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@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

June 23, 2008

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

RE: **EM-VER-014-080519** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 180 North Main Street, Branford, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, 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 May 19, 2008, including the placement of all necessary equipment and shelters within the tower compound. 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 an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility 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,

S. Derek Phelps

S. Derek Phelps
Executive Director

SDP/MP

c: Honorable Anthony "Unk" DeRos, First Selectman, Town of Branford
Diana Ross, Inland Wetland Enforcement Officer, Town of Branford
Justine K. Gillen, Zoning Enforcement Officer, Town of Branford
Crown Castle International

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Phone: (860) 827-2935 Fax: (860) 827-2950
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Daniel F. Caruso
Chairman

May 20, 2008

The Honorable Anthony "Unk" DaRos
First Selectman
Town of Branford
Town Hall
1019 Main Street
P. O. Box 150
Branford, CT 06405-0150

RE: **EM-VER-014-080519** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 180 North Main Street, Branford, Connecticut.

Dear Mr. DaRos:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by June 3, 2008.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/jb

Enclosure: Notice of Intent

c: Justine K. Gillen, Zoning Enforcement Officer, Town of Branford
Diana Ross

ROBINSON & COLE LLP

KENNETH C. BALDWIN

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Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
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Direct (860) 275-8345

EM-VER-014-080519

ORIGINAL

May 19, 2008

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**
180 North Main Street, Branford, Connecticut

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains a wireless telecommunications facility at the above referenced location. The Council approved Cellco's shared use of this facility in Docket 122. On August 12, 2004 the Council granted Cellco's request to replace three of its existing cellular antennas with three PCS antennas. Cellco now intends to modify its installation further by replacing the six (6) ALP 9212 cellular antennas with six (6) newer Model DB846F65ZAXY cellular antennas at the 96-foot level on the 110-foot tower. The tower is owned by Crown Castle International. Attached behind Tab 1 are the specifications for the proposed replacement antennas.

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 Anthony DaRos, First Selectman of the Town of Branford. Pursuant to a Council directive, a copy of this letter is being sent to Three M&M Ltd. Partnership, the owner of the property on which the tower is located.

The planned modifications to the facility 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 any increase in the overall height of the existing structure. Cellco's replacement antennas will be located at the 96-foot level of the 110-foot tower.

2. The proposed modifications will not involve any ground-mounted equipment and, therefore, will not require the extension of the site boundaries.

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

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for the facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower can support the proposed modifications. (See Tab 3).

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Anthony DaRos, Branford First Selectman
Three M&M Ltd. Partnership
Sandy M. Carter

ANDREW®

Vertically Polarized Directed Dipole® Panel Antennas

806 - 960 MHz

65° HORIZONTAL BEAMWIDTH

HORIZONTAL BEAMWIDTH	65°		65°	65°
FREQUENCY RANGE	806-960 MHz		806-896 MHz	806-896 MHz
	14.5 & 14.8 dBd / 0° Tilt		14.5 dBd / 0° Tilt	14.3 dBd / 5° Tilt
MODEL	DB846F65ZAXY		DB846H65E-SX	846H65T5E-SX
TYPE	Directed Dipole®, No Screen		Directed Dipole®	Directed Dipole®
ELECTRICAL SPECIFICATIONS				
Frequency Range (MHz)	806-896	870-960	806-896	806-896
Gain (dBd/dBi)	14.5 / 16.6	14.8 / 16.9	14.5 / 16.6	14.3 / 16.4
Horizontal Beamwidth (Deg.)	65	60	65	65
Elevation Beamwidth (Deg.)	11	10.5	11	10.5
USLS (dB)	>15	>15	N/A	N/A
Null Fill (dB) – Below Peak	N/A	N/A	N/A	N/A
Beam Tilt (Deg.)	0	0	0	5
VSWR	<1.33:1	<1.33:1	<1.5:1	<1.5:1
Front-To-Back Ratio (dB)	40	40	30	40
Isolation (dB)	N/A	N/A	N/A	N/A
Max. Input Power (Watts)	500	500	500	500
Polarization	Vertical	Vertical	Vertical	Vertical
Connector Location	Back	Back	Back	Back
Connector Type	7-16 DIN - Female	7-16 DIN - Female	7-16 DIN - Female	7-16 DIN - Female
Optional Connectors	N/A	N/A	N/A	N/A
MECHANICAL SPECIFICATIONS				
Length (inch/mm)	72 / 1,829	72 / 1,829	72 / 1,829	72 / 1,829
Width (inch/mm)	10 / 254	10 / 254	20.5 / 521	20.5 / 521
Depth (inch/mm)	8.5 / 216	8.5 / 216	9 / 229	9 / 229
Net Weight (lbs/kg)	21 / 9.5	21 / 9.5	24 / 10.9	24 / 10.9
Max. Flat Plate Area (ft^2/m^2)	1.61 / 0.15	1.61 / 0.15	4.95 / 0.46	4.95 / 0.46
Max. Wind Load at 100 mph (lbf/N)	87 / 386	87 / 386	273 / 1,214	273 / 1,214
Max. Wind Speed (mph/kmh)	125 / 201	125 / 201	125 / 201	125 / 201
Radome Material	ABS, UV Resistant	ABS, UV Resistant	ABS, UV Resistant	ABS, UV Resistant
Reflector Material	Pass. Aluminum	Pass. Aluminum	Pass. Aluminum	Pass. Aluminum
Radiator Material	Aluminum	Aluminum	Brass	Brass
Hardware Material	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel
Color	Light Gray	Light Gray	Light Gray	Light Gray
Std. Mounting Hardware	DB380	DB380	DB380	DB380
Optional Downtilt Kit	DB5083	DB5083	DB5083	DB5083
Optional Special Mounting	DB5084-AZ	DB5084-AZ	DB5084-AZ	DB5084-AZ

