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

November 15, 2006

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

RE: **EM-VER-069-061103** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 246 East Franklin Street, Danielson, Connecticut.

Dear Attorney Baldwin:

At a public meeting held on November 14, 2006, the Connecticut Siting Council (Council) acknowledged 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 November 3, 2006, 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,

Daniel F. Caruso
Chairman

DFC/MP/laf

c: The Honorable Janice Thurlow, Chairman Town Council, Town of Killingly
Roger Gandolf, Zoning Officer, Town of Killingly
Thomas J. Regan, Esq., Brown Rudnick Berlack Israels, LLP
Christine Farrell, T-Mobile
Michele G. Briggs, New Cingular Wireless PCS, LLC
Christopher B. Fisher, Esq., Cuddy & Feder LLP
SBA, Inc.

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STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
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Daniel F. Caruso
Chairman

November 8, 2006

The Honorable Janice Thurlow
Chairman Town Council
Town of Killingly
172 Main Street
P. O. Box 6000
Danielson, CT 06239-6000

RE: **EM-VER-069-061103** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 246 East Franklin Street, Danielson, Connecticut.

Dear Ms. Thurlow:

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.

The Council will consider this item at the next meeting scheduled for Tuesday, November 14, 2006 at 1:30 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the Council by November 13, 2006.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/ap

Enclosure: Notice of Intent

c: Roger Gandolf, Zoning Officer, Town of Killingly

ROBINSON & COLE LLP

KENNETH C. BALDWIN

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

ORIGINAL

EM-VER-069-061103

November 3, 2006

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**
246 East Franklin Street, Danielson, CT

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains a wireless telecommunications facility at 246 East Franklin Street in Danielson. In its continuing effort to improve the quality and reliability of its wireless service, Cellco intends to replace and upgrade its antennas at this facility.

The Council originally approved Cellco's East Franklin Street facility on July 15, 1999 (TS-BAM-069-990701). Cellco now intends to modify this facility by replacing the six of the twelve cellular antennas with six PCS antennas at the same 155-foot level on the 155-foot tower. Attached to this letter are the specifications for the existing and proposed replacement antennas as well as a structural report verifying that the East Franklin Street tower can support the proposed modifications.

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 Bruce E. Benway, Town Manager of Killingly and Elaine B. Lippke, Danielson Borough President.

The planned modification to the facility falls 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 tower structure. Cellco's replacement antennas will be located at the same centerline height and location as the existing antennas.

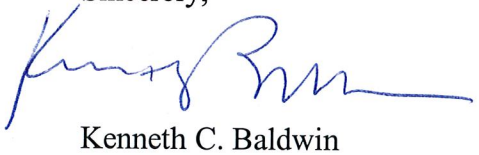
2. The proposed modifications will not affect associated equipment areas and will not therefore, require the extension of the site boundaries.

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

4. The proposed modifications will not result in changes to radio frequency (RF) power density levels at the facility. Therefore, no new Power Density Calculation Table is provided.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications at 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:
Bruce E. Benway, Killingly Town Manager
Elaine B. Lippke, Danielson Borough President
Sandy M. Carter
Michelle Kababik

EXISTING

DB844H80E-XY

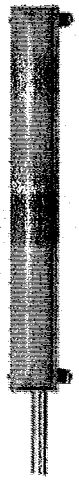
Directed Dipole Antenna

Decibel®
Base Station Antennas

- Excellent azimuth roll-off, 15-20% reduction in cell to cell overlap
- Superior front to back ratio
- Low profile, low wind load for easy zoning
- Outstanding field record, with thousands of units deployed world wide

ELECTRICAL

Frequency (MHz) :	806 - 896	870 - 960
Polarization :	Vertical	Vertical
Gain (dBd/dBi) :	12.5/14.6	12.8/14.9
Azimuth BW (Deg.):	80	80
Elevation BW (Deg.):	15	15
Beam Tilt (Deg.):	0	0
USLS* (dB) :	15	15
Front-To-Back Ratio* (dB) :	40	40
VSWR :	<1.5:1	<1.5:1
Max. Input Power (Watts) :	500	500
Impedance (Ohms) :	50	50
Lightning Protection :	DC Ground	DC Ground



Weight :	6.3 kg (14 lb)
Dimensions (LxWxD) :	1,219 x 165 x 203 mm (48 x 6.5 x 8 in)
Max. Wind Area :	0.10 m² (1.1 ft²)
Max. Wind Load (@ 100 mph) :	262.4 N (59 lbf)
Max. Wind Speed :	241 km/h (150 mph)
Hardware Material :	Galvanized Steel
Connector Type :	7-16 DIN - Female (1, Back)
Color :	Light Gray
Standard Mounting Hardware :	DB380
Standard Downtilt Mounting Hardware :	DB5083

