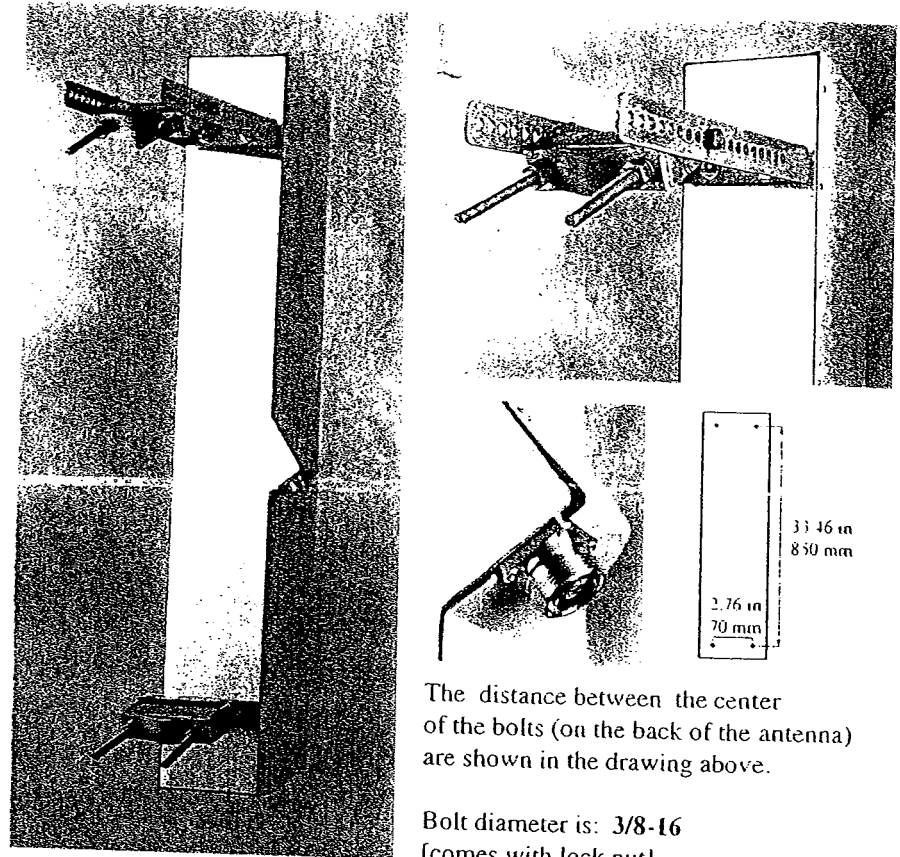
TOWER INVENTORY
SK-1
 DWG. 1 OF 1

ALP-E 9011-Din

Enhanced Log-Periodic Antenna

Features:

- ❑ Small Size
- ❑ Aesthetically Pleasing
- ❑ Suitable For TDMA/CDMA
- ❑ High Return Loss
- ❑ Low Intermodulation
- ❑ High FTB
- ❑ Broadbanded
- ❑ Side-lobe Suppression
- ❑ Sturdy Design
- ❑ Down-Tilt Brackets Incl.



The distance between the center of the bolts (on the back of the antenna) are shown in the drawing above.

Bolt diameter is: 3/8-16
[comes with lock nut].

Frequency Range: 800-900 MHz
 Impedance: 50 ohm
 Connector Type: 7/16 Din
 Return Loss: 20 dB
 Polarization: Vertical
 Gain: > 11 dBd
 Front To Back Ratio: > 30 dB
 Side-Lobe Suppression: 18 dB
 Intermodulation (2x25W): IM3 > 146 dB
 IM5 > 153 dB
 IM7/9 > 163 dB
 Power Rating: 500 W
 H-Plane (-3 dB point): 85 - 92°
 V-Plane (-3 dB point): 16 - 18°
 Lightning Protection: DC Grounded

Overall Height: 43 in [1092 mm]
 Width: 6.5 in [165 mm]
 Depth: 8 in [203 mm]
 Weight Including Tilt-Brackets: 20 lbs [9.1 Kg]
 Rated Wind Velocity: 113 mph [180 Km/h]
 Wind Area (CxA/Side): 2.3 sq. ft. [0.22 sq.m]
 Lateral Thrust At Rated Wind Worst Case: 112 lbs [500 N]

Radiating Elements: Aluminum
 Extrusion: Aluminum
 Radome: Grey PVC
 Tilt-Bracket: Hot Dip Galvanized Steel
 Antenna Bolts: Stainless Steel

The ALP-E 9011-Din is made in U.S.A.

DECIBEL
Base Station Antennas

948F85T2E-M

16.1 dBi, Directed Dipole Antenna
1850-1990 MHz

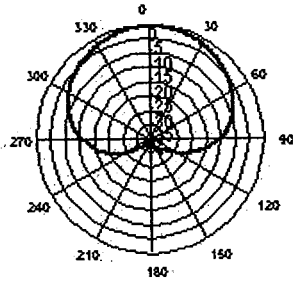
1850-1990 MHz

MaxFill™

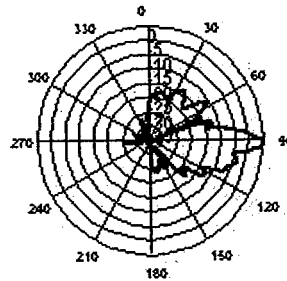
dB Director®

- Exceptional azimuth roll-off reducing soft hand-offs and improving capacity
- Excellent upper side lobe suppression
- Deep null filling below the horizon assures improved signal intensity
- Low profile appearance and low wind loading profile for easier zoning approvals

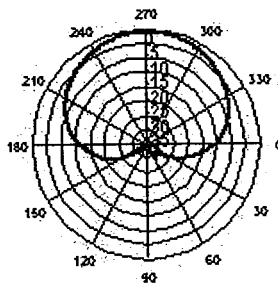
850



Azimuth 1850 MHz (Tilt=2)



Vertical 1850 MHz (Tilt=2)



Horizontal 1850 MHz (Tilt=2)



ELECTRICAL

MECHANICAL

Frequency (MHz):	1850-1990
Polarization:	Vertical
Gain (dBd/dBi):	14/16.1
Azimuth BW:	85°
Elevation BW:	8°
Beam Tilt:	2°
USLS* (dB):	>18
Null Fill* (dB):	15
Front-to-Back Ratio* (dB):	40
VSWR:	<1.33:1
IM Suppression - Two 20 Watt Carriers:	-150 dBc
Impedance:	50 Ohms
Max Input Power:	250 Watts
Lightning Protection:	DC Ground
Opt Electrical Tilt:	0°, 4°, 6°

Weight:	8.5 lbs (3.9 kg)
Dimensions (LxWxD):	48 X 3.5 X 7 in (1219 X 89 X 178 mm)
Max. Wind Area:	1.18 ft² (0.11 m²)
Max. Wind Load (@ 100mph):	65 lbf (289 N)
Max. Wind Speed:	125 mph (201 km/h)
Radiator Material:	Low Loss Circuit Board
Reflector Material:	Aluminum
Radome Material:	ABS, UV Resistant
Mounting Hardware Material:	Galvanized Steel
Connector Type:	7-16 DIN - Female (Bottom)
Color:	Light Gray
Standard Mounting Hardware:	DB390 Pipe Mount Kit, included
Downtilt Mounting Hardware:	DB5098, optional
Opt. Mounting Hardware:	DB5094-AZ Azimuth Wall Mount



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Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

Date: 4/29/2004
* - Indicates Typical Values

dbtech@andrew.com

General Power Density

Site Name: East Windsor, CT
 Tower Height: 144 ft rad center

Operator	Operating Frequency (MHz)	Number of Trans	ERP Per Trans (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure (mW/cm ²)	Fraction of MPE
Verizon	869	9	200	1800	144	0.0312	0.5793	5.39%
Verizon	1900	3	200	600	144	0.0104	1	1.04%
Total Percentage of Maximum Permissible Exposure								6.43%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

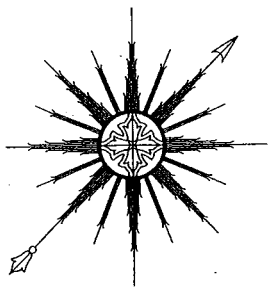
MHz = Megahertz

mW/cm² = milliwatts per square centimeter

ERP = Effective Radiated Power

Absolute worst case scenario, maximum values used.





ALL-POINTS TECHNOLOGY CORPORATION, P.C.

STRUCTURAL ANALYSIS REPORT 188' SELF-SUPPORTING TOWER EAST WINDSOR, CONNECTICUT

Prepared for
Verizon Wireless

Verizon Site: East Windsor

March 2, 2005



APT Project #CT141510

**STRUCTURAL ANALYSIS REPORT
188' ROHN SSV TOWER
EAST WINDSOR, CONNECTICUT
prepared for
Verizon Wireless**

EXECUTIVE SUMMARY:

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of this 188-foot ROHN SSV tower. The analysis was performed for Verizon Wireless' replacement of three existing ALP-9011 panel antennas with six DB948F85 panels on existing sector mounts at 144'. Waveguide cables are to be three additional 1-5/8" cables.

Our analysis indicates the tower and foundations are capable of supporting the proposed antenna changes.

INTRODUCTION:

A structural analysis was performed on the above-mentioned communications tower by APT for Verizon Wireless. The tower is located at 232 South Main Street in East Windsor, Connecticut. APT did not visit the tower site. This analysis was performed based on information provided by Verizon Wireless, which included ROHN tower drawings, photographs, a lease exhibit prepared by URS Corporation for AT&T Wireless, and proposed antenna changes.

The structure is a 188-foot galvanized steel, Model SSV self-supporting tower manufactured by UNR-ROHN. The analysis was performed with the following antenna inventory (proposed antenna changes shown in **bold** text):

Antenna	Elev.	Mount	Coax.
(9) RR90-17-02DP panels	188'	13' platform	(9) 1-5/8"
(6) ALP7250.03 panels ¹	184'	(3) 10' sector mounts	(6) 1-5/8"
(9) CSS DUO1417-8686 panels	168'	(3) 15' sector mounts	(9) 1-5/8"
(9) ALP7250.03 panels ²	153'	(3) 12' sector mounts	(9) 1-5/8"
(9) ALP-9011; (6) DB948F85 ³	144'	(3) 15' sector mounts	(15) 1-5/8"
(6) DB980H90 panels	124'	(3) 10' sector mounts	(6) 1-5/8"

Notes:

¹ Three antennas currently installed on leg-mounts, six used for analysis.

² Six antennas currently installed on 4' sidearms, nine used for analysis.