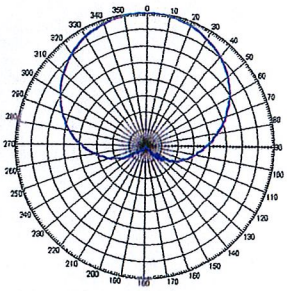
Specifications are subject to change. Please see our website for the latest information.

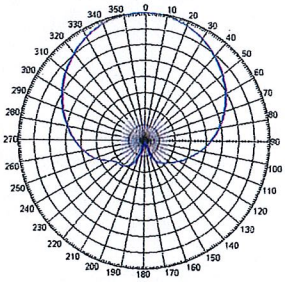
DB846F65ZAXY

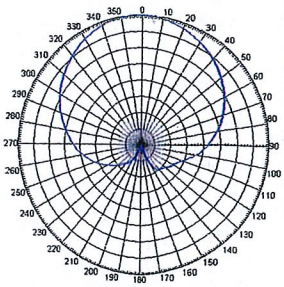
DB846H65E-SX

846H65T5E-SX

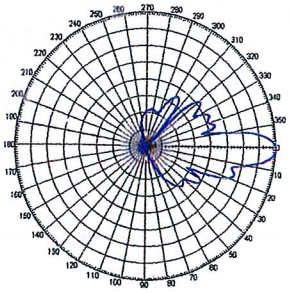
Azimuth Pattern

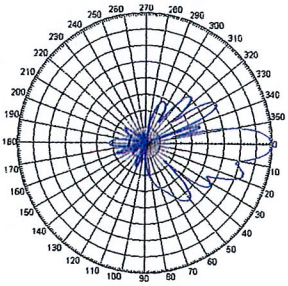


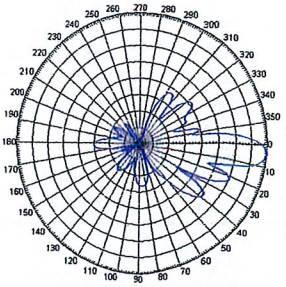




Elevation Pattern







Scale: 10° radials, 5 dB per division

General Power Density

Site Name: Brandford, CT
Tower Height: 96' (Cellular) and (PCS) 105' to Rad Center (Verizon Platform)

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
Verizon Cellular	880	9	365	3285	96	0.1282	0.5866	21.85%
Verizon PCS	1900	3	313	939	105	0.0306	1.0	3.06%
Total Percentage of Maximum Permissible Exposure								24.92%

*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/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case scenario, maximum values used.

April 29, 2008

LaShay Holmes
Crown Castle USA
9105 Monroe Road Suite 150
Charlotte NC 28270
(704) 814-8311

Vertical Structures Inc
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
acronin@verticalstructures.com

Subject: **Structural Analysis Report**

Carrier Designation	**Verizon Wireless Change-Out** **Carrier Site Number: NHV113** **Carrier Site Name: Branford, CT**
Crown Castle Designation	**Crown Castle BU Number: 806360** **Crown Castle Site Name: NHV 113** **Crown Castle JDE Job Number: 102865**
Engineering Firm Designation	**Vertical Structures Project Number: 2008-004-071**
Site Data	**180 & 184 North Main Street, Branford, CT, New Haven County** **Latitude 41°-17'-23.0", Longitude -72°-48'-43.0"** **110' Valmont Monopole Tower**

Dear Ms. Holmes,

Vertical Structures is pleased to submit this structural analysis report to determine the structural integrity of the aforementioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 282654, and Application Number 59379, Revision 4. The purpose of the analysis is to determine the suitability of the tower for the following load case:

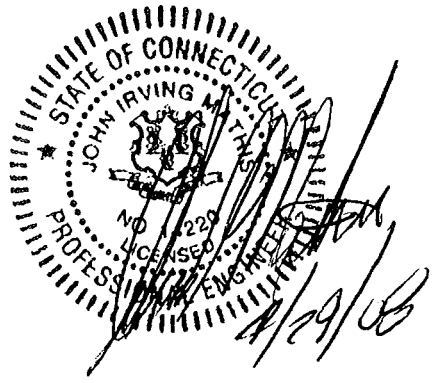
Load Case 1 (LC1): Proposed Equipment (Table 1) + Existing/Reserved Equipment (Table 2)

Based on our analysis we have determined the tower superstructure and foundation are sufficient for LC1. This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon an 85 MPH basic "fastest mile" wind speed, equivalent to a 105 MPH basic "3-second gust" wind speed per IBC Table 1609.3.1.

Vertical Structures appreciates the opportunity of providing our continuing professional services to you and Crown Castle USA. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

Andy Cronin
Project Engineer



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1.) INTRODUCTION

The 110' tall monopole tower was designed and manufactured by Valmont for Metro Mobile in 1990. The existing structure consists of three (3) 12-sided tapered polygonal tubes joined via slip joint connections and is founded on a 6' diameter by 6' deep drilled pier with eighteen (18) rock anchors embedded 12' into rock.

2.) ANALYSIS CRITERIA

The NHV 113 monopole tower was analyzed in accordance with the current EIA-222-F publication, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." The proposed, existing, and reserved antennas, cables, and mounts considered in this analysis are listed in Tables 1 and 2. Applied forces in this study were derived from an 85 MPH basic "fastest mile" wind speed with no ice and a reduced 74 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The tower was originally designed for a 90 MPH basic "fastest mile" wind speed with no ice and a reduced 78 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The original design loads are listed in Table 3. All cables are assumed to be routed in accordance with the drawing in Appendix B.

Table 1 – Proposed Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
96	6	Decibel	DB846F65ZAXY			6	1 5/8

Table 2 – Existing and Reserved Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
105	3	Decibel	932DG65T2E-M	Valmont	TEC COM. Platform w/ (3) 12' Knockdown Frames	6	1 1/4
96	6 + 6*	Swedcom	ALP 9212-N			6 + 6*	7/8
	1		E911 GPS			1*	1/2
83	1	Decibel	DB225-A			1	1/4
64	1	Decibel	DB225-A		(1) Pipe Mount	1	1 5/8

*Indicates equipment to be removed.

Table 3 – Design Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
101	4	Celwave	PD10017	Valmont	TEC COM. Platform		
	12	Celwave	PD1132				
79	1	Decibel	DB-212-2	Valmont	(1) Pipe Mount		
60	1	Decibel	DB-212-2	Valmont	(1) Pipe Mount		

3.) ANALYSIS PROCEDURE

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Online Application	Verizon Wireless Change-Out Revision #4	59379	CCI iSite
Tower Drawings	Valmont Order No. 10666-90	971913	CCI iSite
Foundation Drawing	SAC Engineering Job No. 1990-9	217660	CCI iSite
Geotechnical Report	Applied Earth Technologies Report Dated, "June 12, 1990"	262228	CCI iSite

3.1) Analysis Methods

RISA Tower (Version 5.1), a commercially available analysis software package, 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/TIA/EIA-222-F or the local building code requirements. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1. Tower and structures were built in accordance with the manufacturer's specifications.
2. The tower and structures have been maintained in accordance with manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and any referenced drawings.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.

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

4.) ANALYSIS RESULTS

Table 5 – Tower Component Stresses vs. Capacity (LC1)