Andrew Corporation
2601 Telecom Parkway
Richardson, Texas U.S.A 75082-3521
Tel: 214.631.0310

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

* - Indicates Typical

1/26/2006

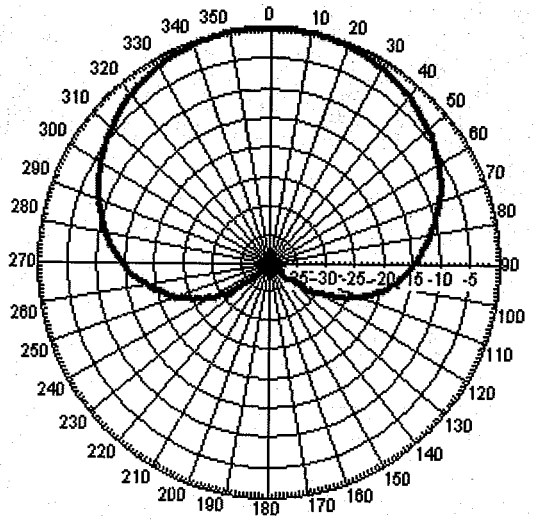
dbtech@andrew.com

DB844H80E-XY

Directed Dipole Antenna

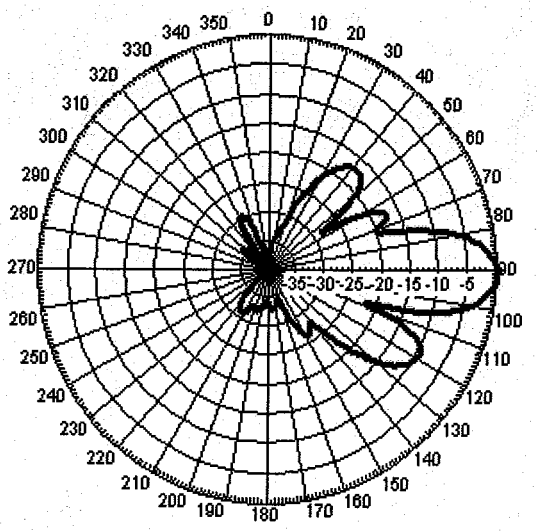
Decibel®
Base Station Antennas

AZIMUTH PATTERN



Freq: 835 MHz, Tilt: 0

ELEVATION PATTERN



Freq: 835 MHz, Tilt: 0

Andrew Corporation
2601 Telecom Parkway
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Fax: 1.800.229.4706
www.andrew.com

* - Indicates Typical

1/26/2006

dbtech@andrew.com

PROPOSED

Vertically Polarized, Log Periodic 80° / 17.5 dBi

LPA-185080/12CF ___

When ordering, replace "___" with connector type.

Mechanical specifications

Length	1806 mm	71.1 in
Width	104 mm	4.1 in
Depth	150 mm	5.9 in
[2] Weight	4.8 kg	10.5 lbs
Wind Area		
Front	0.188 m^2	2.02 ft^2
Side	0.271 m^2	2.92 ft^2
Rated Wind Velocity (Safety factor 2.0)		
	>270 km/hr	>168 mph
Wind load @ 100 mph (161 km/hr)		
Front	325 N	73.1 lbs
Side	440 N	98.9 lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting & Downtilting:
Wall mounted or pole tower mount with mounting brackets.

Mounting bracket kit #26799997
Downtilt bracket kit #26799999
The downtilt bracket kit includes the mounting bracket kit.

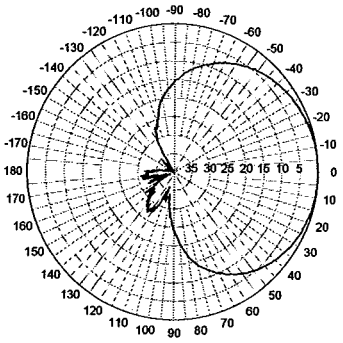
Electrical specifications

Frequency Range	1850-1990 MHz
Impedance	50Ω
[3] Connector	NE, E-DIN
[1] VSWR	<1.4:1
Polarization	Vertical
[1] Gain	17.5 dBi
[2] Power Rating	250 W
[1] Half Power Angle	
H-Plane	80°
E-Plane	5°
[1] Electrical Downtilt	0°
[1] Null Fill	10%
Lightning Protection	Direct Ground