³ Proposed six antennas to replace three existing ALP-9011 panels.

All-Points Technology Corporation, P.C.

150 Old Westside Road
North Conway, NH 03860
(603) 356-5214

3 Saddlebrook Drive
Killingworth, CT 06419
(860) 663-1697

STRUCTURAL ANALYSIS:

Methodology:

The structural analysis was done in accordance with EIA/TIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design.

The analysis was conducted using a wind speed of 80 miles per hour and one-half inch of radial ice over the entire structure and all appurtenances. The EIA/TIA Standard requires a minimum wind speed of 80 miles per hour for Hartford County, Connecticut. The tower was analyzed by calculating the resultant wind loading and associated maximum bending moments, shear forces, and axial loads. The moments and forces were used to calculate stresses in leg and bracing members, which were compared to allowable stresses according to AISC.

Two loading conditions were evaluated in accordance with EIA/TIA-222-F to determine the tower's capacity. The more demanding of the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load
- Case 2 = 0.75 Wind Load (with ice) + Ice Load + Tower Dead Load

Analysis Results:

Our analysis determined the existing tower is capable of supporting the proposed antenna changes. The following table summarizes the results of the analysis based on stresses of individual leg and bracing members:

Elevation	Leg Capacity	Bracing Capacity
0-20'	48%	67%
20'-40'	42%	55%
40'-60'	47%	40%
60'-80'	50%	34%
80'-100'	50%	47%
100'-120'	41%	43%
120'-140'	43%	31%
140'-160'	43%	35%
160'-188'	31%	46%
180'-188'	5%	15%

All-Points Technology Corporation, P.C.

150 Old Westside Road
North Conway, NH 03860
(603) 356-5214

3 Saddlebrook Drive
Killingworth, CT 06419
(860) 663-1697

Base Foundation:

Evaluation of the existing base foundations, reinforced concrete pad and piers, was performed from ROHN drawings provided by Verizon. Foundations were determined to be adequate to support the proposed loads.

Base reactions imposed with the additional antennas were calculated as follows:

Tension:	159.3 kips
Compression:	212.2 kips
Total Shear:	39.9 kips
Overturning Moment:	4090 ft-kips

CONCLUSIONS AND RECOMMENDATIONS:

Our structural analysis indicates the 188-foot ROHN SSV tower located in East Windsor, Connecticut is capable of supporting the antenna changes proposed by Verizon Wireless.

LIMITATIONS:

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in new condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

1. Replacing or strengthening bracing members.
2. Reinforcing leg members in any manner.
3. Installing antenna mounts or side arms.
4. Extending tower.

APT hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon the information contained and set forth herein. If you are aware of any information which is contrary to that which is contained herein, or you are aware of any defects arising from the original design, material, fabrication and erection deficiencies, you should disregard this report and immediately contact APT. APT disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

All-Points Technology Corporation, P.C.

150 Old Westside Road
North Conway, NH 03860
(603) 356-5214

3 Saddlebrook Drive
Killingworth, CT 06419
(860) 663-1697

Appendix A

Tower Drawings

SECTION	SECTION MEMBER SCHEDULE		BRACE
	SIZE	CONNECTION	
7	PIPE 2.875" O.D. X 0.203" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 1
8	PIPE 3" O.D. X 0.300" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 2
9	PIPE 4" O.D. X 0.500" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 3
10	PIPE 5" O.D. X 0.500" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 4
11	PIPE 6" O.D. X 0.625" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 5
12	PIPE 8" O.D. X 0.750" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 6
13	PIPE 8" O.D. X 0.750" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 7
14	PIPE 8" O.D. X 0.750" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 8
15	PIPE 8" O.D. X 0.750" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 9
16	PIPE 8" O.D. X 0.750" THICK	W/20" MOUNTING FRAMES	CONNECTION NO. 10

NOTE: SECTION NUMBERS ARE FOR REFERENCE ONLY.
FOR NOMINAL FACE WIDTH DIMENSIONS, REFER TO STRESS ANALYSIS.

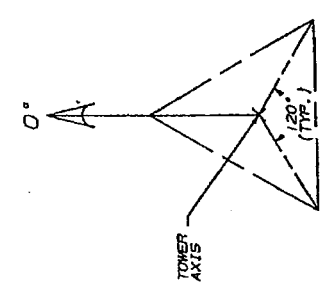
GENERAL NOTES

1. Rohn communication tower designs conform to E.I.A.-222-E unless otherwise specified. (See tower design loading.)
2. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON THE SPECIFIC DATA IN ACCORDANCE WITH ANSI/EIA-222-E AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. ANTENNAS AND LINES LISTED IN TOWER DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
4. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
5. WORK SHALL BE IN ACCORDANCE WITH E.I.A.-222-E. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, YIELD STRENGTH OF STRUCTURAL STEEL MEMBERS SHALL BE 50 KSI EXCEPT AS NOTED BELOW.
6. NO ANGLE BRACES L1-75X3/16 THRU L2-1/2X1/4 SHALL BE 36 KSI. STRUCTURAL PLATES SHALL BE 36 KSI. NO FIELD WELDS SHALL BE ALLOWED.
7. FIELD CONNECTIONS SHALL CONFORM TO ASTM A-325, EXCEPT WHERE NOTED.
8. ALL BOLTS SHALL BE PROVIDED FOR ALL TOWER BOLTS.
9. STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH E.I.A.-222-E.
10. ALL HIGH STRENGTH BOLTS ARE TO BE TIGHTENED TO A "SMUGTIGHT" CONDITION AS DEFINED IN THE NOVEMBER 13, 1985 AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
11. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR CONSTRUCTION MARKING AND LIGHTING.
12. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
13. DESIGN ASSUMES THAT AS A MINIMUM, MAINTENANCE AND INSPECTION ACCESS SHALL BE PROVIDED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/EIA-222-E.
14. TOWER ORIENTATION TO BE DETERMINED BY OTHERS.
15. DESIGN ASSUMES THAT ANTENNA TRANSMISSION LINES AND WAVEGUIDE LADDERS ARE EVENLY DISTRIBUTED OVER THREE TOWER SECTORS.
16. LADDERS ARE EVENLY DISTRIBUTED OVER THREE TOWER SECTORS. SYMMETRICAL TO MINIMIZE TORQUE.
17. SIX 1/2" DIA. WAVEGUIDE LADDERS SHALL BE PROVIDED FROM 10' TO TOP OF TOWER.
18. THE PURCHASER SHALL VERIFY THAT ACTUAL SITE SOIL PARAMETERS MEET OR EXCEED E.I.A. "NORMAL" SOIL PARAMETERS.
19. STANDARD INSIDE CORNER MOUNTED LADDER WITH ROP-LOC SAFETY DEVICE SHALL BE PROVIDED FOR CLIMBING THE ENTIRE HEIGHT OF THE TOWER.
20. DISH AZIMUTHS SHOWN ARE NOMINAL AZIMUTHS USED FOR DESIGN. ACTUAL AZIMUTHS TO BE DETERMINED BY OTHERS. MUST NOT RESULT IN INCREASED DESIGN WIND SPEED.
21. THE RELATIVE POSITION OF ANTENNAS WITH RESPECT TO THE TOWER DESIGN.

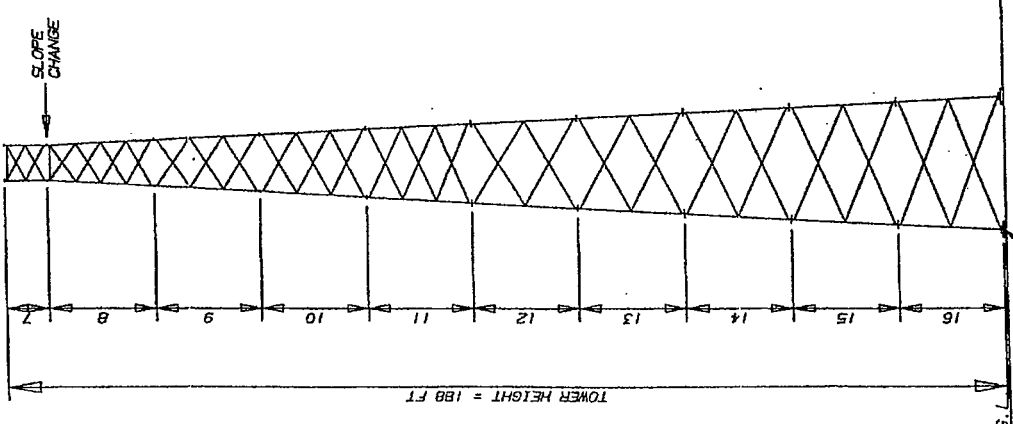
TOWER DESIGN LOADING		E.P.A. (SF)		LINE SIZE (NOM)	
ELEVATION (FT)	ANTENNA TYPE	NO	W/ICE	(1)	(2)
TOP	LIGHTS AND (12) PO220 ANTENNAS W/CELLULAR PLATFORM	85.8	(TOTAL) 117.6	(1) 3/4" x 5/8"	(2) 1/2"
178	(12) DAPA 58000/58010 ANT'S W/20" MOUNTING FRAMES	80.0	(TOTAL) 102.0	(1) 1-5/8"	(2) 1-5/8"
168	(12) DAPA 58000/58010 ANT'S W/20" MOUNTING FRAMES	80.0	(TOTAL) 102.0	(1) 1-5/8"	(2) 1-5/8"
155	(12) DAPA 58000/58010 ANT'S W/20" MOUNTING FRAMES	80.0	(TOTAL) 102.0	(1) 1-5/8"	(2) 1-5/8"
140	(15) ALP9212 ANTENNAS W/20" MOUNTING FRAMES	113.0	(TOTAL) 136.0	(1) 1-5/8"	(2) 1-5/8"
120	(12) PO220 ANTENNAS W/20" MOUNTING FRAMES	100.0	(TOTAL) 144.0	(1) 1-5/8"	(2) 1-5/8"
110	(2) 6" H.P. DISHES	66.5	(TOTAL) 66.5	(1) 1-5/8"	(2) 1-5/8"
90	(3) PO220 ANTENNAS W/3" 6" SIDE ARMS	28.6	(TOTAL) 40.0	(1) 1-5/8"	(2) 1-5/8"
80	2' STD DISH [240]	5.3	(TOTAL) 5.3	(1) 1/2"	(1) 1/2"
65	2' STD DISH [240]	5.3	(TOTAL) 5.3	(1) 1/2"	(1) 1/2"

NOTE: ANTENNA AZIMUTH IS SHOWN IN DEGREES WITHIN THE [BRACKETS].
SEE STRESS ANALYSIS FOR A COMPLETE LISTING OF ALL LOADS ON TOWER

MEMBER	TUBULAR MEMBER PROPERTIES	
	O.D. (IN)	THICK. (IN)
PIPE 2.875" O.D. X 0.203" THICK	2.875	0.203
PIPE 3" O.D. X 0.300" THICK	3.000	0.300
PIPE 4" O.D. X 0.500" THICK	4.500	0.500
PIPE 5" O.D. X 0.500" THICK	5.500	0.500
PIPE 6" O.D. X 0.625" THICK	6.625	0.625
PIPE 8" O.D. X 0.750" THICK	8.750	0.750



TOWER CONFIGURATION
N.T.S.