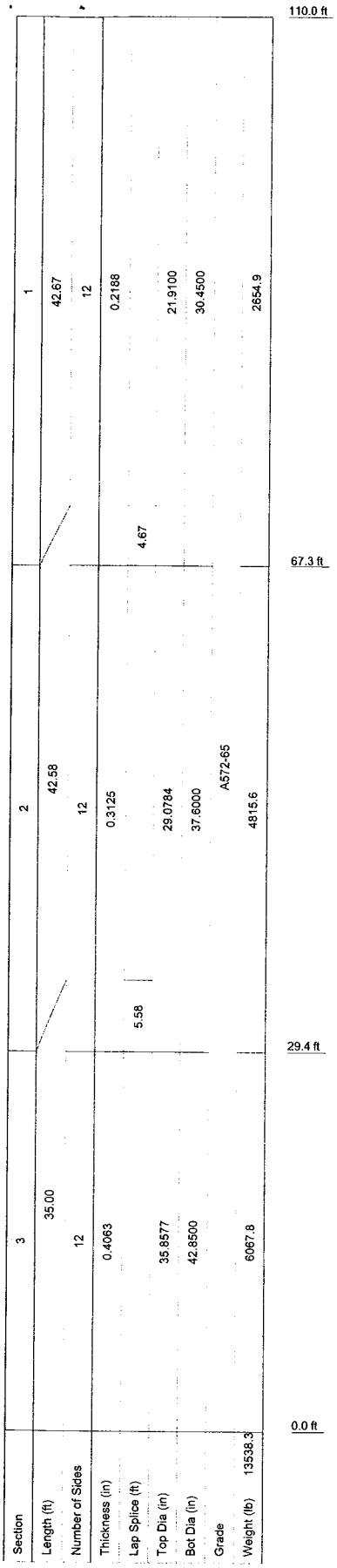
Section Capacity Table

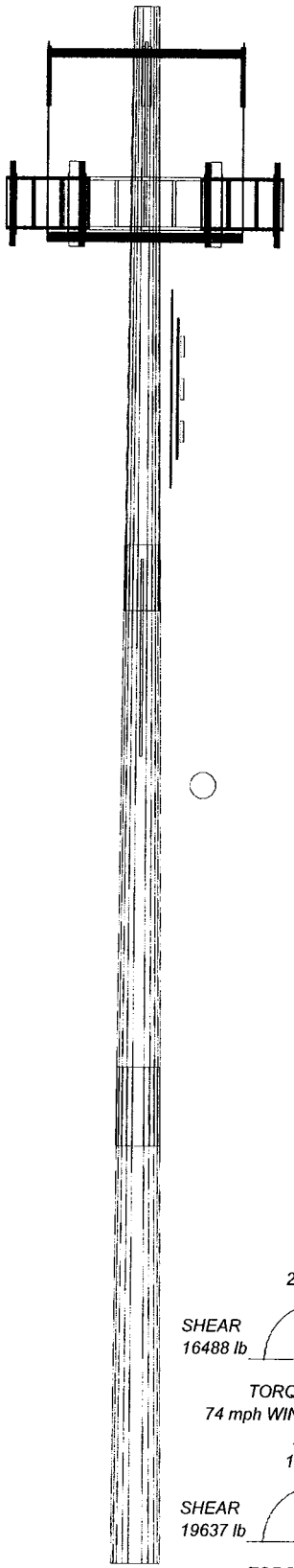
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	110 - 67.3333	Pole	TP30.45x21.91x0.2188	1	-6107.95	1013903.75	49.0	Pass
L2	67.3333 - 29.4167	Pole	TP37.6x29.0784x0.3125	2	-11261.20	1892126.77	59.5	Pass
L3	29.4167 - 0	Pole	TP42.85x35.8577x0.4063	3	-18694.00	2886411.43	58.7	Pass
							Summary	
						Pole (L2)	59.5	Pass
						RATING =	**59.5**	**Pass**

Notes	Component	% Capacity	Pass/Fail
Additional Component Analysis Summary:			
1	Anchor Bolts (Tension)	64.1	Pass
1	Base Plate (Bending)	35.7	Pass
	Foundation (Compared to Design Loads)	62.5	Pass
	Structure Rating =	**64.1**	**Pass**

1) Indicates calculations supporting % capacity are included in Appendix C.

APPENDIX A





DESIGNED APPURTENANCE LOADING

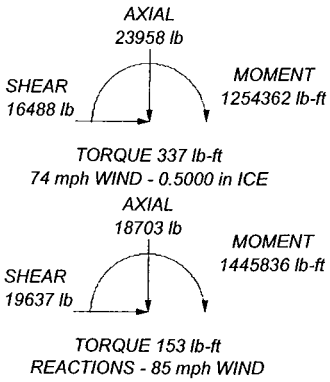
TYPE	ELEVATION	TYPE	ELEVATION
Valmont 13'-5" L.P. Platform (VSI) (Verizon Wireless)	107	12' Knockdown T-Frame (VSI) (Verizon Wireless)	96
14' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	107 - 94	(2) ALP 9212-N w/Mount Pipe (Verizon Wireless)	96
14' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	107 - 94	(2) ALP 9212-N w/Mount Pipe (Verizon Wireless)	96
14' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	107 - 94	(2) ALP 9212-N w/Mount Pipe (Verizon Wireless)	96
932DG65T2E-M w/Mount Pipe (Verizon Wireless)	105	(2) DB846F65ZAXY w/Mount Pipe (Verizon Wireless)	96
932DG65T2E-M w/Mount Pipe (Verizon Wireless)	105	(2) DB846F65ZAXY w/Mount Pipe (Verizon Wireless)	96
932DG65T2E-M w/Mount Pipe (Verizon Wireless)	105	(2) DB846F65ZAXY w/Mount Pipe (Verizon Wireless)	96
(2) 6' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	105	Generic GPS (VSI) (Verizon Wireless)	96
(2) 6' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	105	Valmont 13'-5" L.P. Platform (VSI) (Verizon Wireless)	94
(2) 6' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	105	14' x 2" Antenna Mount Pipe (VSI)	83
12' Knockdown T-Frame (VSI) (Verizon Wireless)	96	DB225-A	83
12' Knockdown T-Frame (VSI) (Verizon Wireless)	96	14' x 2" Antenna Mount Pipe (VSI)	64
		DB225-A	64