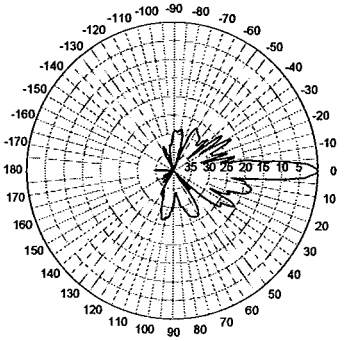
[1] Typical Values
[2] Power Rating limited by connector only.
[3] NE indicates an elongated N Connector.
E-DIN indicates an elongated DIN Connector.
[4] The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation-pattern[1)]



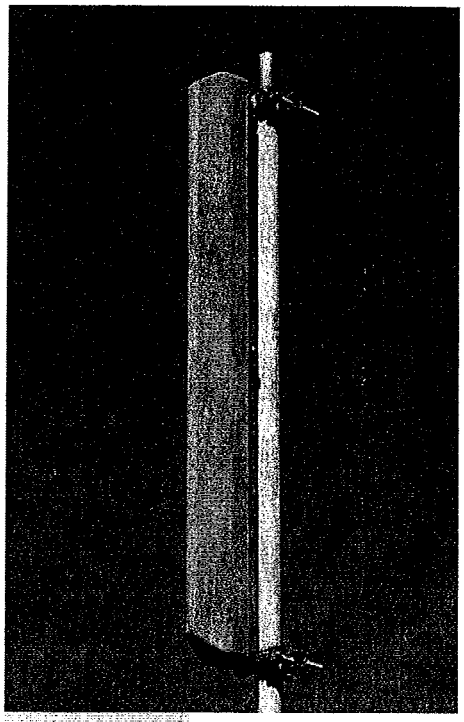
Horizontal



Vertical

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back Ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Every Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

CF Denotes a Center-Fed Connector.

1850-1990 MHz

Amphenol Antel, Inc.
The Antenna Technology Company
1300 Capital Drive, Rockford, IL 61109 Toll-Free (888) 417-9562 Tel. (815) 399-0001
Fax (815) 399-0156 Email antel@antelinc.com www.antelinc.com

Revision Date: 1/27/05

VERTICAL STRUCTURES, INC.

October 20, 2006

Mr. Mark Luther
SBA Network Services
800 South Washington Ave.
Scranton, PA 18505
(570) 558-3450

Subject:

Structural Analysis Report
Verizon Wireless Change-Out
SBA Site Name: Danielson, CT
SBA Site Number: CT-00302-S
155' Nudd M-200 Monopole Tower
Vertical Structures Job Number: 2006-007-034

Dear Mr. Luther,

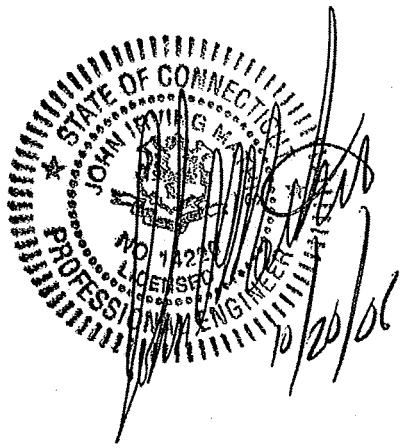
Vertical Structures is pleased to provide you with the results of the structural analysis performed on the 155' tall monopole tower at the Danielson site in Connecticut. The purpose of the analysis was to determine the suitability of the tower upon replacing six (6) existing panel antennas mounted on an existing platform at 155' with six (6) proposed Antel LPA-185080/12CF_2 panel antennas for Verizon Wireless when combined with the existing and reserved equipment on the structure. 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.

Based on our analysis we have determined the tower superstructure and foundation are sufficient for the proposed loading.

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

Respectfully submitted,

Pankaj Taneja
Project Engineer



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Respectfully submitted,

Pankaj Taneja
Project Engineer

TABLE OF CONTENTS

INTRODUCTION

The subject tower is located in Danielson, Connecticut. The 155' Nudd M-200 monopole tower was designed and manufactured by Fred A. Nudd Corporation for SBA in 1998. The existing structure consists of four (4) 12-sided tapered polygonal tubes joined via slip joint connections. The tower is founded on a 33' square by 3'-6" thick mat bearing 4' below grade. The tower was previously reworked in 2002 to accommodate additional loading.

ANALYSIS CRITERIA

The Danielson 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 future antennas, cables and mounts considered in this analysis are listed in Table 1. 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 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 original design loads are listed in Table 2. All cables are assumed to be routed up the interior of the pole unless otherwise noted.