10 A-BOLTS (30 TOTAL)
1" DIA. X 78" LONG
ASTM A 354 GR. BC

TOWER REACTIONS	
COMPRESSION	= 179.0 KIPS
TENSION	= 203.0 KIPS
TOTAL SHEAR	= 63.9 KIPS
O.T.M.	= 6780.7 FT-KIPS

No. Revision Description		Date		Title	
1	DLB	09/27/96		189' SSV TOWER DESIGN	
2	MA	11/07/96		FOR BALCH OF EAST WINDSOR	
3	MA	11/21/96		FOR BALCH OF EAST WINDSOR	
4	MA	11/21/96		FOR BALCH OF EAST WINDSOR	

ENG. FILE: 34769PH DRAWING NO.: A963110

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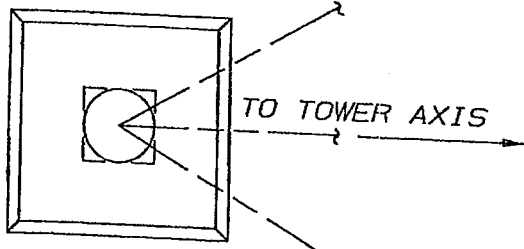
Rev. By: Cld Bld App'd By: ROHN

TOWER SITE: 232 SOUTH MAIN STREET
EAST WINDSOR, CT 06088-0678
COUNTY: HARTFORD

FOUNDATION SCHEDULE

"A"	"B"	"C"	"D"	"E"
11'-9"	11'-1 1/2"	4'-6"	14'-0"	2'-6"

NOTE: SEE TOWER ASSEMBLY DRAWING FOR FOUNDATION LAYOUT AND ANCHORAGE EMBEDMENT DRAWING NUMBER. SEE DRAWING NUMBER B841300 FOR GENERAL FOUNDATION NOTES.



PLAN VIEW

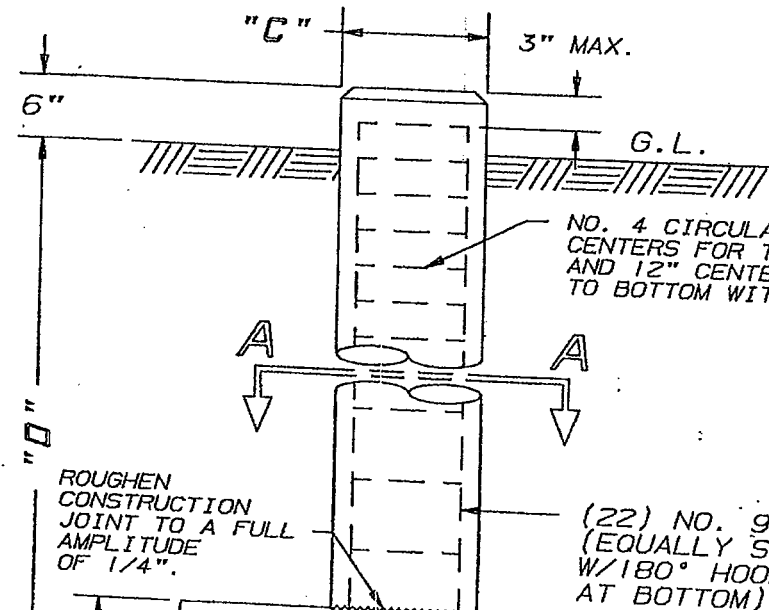
VOLUME OF CONCRETE

ROUND PIER

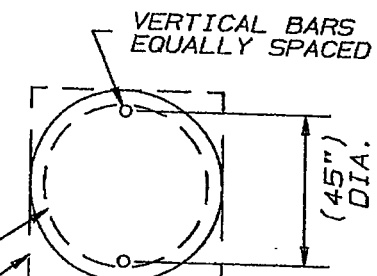
19.2 CU. YDS. (PER LEG)
57.6 CU. YDS. (PER 3 LEGS)

REACTIONS/LEG

UPLIFT = 292.0 KIPS
DOWNLOAD = 378.0 KIPS
SHEAR = 42.7 KIPS



ELEVATION VIEW



SECTION A-A

NOTE: CAGE DIA. FROM CENTERLINE OF VERTICAL BARS.

(13) NO. 7 HORIZ. BARS
EQUALLY SPACED
EACH WAY
TOP AND BOTTOM.
(52 TOTAL)

(22) NO. 9 VERT. BARS
(EQUALLY SPACED
W/180° HOOKS
AT BOTTOM).

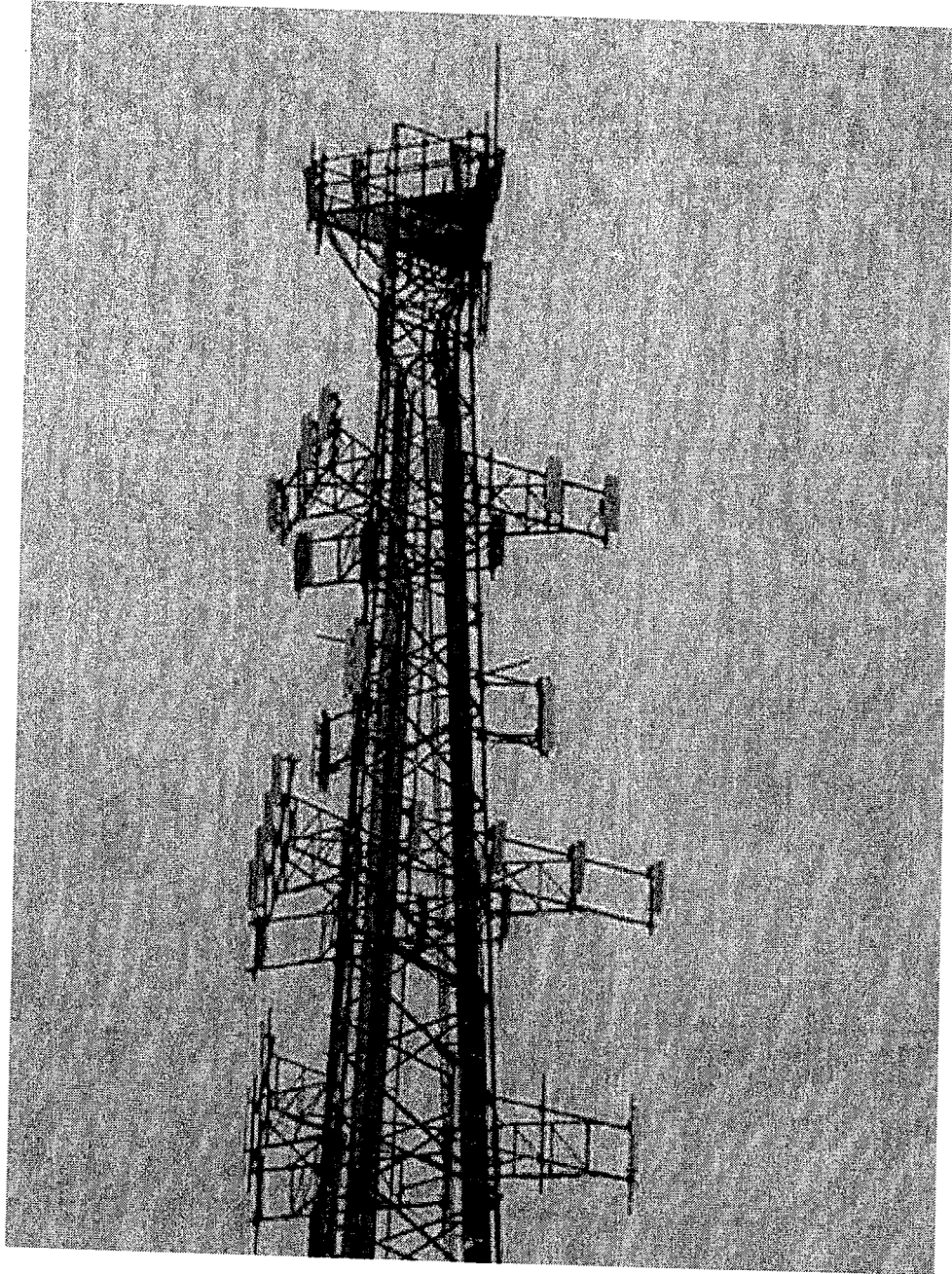
ROUGHEN
CONSTRUCTION
JOINT TO A FULL
AMPLITUDE
OF 1/4".

No. ▲ Revision Description			▲ Date ▲ Rev By ▲ Ckd By ▲ Appd By		
THIS DRAWING IS THE PROPERTY OF ROHN. IT IS NOT TO BE REPRODUCED, COPIED OR TRACED IN WHOLE OR IN PART WITHOUT OUR WRITTEN CONSENT.			R O H N		
Scale: NONE	By	Date	Title:		
Drawn:	DLB	09/27/96	PIER AND PAD FOUNDATION DETAILS FOR NORMAL SOIL PER ANSI/EIA-222-E		
Checked:	DWG	09/27/96			
App. Eng.:	XK	9/27/96			
App. Sales:	Pen	9/27/96			
ENG. FILE:			DRAWING NO.: A963111		

Appendix B

Photograph

VERIZON WIRELESS
188' ROHN SSV TOWER
EAST WINDSOR, CONNECTICUT



Overview of 188' ROHN Model SSV self-supporting tower located in East Windsor, Connecticut.

Photo provided by Verizon Wireless

Appendix C

Calculations

ERITower All-Points Technology Corp. 150 Old Westside Road North Conway, NH 03860 Phone: 603-496-5853 FAX: 603-356-5214	Job	188' ROHN Model SSV	Page	1 of 6
	Project	CT141510 East Windsor	Date	20:12:09 03/01/05
	Client	Verizon Wireless	Designed by	REA

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 188.00 ft above the ground line.
 The face width of the tower is 6.58 ft at the top and 25.04 ft at the base.
 This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Basic wind speed of 80 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 69 mph is used in combination with ice.
- Stress ratio used in tower member design is 1.333.