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 59.5%



Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, Kentucky 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job: *NHV 113, CT BU#806360*		
Project: *Vertical Structures Job No. 2008-004-071*		
Client: Crown Castle	Drawn by: Andy Cronin	App'd:
Code: TIA/EIA-222-F	Date: 04/29/08	Scale: NTS
Path: \\Nas1\acronin\2008-004-071-NHV 113 CT\RISA\806360.eri		Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	110.00-67.33	42.67	4.67	12	21.9100	30.4500	0.2188	0.8750	A572-65 (65 ksi)
L2	67.33-29.42	42.58	5.58	12	29.0784	37.6000	0.3125	1.2500	A572-65 (65 ksi)
L3	29.42-0.00	35.00		12	35.8577	42.8500	0.4063	1.6250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.6829	15.2788	917.5793	7.7655	11.3494	80.8484	1859.2645	7.5197	5.2856	24.163
	31.5242	21.2941	2484.0378	10.8228	15.7731	157.4857	5033.3340	10.4803	7.5743	34.626
L2	31.0710	28.9457	3057.2251	10.2982	15.0626	202.9675	6194.7669	14.2462	6.9555	22.258
	38.9264	37.5205	6658.5803	13.3489	19.4768	341.8724	13492.0890	18.4665	9.2393	29.566
L3	38.2774	46.3749	7439.3822	12.6916	18.5743	400.5205	15074.2053	22.8243	8.5211	20.975
	44.3616	55.5217	12766.6349	15.1949	22.1963	575.1695	25868.6636	27.3261	10.3950	25.588

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 110.00-67.33				1	1	1		
L2 67.33-29.42				1	1	1		
L3 29.42-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF6-50A (1-1/4 FOAM) (Verizon Wireless)	A	No	Inside Pole	105.00 - 5.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
LDF5-50A (7/8 FOAM) (Verizon Wireless)	A	No	Inside Pole	96.00 - 5.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
FLC 158-50J (1 5/8 FOAM) (Verizon Wireless)	A	No	Inside Pole	96.00 - 5.00	6	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
LDF1-50A (1/4 FOAM)	B	No	Inside Pole	83.00 - 5.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	64.00 - 5.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	110.00-67.33	A	0.000	0.000	0.000	0.000	364.16
		B	0.000	0.000	0.000	0.000	0.94
		C	0.000	0.000	0.000	0.000	0.00
L2	67.33-29.42	A	0.000	0.000	0.000	0.000	434.52
		B	0.000	0.000	0.000	0.000	2.27
		C	0.000	0.000	0.000	0.000	28.36
L3	29.42-0.00	A	0.000	0.000	0.000	0.000	279.82
		B	0.000	0.000	0.000	0.000	1.47
		C	0.000	0.000	0.000	0.000	20.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	110.00-67.33	A	0.500	0.000	0.000	0.000	0.000	364.16
		B		0.000	0.000	0.000	0.000	0.94
		C		0.000	0.000	0.000	0.000	0.00
L2	67.33-29.42	A	0.500	0.000	0.000	0.000	0.000	434.52
		B		0.000	0.000	0.000	0.000	2.27
		C		0.000	0.000	0.000	0.000	28.36
L3	29.42-0.00	A	0.500	0.000	0.000	0.000	0.000	279.82
		B		0.000	0.000	0.000	0.000	1.47
		C		0.000	0.000	0.000	0.000	20.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	110.00-67.33	0.0000	0.0000	0.0000	0.0000
L2	67.33-29.42	0.0000	0.0000	0.0000	0.0000
L3	29.42-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Valmont 13'-5" L.P. Platform (VSI) (Verizon Wireless)	C	None			0.0000	107.00	No Ice	31.00	31.00	1260.00
							1/2" Ice	37.70	37.70	2110.00
Valmont 13'-5" L.P. Platform (VSI) (Verizon Wireless)	C	None			0.0000	94.00	No Ice	31.00	31.00	1260.00
							1/2" Ice	37.70	37.70	2110.00
14' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	A	From Centroid-Leg	8.00 0.00	0.00	0.0000	107.00 - 94.00	No Ice	3.33	3.33	52.00
							1/2" Ice	4.75	4.75	76.88
14' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	B	From Centroid-Leg	8.00 0.00	0.00	0.0000	107.00 - 94.00	No Ice	3.33	3.33	52.00
							1/2" Ice	4.75	4.75	76.88
14' x 2" Antenna Mount Pipe (VSI) (Verizon Wireless)	C	From Centroid-Leg	8.00 0.00	0.00	0.0000	107.00 - 94.00	No Ice	3.33	3.33	52.00
							1/2" Ice	4.75	4.75	76.88
932DG65T2E-M w/Mount Pipe (Verizon Wireless)	A	From Centroid-Leg	8.00 0.00	0.00	0.0000	105.00	No Ice	4.15	3.50	35.05
							1/2" Ice	4.79	4.54	69.93
932DG65T2E-M w/Mount Pipe (Verizon Wireless)	B	From Centroid-Leg	8.00 0.00	0.00	0.0000	105.00	No Ice	4.15	3.50	35.05
							1/2" Ice	4.79	4.54	69.93