Tower Section Geometry

Tower Section	Tower Elevation <i>ft</i>	Assembly Database	Description	Section Width <i>ft</i>	Number of Sections	Section Length <i>ft</i>
T1	188.00-180.00			6.58	1	8.00
T2	180.00-160.00			6.58	1	20.00
T3	160.00-140.00			8.54	1	20.00
T4	140.00-120.00			10.61	1	20.00
T5	120.00-100.00			12.74	1	20.00
T6	100.00-80.00			14.83	1	20.00
T7	80.00-60.00			16.92	1	20.00
T8	60.00-40.00			18.88	1	20.00
T9	40.00-20.00			21.13	1	20.00
T10	20.00-0.00			23.04	1	20.00

Tower Section	Tower Elevation <i>ft</i>	Diagonal Spacing <i>ft</i>	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset <i>in</i>	Bottom Girt Offset <i>in</i>
T1	188.00-180.00	4.00	X Brace	No	No	0.0000	0.0000
T2	180.00-160.00	4.00	X Brace	No	No	0.0000	0.0000
T3	160.00-140.00	6.67	X Brace	No	No	0.0000	0.0000
T4	140.00-120.00	6.67	X Brace	No	No	0.0000	0.0000
T5	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T6	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Elevation <i>ft</i>	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 188.00-180.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 160.00-140.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T4 140.00-120.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)

ERITower

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Job	188' ROHN Model SSV	Page	2 of 6
Project	CT141510 East Windsor	Date	20:12:09 03/01/05
Client	Verizon Wireless	Designed by	REA

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T5 120.00-100.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T6 100.00-80.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T7 80.00-60.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T8 60.00-40.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T9 40.00-20.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T10 20.00-0.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 188.00-180.00	Equal Angle	L2x2x1/8	A36 (36 ksi)			A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L2x2x1/8	A36 (36 ksi)			A36 (36 ksi)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 188.00-180.00	Flange	0.6250	4	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 180.00-160.00	Flange	0.7500	4	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 160.00-140.00	Flange	0.8750	4	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T4 140.00-120.00	Flange	1.0000	4	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T5 120.00-100.00	Flange	1.0000	6	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 100.00-80.00	Flange	1.0000	6	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T7 80.00-60.00	Flange	1.0000	8	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T8 60.00-40.00	Flange	1.0000	8	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T9 40.00-20.00	Flange	1.0000	8	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T10 20.00-0.00	Flange	1.0000	10	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	A	Yes	Ar (CfAe)	188.00 - 6.00	12	6	0.5000	1.9800		1.04
1 5/8	A	Yes	Ar (CfAe)	184.00 - 6.00	6	3	0.5000	1.9800		1.04
1 5/8	B	Yes	Ar (CfAe)	168.00 - 6.00	9	6	0.5000	1.9800		1.04
1 5/8	B	Yes	Ar (CfAe)	153.00 - 6.00	6	3	0.5000	1.9800		1.04

ERITower

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Project	CT141510 East Windsor	Date	20:12:09 03/01/05
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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	C	Yes	Ar (CfAe)	144.00 - 6.00	15	12	0.5000	1.9800		1.04
1 5/8	C	Yes	Ar (CfAe)	124.00 - 6.00	6	3	0.5000	1.9800		1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
(3) RR90-17-02DP	A	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 4.36 1/2" Ice 4.77	1.97 2.31	18.00 40.42
(3) RR90-17-02DP	B	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 4.36 1/2" Ice 4.77	1.97 2.31	18.00 40.42
(3) RR90-17-02DP	C	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 4.36 1/2" Ice 4.77	1.97 2.31	18.00 40.42
13' platform	C	None		0.0000	188.00	No Ice 10.75 1/2" Ice 11.59	10.75 11.59	1100.00 1179.27
(2) 7250.03	A	From Leg	4.00 0.00 0.00	0.0000	184.00	No Ice 4.00 1/2" Ice 4.39	1.87 2.33	15.40 35.03
(2) 7250.03	B	From Leg	4.00 0.00 0.00	0.0000	184.00	No Ice 4.00 1/2" Ice 4.39	1.87 2.33	15.40 35.03
(2) 7250.03	C	From Leg	4.00 0.00 0.00	0.0000	184.00	No Ice 4.00 1/2" Ice 4.39	1.87 2.33	15.40 35.03
10' PCS mount APT	A	None		0.0000	184.00	No Ice 4.25 1/2" Ice 7.52	2.12 3.76	250.00 350.00
10' PCS mount APT	B	None		0.0000	184.00	No Ice 4.25 1/2" Ice 7.52	2.12 3.76	250.00 350.00
10' PCS mount APT	C	None		0.0000	184.00	No Ice 4.25 1/2" Ice 7.52	2.12 3.76	250.00 350.00
(3) DUO1417-8686	A	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 6.53 1/2" Ice 6.94	4.20 4.57	20.30 62.49
(3) DUO1417-8686	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 6.53 1/2" Ice 6.94	4.20 4.57	20.30 62.49
(3) DUO1417-8686	C	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 6.53 1/2" Ice 6.94	4.20 4.57	20.30 62.49
15' T-frame APT	A	None		0.0000	168.00	No Ice 9.10 1/2" Ice 12.56	4.55 6.28	500.00 750.00
15' T-frame APT	B	None		0.0000	168.00	No Ice 9.10 1/2" Ice 12.56	4.55 6.28	500.00 750.00
15' T-frame APT	C	None		0.0000	168.00	No Ice 9.10 1/2" Ice 12.56	4.55 6.28	500.00 750.00
(3) 7250.03	A	From Leg	4.00 0.00 0.00	0.0000	153.00	No Ice 4.00 1/2" Ice 4.39	1.87 2.33	15.40 35.03
(3) 7250.03	B	From Leg	4.00 0.00	0.0000	153.00	No Ice 4.00 1/2" Ice 4.39	1.87 2.33	15.40 35.03

ERITower

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 North Conway, NH 03860
 Phone: 603-496-5853
 FAX: 603-356-5214

Job	188' ROHN Model SSV	Page	4 of 6
Project	CT141510 East Windsor	Date	20:12:09 03/01/05
Client	Verizon Wireless	Designed by	REA

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
(3) 7250.03	C	From Leg	0.00 4.00 0.00 0.00	0.0000	153.00	No Ice 4.00 1/2" Ice 4.39	1.87 2.33	15.40 35.03
12' T-frame APT	C	None		0.0000	153.00	No Ice 5.80 1/2" Ice 8.17	2.90 4.08	350.00 450.00
12' T-frame APT	C	None		0.0000	153.00	No Ice 5.80 1/2" Ice 8.17	2.90 4.08	350.00 450.00
12' T-frame APT	C	None		0.0000	153.00	No Ice 5.80 1/2" Ice 8.17	2.90 4.08	350.00 450.00
(3) ALP-E 9011-DIN	A	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 2.72 1/2" Ice 3.04	3.34 3.68	20.00 43.79
(3) ALP-E 9011-DIN	B	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 2.72 1/2" Ice 3.04	3.34 3.68	20.00 43.79
(3) ALP-E 9011-DIN	C	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 2.72 1/2" Ice 3.04	3.34 3.68	20.00 43.79
(2) DB948F85T2E-M	A	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1.92 1/2" Ice 2.22	3.26 3.62	8.50 27.57
(2) DB948F85T2E-M	B	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1.92 1/2" Ice 2.22	3.26 3.62	8.50 27.57
(2) DB948F85T2E-M	C	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1.92 1/2" Ice 2.22	3.26 3.62	8.50 27.57
15' T-frame APT	A	None		0.0000	144.00	No Ice 9.10 1/2" Ice 12.56	4.55 6.28	500.00 750.00
15' T-frame APT	B	None		0.0000	144.00	No Ice 9.10 1/2" Ice 12.56	4.55 6.28	500.00 750.00
15' T-frame APT	C	None		0.0000	144.00	No Ice 9.10 1/2" Ice 12.56	4.55 6.28	500.00 750.00
(2) DB980H90E-M	A	From Leg	4.00 0.00 0.00	0.0000	124.00	No Ice 3.80 1/2" Ice 4.18	2.19 2.56	8.50 28.62
(2) DB980H90E-M	B	From Leg	4.00 0.00 0.00	0.0000	124.00	No Ice 3.80 1/2" Ice 4.18	2.19 2.56	8.50 28.62
(2) DB980H90E-M	C	From Leg	4.00 0.00 0.00	0.0000	124.00	No Ice 3.80 1/2" Ice 4.18	2.19 2.56	8.50 28.62
10' PCS mount APT	A	None		0.0000	124.00	No Ice 4.25 1/2" Ice 7.52	2.12 3.76	250.00 350.00
10' PCS mount APT	B	None		0.0000	124.00	No Ice 4.25 1/2" Ice 7.52	2.12 3.76	250.00 350.00
10' PCS mount APT	C	None		0.0000	124.00	No Ice 4.25 1/2" Ice 7.52	2.12 3.76	250.00 350.00

Job	188' ROHN Model SSV	Page	5 of 6
Project	CT141510 East Windsor	Date	20:12:09 03/01/05
Client	Verizon Wireless	Designed by	REA

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	188	Leg	A325N	0.6250	4	87.79	13497.40	0.007 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	1074.01	6442.72	0.167 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	147.25	5437.50	0.027 ✓	1.333	Member Bearing
T2	180	Leg	A325N	0.7500	4	709.20	19438.60	0.036 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	2201.46	6442.72	0.342 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	94.18	4531.25	0.021 ✓	1.333	Member Bearing
T3	160	Leg	A325N	0.8750	4	3953.43	26458.10	0.149 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	3630.78	6442.72	0.564 ✓	1.333	Bolt Shear
T4	140	Leg	A325N	1.0000	4	8238.62	34557.50	0.238 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	4314.97	6442.72	0.670 ✓	1.333	Bolt Shear
T5	120	Leg	A325N	1.0000	6	8723.00	34557.50	0.252 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	4834.40	9277.52	0.521 ✓	1.333	Bolt Shear
T6	100	Leg	A325N	1.0000	6	12213.00	34557.50	0.353 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	5754.38	9277.52	0.620 ✓	1.333	Bolt Shear
T7	80	Leg	A325N	1.0000	8	11551.80	34557.50	0.334 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	6538.14	9277.52	0.705 ✓	1.333	Bolt Shear
T8	60	Leg	A325N	1.0000	8	13864.80	34557.50	0.401 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	6906.95	9277.52	0.744 ✓	1.333	Bolt Shear
T9	40	Leg	A325N	1.0000	8	16043.70	34557.50	0.464 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	9114.52	9277.52	0.982 ✓	1.333	Bolt Shear
T10	20	Leg	A325N	1.0000	10	14662.90	34557.50	0.424 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	11327.40	9277.52	1.221 ✓	1.333	Bolt Shear

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
T1	188 - 180	Leg	ROHN 2.5 STD	3	-2864.10	55076.63	5.2	Pass
		Diagonal	L1 3/4x1 3/4x3/16	8	-1074.01	7357.80	14.6	Pass
T2	180 - 160	Top Girt	L2x2x1/8	4	-147.25	2632.27	5.6	Pass
		Leg	ROHN 2.5 STD	21	-16865.10	55047.70	30.6	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	26	-2181.50	4780.30	45.6	Pass
		Top Girt	L2x2x1/8	22	-97.23	2632.27	3.7	Pass
T4	140 - 120	Leg	ROHN 3 EH	57	-35819.00	83781.05	42.8	Pass
		Diagonal	L2 1/2x2 1/2x1/4	59	-3630.78	10476.43	34.7	Pass
T5	120 - 100	Leg	ROHN 4 EH	78	-59443.50	139063.89	42.3 (b)	Pass
		Diagonal	L3x3x1/4	80	-4314.97	14147.93	30.5	Pass
T6	100 - 80	Leg	ROHN 5 EH	99	-84108.90	206284.41	40.8	Pass
		Diagonal	L3x3x1/4	101	-4813.23	11154.25	43.2	Pass
T6	100 - 80	Leg	ROHN 6 EHS	120	-106387.00	212189.60	50.1	Pass
		Diagonal	L3 1/2x3 1/2x1/4	122	-5743.75	12242.16	46.9	Pass

ERITower All-Points Technology Corp. 150 Old Westside Road North Conway, NH 03860 Phone: 603-496-5853 FAX: 603-356-5214	Job	188' ROHN Model SSV	Page	6 of 6
	Project	CT141510 East Windsor	Date	20:12:09 03/01/05
	Client	Verizon Wireless	Designed by	REA

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail	
T7	80 - 60	Leg	ROHN 6 EH	135	-131515.00	264316.56	49.8	Pass	
		Diagonal	L4x4x5/16	137	-6458.99	19073.63	33.9	Pass	
T8	60 - 40	Leg	ROHN 8 EHS	150	-156145.00	332507.51	52.9 (b)	Pass	
		Diagonal	L4x4x5/16	152	-6398.14	16115.97	47.0	Pass	
T9	40 - 20	Leg	ROHN 8 EH	165	-182152.00	435235.15	39.7	Pass	
		Diagonal	L4x4x5/16	173	-8244.78	14970.12	55.1	Pass	
T10	20 - 0	Leg	ROHN 8 EH	180	-208729.00	435220.48	73.7 (b)	Pass	
		Diagonal	L4x4x3/8	188	-10275.40	15286.98	48.0	Pass	
							91.6 (b)		
							Summary		
							Leg (T6)	50.1	Pass
							Diagonal (T10)	91.6	Pass
							Top Girt (T1)	5.6	Pass
							Bolt Checks	91.6	Pass
							RATING =	91.6	Pass

DECIBEL®
Base Station Antennas

DB844G65ZAXY

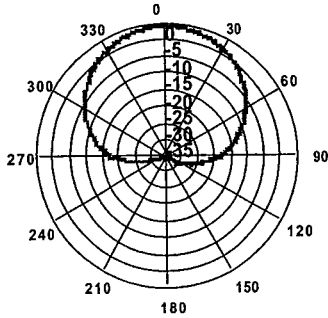
13.5 dBd, Directed Dipole, No Screen Antenna
806-896, 870-960 MHz

806-896 MHz
870-960 MHz

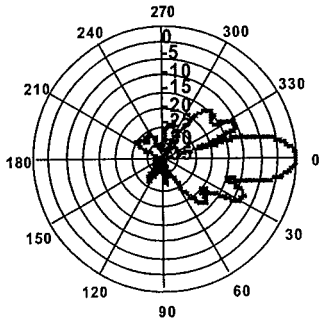
GEN3VPOL™
ZoneMaster™

- Excellent azimuth roll-off, reducing sector to sector interference and reducing soft hand-offs
- Air dielectric feed system, no screws, rivets, welds or solder in RF element feed path
- Strong upper side lobe suppression
- Low profile appearance and low wind loading profile for easier zoning approvals

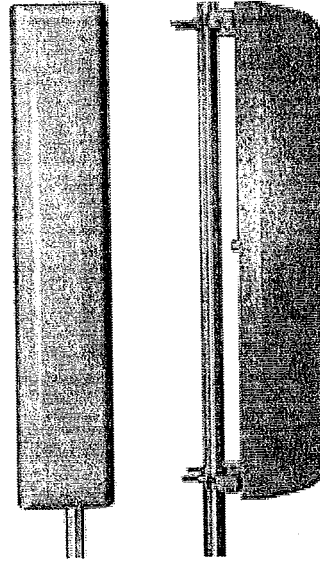
65°



Horizontal 880 MHz (Tilt=0)



Vertical 880 MHz (Tilt=0)



ELECTRICAL

Frequency (MHz):	806-896	870-960
Polarization:	Vertical	Vertical
Gain (dBd/dBi):	13.5/15.6	13.8/15.9
Azimuth BW:	65°	65°
Elevation BW:	15°	15°
Beam Tilt:	0°	0°
USLS* (dB):	>15	>15
Null Fill* (dB):	20-25	20-25
Front-to-Back Ratio* (dB):	40	40
VSWR:	<1.33:1	<1.33:1
Impedance:	50 Ohms	50 Ohms
Max Input Power:	500 Watts	500 Watts
Lightning Protection:	DC Ground	DC Ground
Opt Electrical Tilt:	6°	6°

MECHANICAL

Weight:	12 lbs (5.4 kg)
Dimensions (LxWxD):	48 X 10 X 8.5 in (1219 X 254 X 216 mm)
Max. Wind Area:	0.97 ft² (0.09 m²)
Max. Wind Load (@ 100mph):	53 lbf (236 N)
Max. Wind Speed:	125 mph (201 km/h)
Radiator Material:	Aluminum
Reflector Material:	Aluminum
Radome Material:	ABS, UV Resistant
Mounting Hardware Material:	Galvanized Steel
Connector Type:	7-16 DIN -Female (Back)
Color:	Light Gray
Standard Mounting Hardware:	DB380 Pipe Mount Kit, included
Downtilt Mounting Hardware:	DB5083, optional
Opt. Mounting Hardware:	DB5084-AZ Azimuth Wall Mount



Andrew Corporation
8635 Stemmons Freeway
Dallas, Texas U.S.A 75247-3701
Tel: 214.631.0310

Fax: 214.631.4706
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

Warranty: Five years
Date: 4/23/2004
* - Indicates Typical Values

dbtech@andrew.com

DECIBEL
Base Station Antennas

950G65VTZE-M

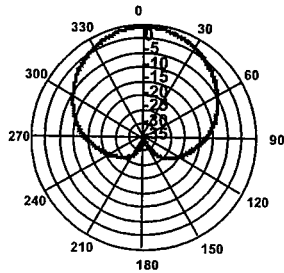
18.1 dBi, Directed Dipole Antenna
1850-1990 MHz

1850-1990 MHz

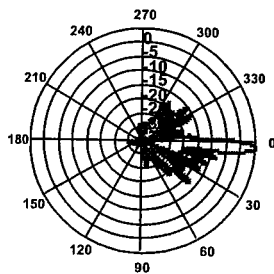
VARI-TILT®
ZoneMaster™

- Field adjustable electrical downtilt, featuring linear phase shifter, no wheels or gears
- Exceptional elevation and azimuth pattern shaping
- Strong Front to Back and Front to Side ratio reduces soft hand-offs

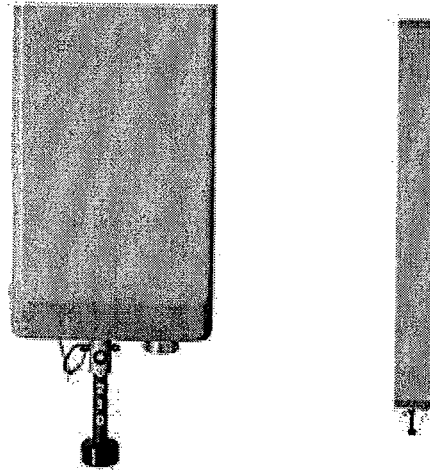
65°



Azimuth 1950 MHz (Tilt=3)



Vertical 1950 MHz (Tilt=3)



ELECTRICAL

Frequency (MHz):	1850-1990
Polarization:	Vertical
Gain (dBd/dBi):	16/18.1
Azimuth BW:	65°
Elevation BW:	6.5°
Beam Tilt:	0-7°
USLS* (dB):	>17
Null Fill* (dB):	20
Front-to-Back Ratio* (dB):	40
VSWR:	<1.4:1
IM Suppression - Two 20 Watt Carriers:	-145 dBc
Impedance:	50 Ohms
Max Input Power:	250 Watts
Lightning Protection:	DC Ground

MECHANICAL

Weight:	10 lbs (4.5 kg)
Dimensions (LxWxD):	60 X 6.5 X 5 in (1524 X 165 X 127 mm)
Max. Wind Area:	1.51 ft ² (0.14 m ²)
Max. Wind Load (@ 100mph):	85 lbf (378 N)
Max. Wind Speed:	125 mph (201 km/h)
Radiator Material:	Low Loss Circuit Board
Reflector Material:	Aluminum
Radome Material:	ABS, UV Resistant
Mounting Hardware Material:	Galvanized Steel
Connector Type:	7-16 DIN - Female (Bottom)
Color:	Light Gray
Standard Mounting Hardware:	DB390 Pipe Mount Kit, included
Downtilt Mounting Hardware:	DB5098, optional
Opt. Mounting Hardware:	DB5094-AZ Azimuth Wall Mount



Andrew Corporation
8635 Stemmons Freeway
Dallas, Texas U.S.A 75247-3701
Tel: 214.631.0310

Fax: 214.631.4706
Toll Free Tel: 1.800.676.5342
Fax: 1.800.229.4706
www.andrew.com

Warranty: 5 years
Date: 4/8/2004
* - Indicates Typical Values

dbtech@andrew.com

General Power Density

Site Name: Windsor South , CT
 Tower Height: 100 ft rad center

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure (mW/cm ²)	Fraction of MPE (%)
Verizon	869	9	200	1800	100	0.0647	0.5793	11.17%
Verizon	1900	3	200	600	100	0.0216	1	2.16%
Total Percentage of Maximum Permissible Exposure								13.33%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
 mW/cm² = milliwatts per square centimeter
 ERP = Effective Radiated Power

Absolute worst case scenario, maximum values used.