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
932DG65T2E-M w/Mount Pipe	C	From Centroid-Leg	8.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice	4.15 4.79	3.50 4.54	35.05 69.93
(Verizon Wireless)									
(2) 6' x 2" Antenna Mount Pipe (VSI)	A	From Centroid-Leg	8.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(Verizon Wireless)									
(2) 6' x 2" Antenna Mount Pipe (VSI)	B	From Centroid-Leg	8.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(Verizon Wireless)									
(2) 6' x 2" Antenna Mount Pipe (VSI)	C	From Centroid-Leg	8.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(Verizon Wireless)									
12' Knockdown T-Frame (VSI)	A	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	6.00 8.50	2.00 2.90	125.00 195.00
(Verizon Wireless)									
12' Knockdown T-Frame (VSI)	B	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	6.00 8.50	2.00 2.90	125.00 195.00
(Verizon Wireless)									
12' Knockdown T-Frame (VSI)	C	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	6.00 8.50	2.00 2.90	125.00 195.00
(Verizon Wireless)									
(2) ALP 9212-N w/Mount Pipe	A	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	6.42 7.11	7.45 8.59	42.71 103.63
(Verizon Wireless)									
(2) ALP 9212-N w/Mount Pipe	B	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	6.42 7.11	7.45 8.59	42.71 103.63
(Verizon Wireless)									
(2) ALP 9212-N w/Mount Pipe	C	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	6.42 7.11	7.45 8.59	42.71 103.63
(Verizon Wireless)									
(2) DB846F65ZAXY w/Mount Pipe	A	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	7.27 7.88	7.82 9.01	46.55 111.10
(Verizon Wireless)									
(2) DB846F65ZAXY w/Mount Pipe	B	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	7.27 7.88	7.82 9.01	46.55 111.10
(Verizon Wireless)									
(2) DB846F65ZAXY w/Mount Pipe	C	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	7.27 7.88	7.82 9.01	46.55 111.10
(Verizon Wireless)									
Generic GPS (VSI)	C	From Centroid-Leg	8.00 0.00 0.00	0.0000	96.00	No Ice 1/2" Ice	1.40 1.70	1.40 1.70	25.00 30.00
(Verizon Wireless)									
**									
14' x 2" Antenna Mount Pipe (VSI)	B	From Centroid-Leg	2.25 0.00 0.00	0.0000	83.00	No Ice 1/2" Ice	3.33 4.75	3.33 4.75	52.00 76.88
DB225-A	B	From Centroid-Leg	2.75 0.00 0.00	-10.0000	83.00	No Ice 1/2" Ice	3.21 5.78	3.21 5.78	37.00 48.10
**									
14' x 2" Antenna Mount Pipe (VSI)	A	From Centroid-Leg	2.25 0.00 0.00	0.0000	64.00	No Ice 1/2" Ice	3.33 4.75	3.33 4.75	52.00 76.88
DB225-A	A	From Centroid-Leg	2.75 0.00 0.00	-30.0000	64.00	No Ice 1/2" Ice	3.21 5.78	3.21 5.78	37.00 48.10