GPD ASSOCIATES
Engineers . Architects . Planners



Steve Tuttle
Crown Castle International
349 West Commercial St., Suite 2630
East Rochester, NY 14445
(585) 899-3445

January 31, 2005

Subject: Structural Analysis Report

Carrier Designation Verizon Collocate
Site Name: Windsor South
Site Number: HRT096

Crown Castle Designation BU Number: 806371
Site Name: HRT 096 943227

GPD Associate Designation Project Number: 2005078.08

Site Data 599 Matianuck Ave., Windsor, Connecticut, 06095
Latitude 41° 49' 17.0", Longitude 72° 40' 38.0"
100' Valmont Monopole

Dear Mr. Tuttle,

GPD is pleased to submit this structural analysis report as a determination of the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the addition of the following proposed antenna configuration.

Elev. 101' (9) Decibel DB844G65ZAXY Antennas on a 13' Valmont platform w/ (9) 1-5/8" internal coax
(6) Decibel 950G65VTZE-M Antennas on the same Platform w/ (6) 1-5/8" internal coax

This analysis has been performed in accordance with the TIA/EIA-222-F standard based upon a wind speed condition of 80 mph. Based on our analysis we have determined the tower and its foundation will be sufficient for the proposed loading.

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

Respectfully submitted,

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

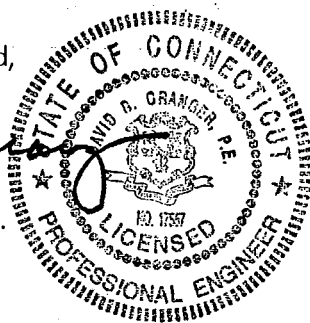


TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
TOWER DESCRIPTION	3
Table 1 – Original Design	3
ANALYSIS CRITERIA	3
Table 2 – Existing and Reserved Antenna and Cable Information	4
Table 3 – Proposed Antenna and Cable Information	4
ANALYSIS PROCEDURE	
Table 4 – Documents Provided	4
Analysis Methods.....	4
Assumptions	5
ANALYSIS RESULTS	5
Table 5 – Tower Summary.....	5
Recommended Modifications	5
DISCLAIMER OF WARRANTIES	5
APPENDIX A	
ERI Tower Output File	
APPENDIX B	
Tower Elevation Drawing	

EXECUTIVE SUMMARY

The purpose of this analysis was to verify that the existing structure is capable of carrying the proposed loading configuration as specified by Verizon to Crown Castle International. This report was commissioned by Mr. Steve Tuttle of Crown Castle.

The monopole is structurally satisfactory for the proposed loading configuration for a basic wind speed of 80 mph with ½" of radial ice (25% reduction) in accordance with TIA/EIA-222-F and BOCA. The tower rating/capacity is 68.1%.

Foundation reactions, with the proposed loading, were found to be 53.6% of the original design reactions. If the existing foundation was properly designed for the original reactions, then it is our opinion that the foundation will be adequate.

The existing 13' Valmont platform at 100' shall remain for the proposed antennas. The existing antennas and 7/8" coax at 100' shall be removed prior to the installation of the proposed configuration and were not considered in the analysis.

TOWER DESCRIPTION

The existing monopole has 12 sides and is evenly tapered from 38.20" (flat-flat) at the base to 14.76" (flat-flat) at the top. It has two major sections, connected with slip joints. The structure is galvanized and has no tower lighting.

The tower was originally designed for Metro Mobile by Valmont Industries, Inc. of Valley, Nebraska for a 90 mph wind speed with ½" radial ice in accordance with EIA-222-D.

Table 1 – Original Design

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Type	Number Of Feed Lines	Feed Line Size (inches)
97	4		PD10017	Cellular Platform		Internal
	12		PD1132			Internal
84				Cellular Platform		

ANALYSIS CRITERIA

The current requirements of TIA/EIA-222-F and BOCA are for a basic wind speed of 80 mph with ½" of radial ice. A 25% reduction in wind load is allowed when wind and ice are applied simultaneously. TIA/EIA-222-F requires towers within Hartford County be analyzed with an 80 mph wind speed. BOCA requires structures within the towers region to be analyzed using an 80 mph wind speed.

Seismic loads were calculated from hand calculations. It was determined from these calculations that the seismic loads do not control the maximum loading on the structure. The wind loading case will control.

Table 2 – Existing and Reserved Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Type	Number Of Feed Lines	Feed Line Size (inches)
100	12		Panel	13' Valmont Platform	12	7/8
85				13' Valmont Platform		

Table 3 – Proposed Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Type	Number Of Feed Lines	Feed Line Size (inches)
101	9	Decibel	DB844G65ZAXY	13' Valmont Platform	9	1-5/8
	6	Decibel	950G65VTZE-M	13' Valmont Platform	6	1-5/8
85				13' Valmont Platform		

Note: **Bold** indicates a new appurtenance. All coax shall be installed internal to monopole. Existing platform at 100' shall remain for proposed antennas. Existing antennas and 7/8" coax at 100' shall be removed prior to the installation of the proposed configuration.

ANALYSIS PROCEDURE

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	EDP/Triggs Consultants, Inc. Job #: 19038, dated 2/22/91	Doc ID # 262194	Crown DMZ
Original Tower Drawings	Valmont Industries, Inc. Order #: 10887-91, dated 1/22/91	K.Kalugin	Valmont
Foundation Investigation	EDP/Triggs Consultants, Inc. Job #: 19038, dated 4/26/91	Doc ID # 262191	Crown DMZ

Analysis Methods

ERI Tower (Version 3.0.0.16), 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-222-F and all local building code requirements. Selected output from the analysis is included in Appendix A.

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 manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 2 & 3, and the referenced drawings.

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.

ANALYSIS RESULTS

Table 5 – Tower Summary

Member (Yield Strength)	Results
Monopole (65 KSI)	Satisfactory
Foundation	Adequate

Recommended Modifications

The tower and its foundation will be satisfactory for the proposed loading and do not require modifications.

DISCLAIMER OF WARRANTIES

The engineering services rendered by GPD ASSOCIATES in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. GPD ASSOCIATES does not analyze the fabrication, including welding, except as included in this report.

GPD ASSOCIATES makes no warranties, expressed 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

ERI Tower Output File

ERITower GPD Associates 520 S. Main St., Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2102	Job	HRT 096 943227 BU#: 806371	Page	1 of 3
	Project	2005078.08	Date	15:49:09 01/31/05
	Client	Crown Castle	Designed by	jcheronis

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 Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 69 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 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.

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	12
Embedment length	84.2500 in
f_c	4 ksi
Grout space	5.7500 in
Base plate grade	A607-60
Base plate thickness	2.5000 in
Bolt circle diameter	46.0500 in
Outer diameter	52.0500 in
Inner diameter	24.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	$C_A A_A$ ft ² /ft	Weight plf
HJ7-50A (1-5/8 AIR)	C	No	Inside Pole	100.00 - 10.00	15	No Ice	0.00
						1/2" Ice	0.00

ERITower GPD Associates 520 S. Main St., Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2102	Job	HRT 096 943227 BU#: 806371	Page	2 of 3
	Project	2005078.08	Date	15:49:09 01/31/05
	Client	Crown Castle	Designed by	jcheronis

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	K
Valmont 13' Platform w/Rails	C	None		0.0000	100.00	No Ice 1/2" Ice	53.00 53.00	2.00
(3) DB844G65ZAXY	A	From Centroid-Face	3.75 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice	68.00 4.67 3.73 5.05 4.10	3.00 0.02 0.05
(3) DB844G65ZAXY	B	From Centroid-Face	3.75 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice	4.67 3.73 5.05 4.10	0.02 0.05
(3) DB844G65ZAXY	C	From Centroid-Face	3.75 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice	4.67 3.73 5.05 4.10	0.02 0.05
(2) 950G65VTZE-M	A	From Centroid-Face	3.75 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice	3.99 2.78 4.37 3.15	0.01 0.03
(2) 950G65VTZE-M	B	From Centroid-Face	3.75 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice	3.99 2.78 4.37 3.15	0.01 0.03
(2) 950G65VTZE-M	C	From Centroid-Face	3.75 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice	3.99 2.78 4.37 3.15	0.01 0.03
Valmont 13' Platform w/o Rails	C	None		0.0000	85.00	No Ice 1/2" Ice	35.00 35.00 42.00 42.00	1.50 2.50

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension	Actual Allowable Ratio Concrete Stress	Actual Allowable Ratio Plate Stress	Actual Allowable Ratio Stiffener Stress	Controlling Condition	Critical Ratio
in		in	K	ksi	ksi	ksi		
2.5000	12	2.2500	56.86 174.90 0.33	1.039 2.800 0.37	23.916 45.000 0.53		Plate	0.53 ✓

ERITower GPD Associates 520 S. Main St., Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2102	Job	HRT 096 943227 BU#: 806371	Page	3 of 3
	Project	2005078.08	Date	15:49:09 01/31/05
	Client	Crown Castle	Designed by	jcheronis

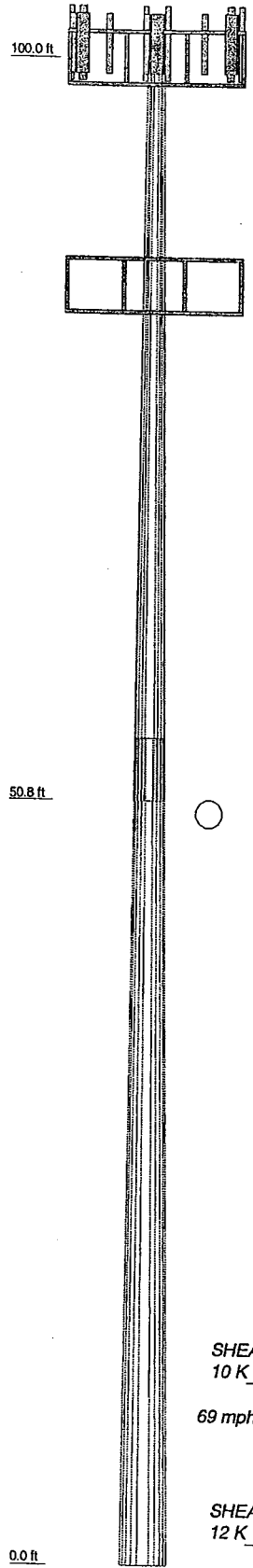
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
L1	100 - 50.83	Pole	TP26.57x14.76x0.3438	1	-7.45	1451.50	40.9	Pass	
L2	50.83 - 0	Pole	TP38.2x24.8809x0.2813	2	-14.19	1680.78	68.1	Pass	
							Summary		
							Pole (L2)	68.1	Pass
							Base Plate	39.9	Pass
							RATING =	68.1	Pass

APPENDIX B

Tower Elevation Drawing

Section	1	2
Length (ft)	49.17	55.00
Number of Sides	12	12
Thickness (in)	0.3438	0.2813
Lap Splice (ft)	4.17	
Top Dia (in)	14.7600	24.8909
Bot Dia (in)	26.5700	38.2000
Grade	A572-65	A572-65
Weight (K)	3.8	5.3



APPURTENANCES

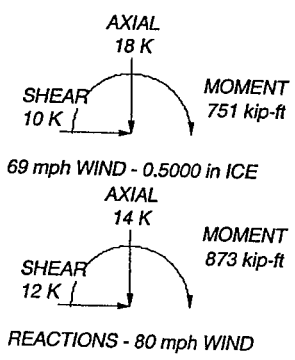
TYPE	ELEVATION	TYPE	ELEVATION
Valmont 13' Platform w/Rails	100	(2) 950G65VTZE-M	100
(3) DB844G65ZAXY	100	(2) 950G65VTZE-M	100
(3) DB844G65ZAXY	100	(2) 950G65VTZE-M	100
(3) DB844G65ZAXY	100	Valmont 13' Platform w/o Rails	85


MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 68.1%

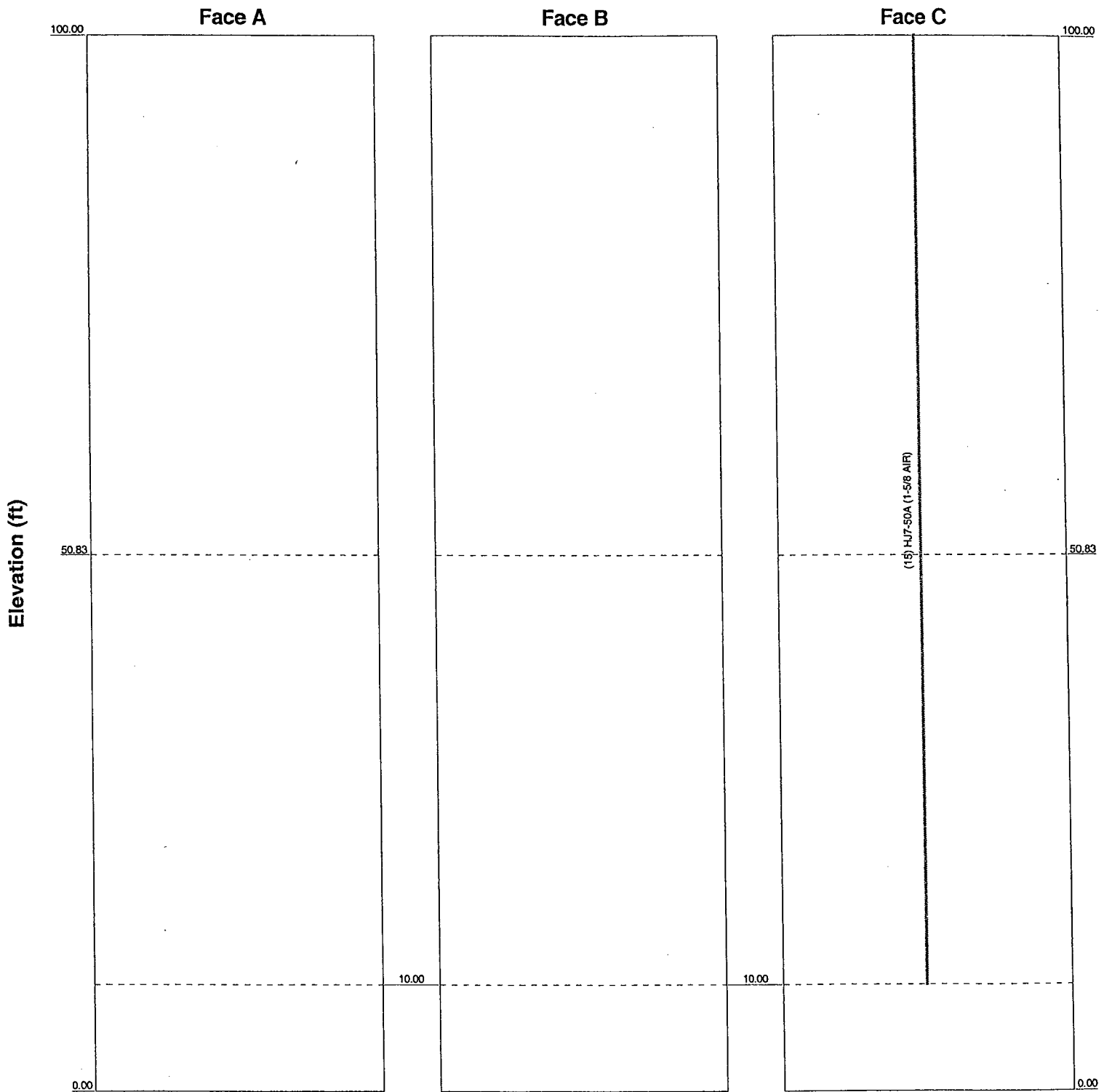



 <p>GPD Associates 520 S. Main St., Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2102</p>	Job: HRT 096 943227 BU#: 806371
	Project: 2005078.08
	Client: Crown Castle Drawn by: jcheronis App'd:
	Code: TIA/EIA-222-F Date: 01/31/05 Scale: NTS
	Path: G:\T\ecom\2005078\08\ER\N06371.dwg Dwg No. E-

Feedline Distribution Chart

0' - 100'

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

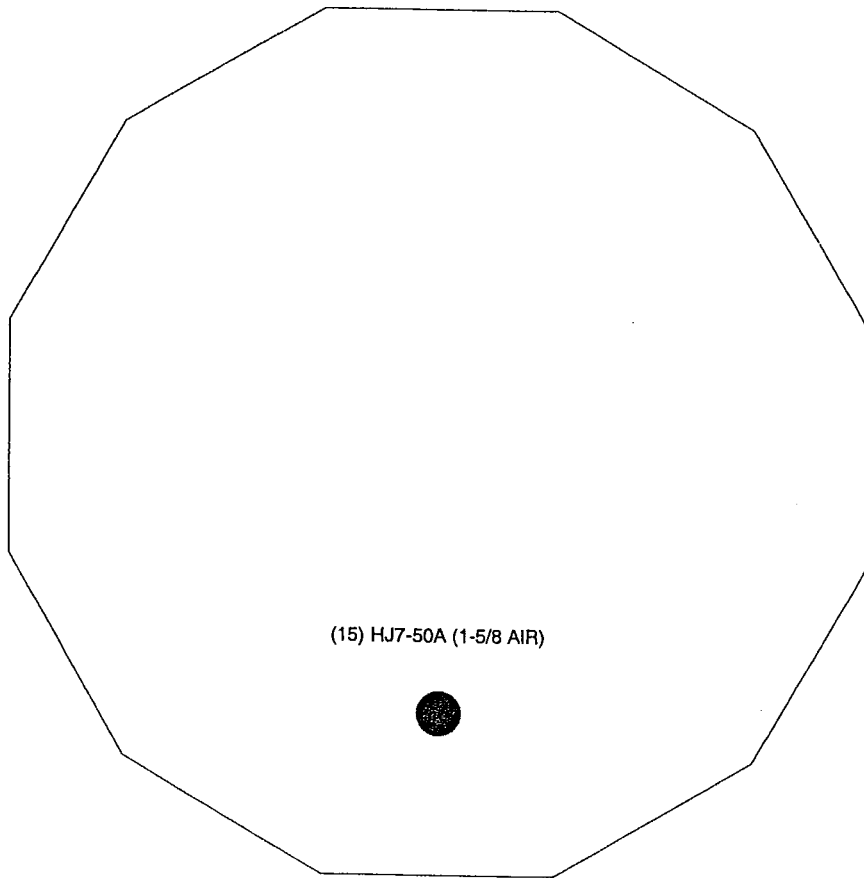



 GPD GROUP Consulting Engineers	GPD Associates		Job: HRT 096 943227 BU#: 806371		
	520 S. Main St., Suite 2531		Project: 2005078.08		
	Akron, Ohio 44311		Client: Crown Castle	Drawn by: jcheronis	App'd:
	Phone: (330) 572-2100		Code: TIA/EIA-222-F	Date: 01/31/05	Scale: NTS
FAX: (330) 572-2102		Path: G:\Telecom\2005078\08\ERI\806371.erf		Dwg No. E-7	