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	110 - 67.3333 (1)	TP30.45x21.91x0.2188	42.67	0.00	0.0	36.858	20.6362	-6107.95	760618.00	0.008
L2	67.3333 - 29.4167 (2)	TP37.6x29.0784x0.3125	42.58	0.00	0.0	39.000	36.3963	-11261.20	1419450.00	0.008
L3	29.4167 - 0 (3)	TP42.85x35.8577x0.4063	35.00	0.00	0.0	39.000	55.5217	-18694.00	2165350.00	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	110 - 67.3333 (1)	TP30.45x21.91x0.2188	293070.00	-23.783	36.858	0.645	0.00	0.000	36.858	0.000
L2	67.3333 - 29.4167 (2)	TP37.6x29.0784x0.3125	820397.50	-30.611	39.000	0.785	0.00	0.000	39.000	0.000
L3	29.4167 - 0 (3)	TP42.85x35.8577x0.4063	1445833.33	-30.165	39.000	0.773	0.00	0.000	39.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 67.3333 (1)	TP30.45x21.91x0.2188	0.008	0.645	0.000	0.653 ✔	1.333	H1-3 ✔
L2	67.3333 - 29.4167 (2)	TP37.6x29.0784x0.3125	0.008	0.785	0.000	0.793 ✔	1.333	H1-3 ✔
L3	29.4167 - 0 (3)	TP42.85x35.8577x0.4063	0.009	0.773	0.000	0.782 ✔	1.333	H1-3 ✔

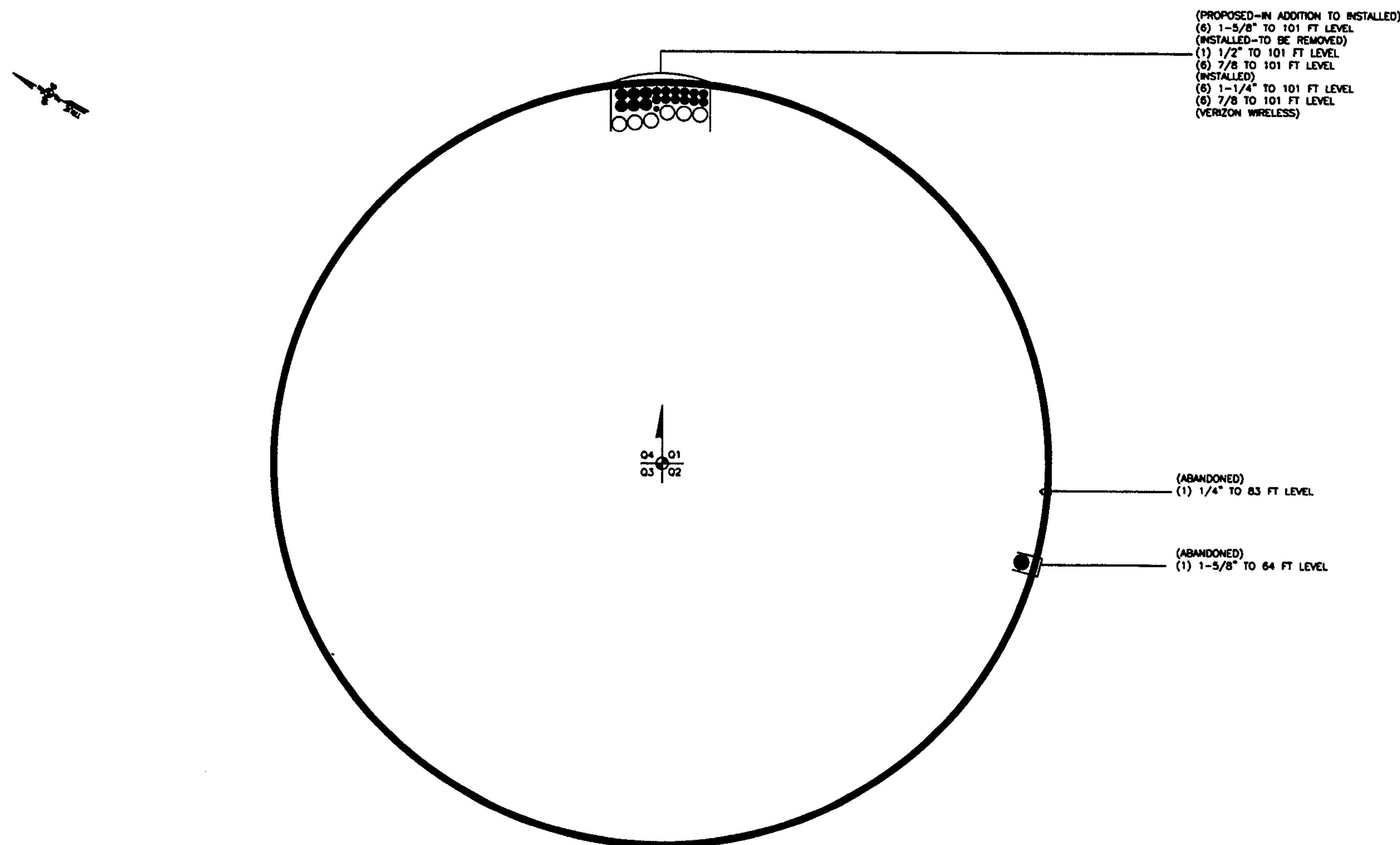
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	110 - 67.3333	Pole	TP30.45x21.91x0.2188	1	-6107.95	1013903.75	49.0	Pass
L2	67.3333 -	Pole	TP37.6x29.0784x0.3125	2	-11261.20	1892126.77	59.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
	29.4167							
L3	29.4167 - 0	Pole	TP42.85x35.8577x0.4063	3	-18694.00	2886411.43	58.7	Pass
							Summary	
						Pole (L2)	59.5	Pass
						RATING =	**59.5**	**Pass**

Program Version 5.1.2.0 - 3/5/2008 File://Nas1/acronin/2008-004-071-NHV 113 CT/RISA/806360.eri

APPENDIX B



BUSINESS UNIT: 806360 TOWER ID: C_BASELEVEL

LEGEND: FEEDLINES

- ● SOLID BLUE CIRCLE DENOTES EXISTING FEEDLINE
- ○ OPEN RED CIRCLE DENOTES PROPOSED FEEDLINE
- ○ OPEN BLUE CIRCLE DENOTES RESERVED FEEDLINE
- X BLUE "X" DENOTES LOCATION NOT GIVEN

NOTE: ASSUME FEEDLINE ATTACHMENT HEIGHT TO TOWER STEEL AT 8-FEET ABOVE FINISHED GRADE UNLESS OTHERWISE SPECIFIED

BASE LEVEL DRAWING

SCALE: 1" = 1'-0" | 1

PLOT DATE: 2/20/2008 FILE NAME: 806360_BASELEVEL.DWG

CROWN REGION ADDRESS
USA

1 27/02/08 APPLICATION ADDED PER WORK ORDER # 197611

DRAWN BY: [illegible]
CHECKED BY: [illegible]
DRAWING DATE: [illegible]

SITE NUMBER:
SITE NAME:

SITE NAME

[illegible]

BUSINESS UNIT NUMBER

[illegible]

SITE ADDRESS

[illegible] NORTH MAIN STREET
BRANFORD, CT [illegible]
NEW HAVEN COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

APPENDIX C

VERTICAL STRUCTURES, INC.

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	NHV 113, CT BU#806360
Job Number:	2008-004-071
Tower Model:	110' Valmont Monopole Tower
Date:	4/29/2008

Input Information:	***Existing Bolts***	
# Bolts, **n**	12	
Bolt Diameter, **d**	2.25	in
Bolt Circle Diameter, **D**	50.86	in
Bolt Ultimate Tensile Stress, F_u	100	ksi
Applied Vertical Load **P**	18.70	kips
Applied Shear **S**	19.64	kips
Applied Moment **M**	17350.03	kip-in
Steel Grade	A615 Gr 75	

Bolt Cross-Sectional Area, **A**	3.976	in^2 (each)
Bolt Group Moment of Inertia, **I**	15427.61841	in^4
Maximum Tensile Stress (outer bolt), σ_y	28.21	ksi
Maximum Shear Stress(any bolt), τ_{xy}	0.412	ksi
Maximum Allowable Stress (per bolt), **Ft**	44.00	ksi
% Capacity	**64.1%**	

The Bolt Group is Adequate for Loading

Maximum Allowable Stress (per bolt), **Ft**

$$0.43F_u - 1.8f_v \leq 0.33F_u$$

This equation is for threaded parts, A449 bolts over 1 1/2" dia. (threads included in shear plane) Manual of Steel Construction ASD, 9th Edition, pg. 5-74, Table J3.3

VERTICAL STRUCTURES, INC.

BASE PLATE CALCULATIONS

Customer:	Crown Castle
Site Name:	NHV 113, CT BU#806360
Job Number:	2008-004-071
Tower Model:	110' Valmont Monopole Tower
Date:	4/29/2008

FOR BASE PLATES WITH EQUALLY DISTRUBUTED ANCHOR BOLTS WITHOUT GUSSET PLATE STIFFENERS

Maximum Tensile Bolt Load	112.15	kip
Number of Sides of Pole	12	
Diameter of Pole at Base	42.85	in
Thickness of Pole at Base	0.40625	in
Area of Pole at Base	55.44	in^2
Circumference of Pole at Base	137.78	in
Anchor Bolt Circle	50.86	in
Anchor Bolt Diameter	2.25	in
Base Plate Section Length	2.88	in
Anchor Bolt Quantity	12	
Base Plate Section Width	11.97	in
Moment on Base Plate Section	323.00	kip-in
Base Plate Thickness	2.75	in
Base Plate Bending Stress	21.41	ksi
Base Plate Yield Strength	60	ksi
Allowable Bending Stress (with 4/3 Increase)	**60**	ksi
% Capacity	**35.7%**	

Base Plate is Adequate for Loading