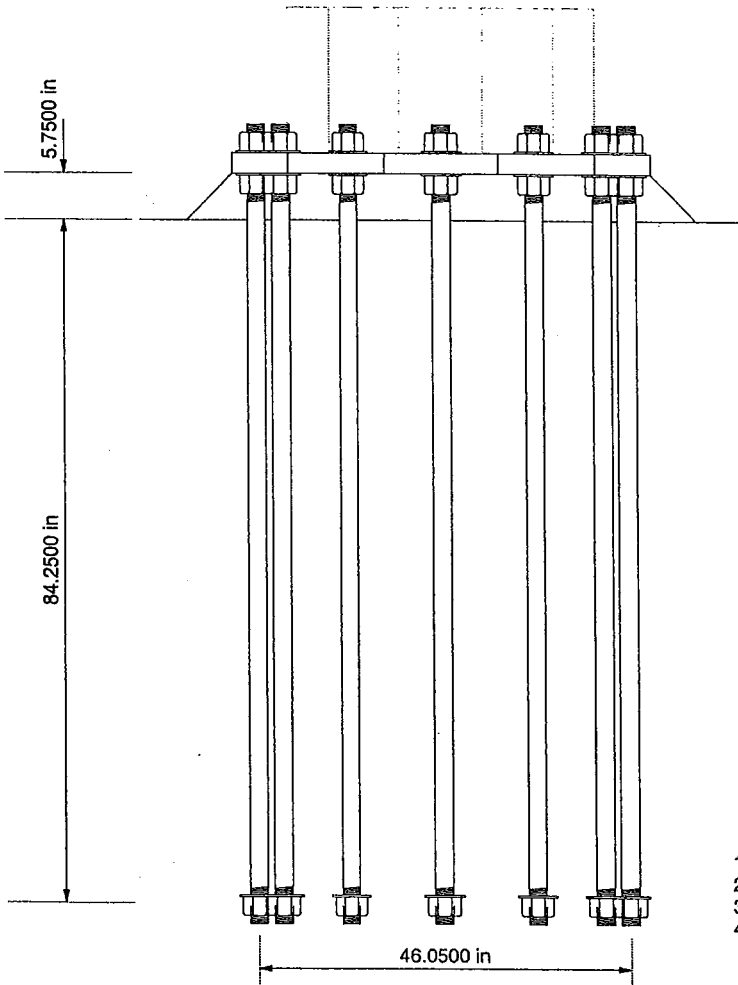
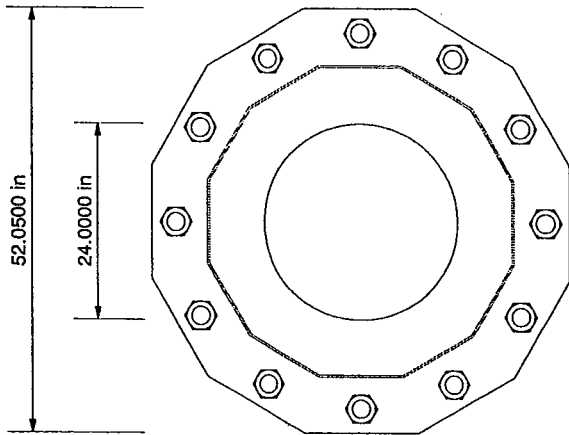
Feedline Plan

_____ Round _____ Flat _____ App In Face

App Out Face




 GPD GROUP Consulting Engineers	GPD Associates	Job: HRT 096 943227 BU#: 806371		
	520 S. Main St., Suite 2531	Project: 2005078.08		
	Akron, Ohio 44311	Client: Crown Castle	Drawn by: jcheronis	App'd:
	Phone: (330) 572-2100	Code: TIA/EIA-222-F	Date: 01/31/05	Scale: NTS
FAX: (330) 572-2102		Path: G:\Telecom\2005078\08\ER\N06371.eir	Dwg No. E-7	



FOUNDATION NOTES

1. Plate thickness is 2.5000 in.
2. Plate grade is A607-60.
3. Anchor bolt grade is A615-75.
4. f'c is 4 ksi.

 GPD GROUP Consulting Engineers	GPD Associates 520 S. Main St., Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2102		Job: HRT 096 943227 BU#: 806371
	Project: 2005078.08		
	Client: Crown Castle	Drawn by: jcheronis	App'd:
	Code: TIA/EIA-222-F	Date: 01/31/05	Scale: NTS
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ALP 9212-N

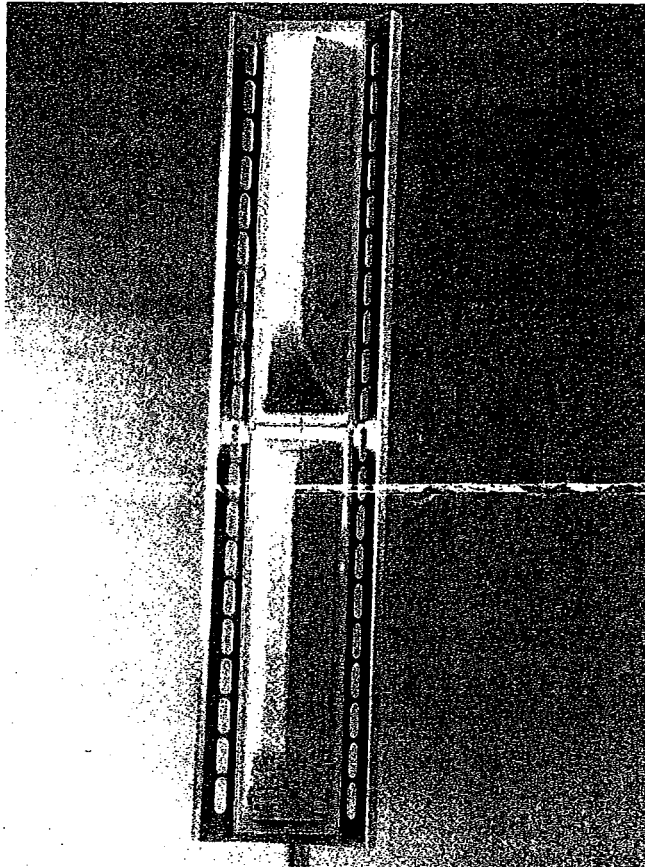
Log-Periodic Reflector Antenna

92 Degrees 12 dBd

Features:

- Broadbanded. (800-900 MHz)
- Low backlobe radiation. Front-to-back ratio better than 28 dB
- Low Intermodulation Products.
- Low Wind-load.
- Low weight.
- Small size.
- Rugged design.

Please see the following pages including radiation patterns/tables for ALP 9212-N.



Electrical Specifications:

Frequency range:	806-896 MHz
Impedance:	50 ohm
Connector:	N-female or 7/8" EIA
VSWR:	Typ. 1.3:1 max 1.5:1
Polarization:	Vertical
Gain:	12 dBd
Front to back ratio:	>28 dB
Side-lobe suppression:	>18 dB
Intermodulation: (2x25W):	IM3 >146 dB IM5 >153 dB IM7 & IM9 >163 dB
Power Rating:	500 W
H-Plane:	-3 dB 95°
E-Plane:	-3 dB 15°
Lightning Protection:	DC Grounded

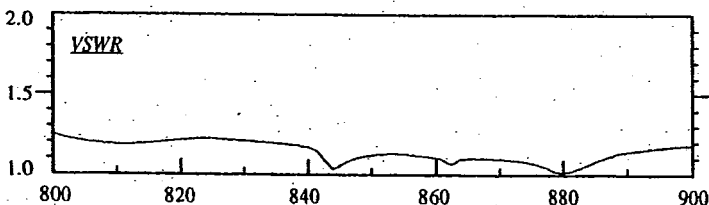
Mechanical Specifications:

Overall Height:	52 in	(1320 mm)
Width:	11.4 in	(290 mm)
Depth:	11.4 in	(290 mm)
Weight including brackets:	26.7 lbs	(12 Kg)
Rated wind velocity:	113 mph	(180 Km/h)
Wind Area (CxA/Front):	3.9 sq.ft	(0.36 sq.m)
Lateral thrust at rated wind		
Worst case:	570 N	

Materials:

Radiating elements:	Aluminum
Element housing:	Grey PVC
Back-plate:	Aluminum
Mounting hardware	
clamps:	Hot dip galvanized steel
bolts:	Stainless steel

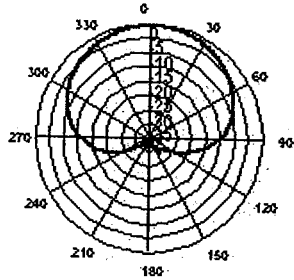
Manufactured by: Allgon System AB



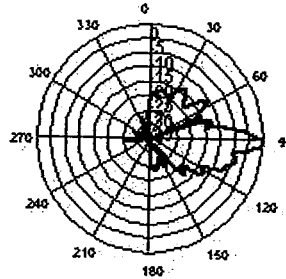
DECIBEL' <i>Base Station Antennas</i>	948F85T2E-M 16.1 dBi, Directed Dipole Antenna 1850-1990 MHz	1850-1990 MHz
		MaxFill™ dB Director®

• Exceptional azimuth roll-off reducing soft hand-offs and improving capacity
 • Excellent upper side lobe suppression
 • Deep null filling below the horizon assures improved signal intensity
 • Low profile appearance and low wind loading profile for easier zoning approvals

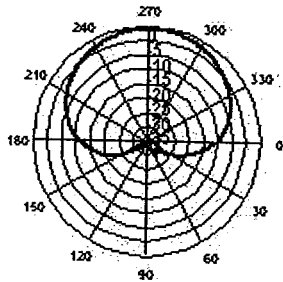
85°



Azimuth 1850 MHz (Tilt=2)



Vertical 1850 MHz (Tilt=2)



Horizontal 1850 MHz (Tilt=2)



ELECTRICAL		MECHANICAL	
Frequency (MHz):	1850-1990	Weight:	8.5 lbs (3.9 kg)
Polarization:	Vertical	Dimensions (LxWxD):	48 X 3.5 X 7 in (1219 X 89 X 178 mm)
Gain (dBd/dBi):	14/16.1	Max. Wind Area:	1.18 ft ² (0.11 m ²)
Azimuth BW:	85°	Max. Wind Load (@ 100mph):	65 lbf (289 N)
Elevation BW:	8°	Max. Wind Speed:	125 mph (201 km/h)
Beam Tilt:	2°	Radiator Material:	Low Loss Circuit Board
USLS* (dB):	>18	Reflector Material:	Aluminum
Null Fill* (dB):	15	Radome Material:	ABS, UV Resistant
Front-to-Back Ratio* (dB):	40	Mounting Hardware Material:	Galvanized Steel
VSWR:	<1.33:1	Connector Type:	7-16 DIN - Female (Bottom)
IM Suppression - Two 20 Watt Carriers:	-150 dBc	Color:	Light Gray
Impedance:	50 Ohms	Standard Mounting Hardware:	DB390 Pipe Mount Kit, included
Max Input Power:	250 Watts	Downtilt Mounting Hardware:	DB5098, optional
Lightning Protection:	DC Ground	Opt. Mounting Hardware:	DB5094-AZ Azimuth Wall Mount
Opt Electrical Tilt:	0°, 4°, 6°		



Andrew Corporation
 8635 Stemmons Freeway
 Dallas, Texas U.S.A 75247-3701
 Tel: 214.631.0310

Fax: 214.631.4706
 Toll Free Tel: 1.800.676.5342
 Fax: 1.800.229.4706
 www.andrew.com

Date: 4/29/2004
 * - Indicates Typical Values

dbtech@andrew.com

General Power Density

Site Name: Somers , CT
 Tower Height: 155 ft rad center

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm ²)	Maximum Permissible Exposure (mW/cm ²)	Fraction of MPE (%)
Verizon	869	9	200	1800	155	0.0269	0.5793	4.65%
Verizon	1900	3	200	600	155	0.0090	1	0.90%
Total Percentage of Maximum Permissible Exposure								5.55%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
 mW/cm² = milliwatts per square centimeter
 ERP = Effective Radiated Power

Absolute worst case scenario, maximum values used.