Table 1 – Proposed and Existing Loads

Mount Elevation	Carrier Name	Status	Antennas	Mounts	Feedlines
155'	**Verizon Wireless**	**Proposed**	**(6) Antel LPA-185080/12CF_2 Panels**		
		Remove	**(6) Decibel DB844H80E-XY Panels**		
		Existing	(6) Decibel DB844H80E-XY Panels	14' L.P. Platform	(12) 1 5/8" Coax
147'	Sprint	Existing	(6) Decibel DB980H90E-M Panels	14' L.P. Platform	(6) 1 5/8" Coax
137'	T-Mobile	Existing	(4) Dapa 59212 Panels	14' L.P. Platform	(4) 1 5/8" Coax
		Reserved	(2) Dapa 59212 Panels		(2) 1 5/8" Coax
127'	AT&T	Existing	(3) Allgon 7184 Panels	Flush Mounted	(6) 1 5/8" Coax
			(6) TMAs		
		Reserved	(9) Allgon 7184 Panels	14' L.P. Platform	(6) 1 5/8" Coax

Table 2 – Original Design Loads

Mount Elevation	Carrier Name	Status	Antennas	Mounts	Feedlines
157'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 2 1/4" Coax
147'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 2 1/4" Coax
137'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 2 1/4" Coax
127'	Co-Lo	Design	(12) Decibel DB896 Panels	14' L.P. Platform	(12) 2 1/4" Coax

ANALYSIS PROCEDURE

Table 3 – Resources Utilized

Resource	Remarks
Proposed Loads	SBA E-mail
Existing Loads	SBA E-mail
Tower Drawings	Nudd Drawing No. 98-6410-1
Foundation Drawings	Nudd Drawing No. 98-6410-4
Geotechnical Report	Jaworski Geotech Project No. C98423G
Rework Drawings	Vertical Structures Job No. 2002-007-001

Analysis Methods

RISA Tower (Version 4.6), 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 or the 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 Table 1 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.

ANALYSIS RESULTS

The Danielson tower superstructure is found to be adequate for the intended loading at the wind and ice conditions considered. Calculated foundation reactions are within the original design limits. Table 4 summarizes the condition of the tower. Capacities up to 105% are considered acceptable based on the analysis procedures used.

Table 4 – Tower Component Capacities

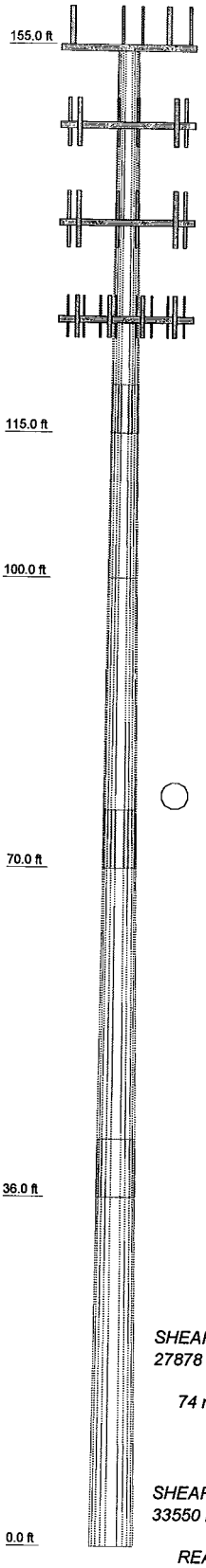
Section Number	Elevation	Percent Capacity Used		
		Pole	Flange Plate	Splice Bolts
1	155' – 115'	56.6	-	-
2 – 3	115' – 70'	95.1	-	-
4	70' – 36'	99.5*	-	-
5	36' – 0'	102.6*	-	-
Anchor Bolts – Tension		95.2		
Base Plate & Gusset – Bending		100.2		
Foundation – Moment		98.5		

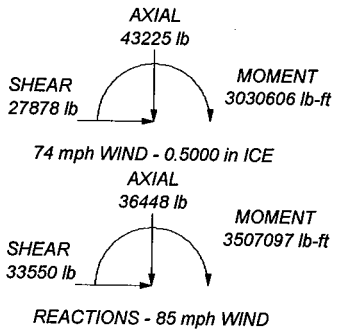
*Indicates percent capacity used is adjusted to account for actual Fy = 53 ksi.

APPENDIX A

Section	1	2	3	4	5
Length (ft)	40.00	20.00	30.00	40.00	42.00
Number of Sides	12	12	12	12	12
Thickness (in)	0.2500	0.2500	0.3125	0.3750	0.4331
Lap Splice (ft)	5.00		6.00	6.00	
Top Dia (in)	26.1250	32.3427	36.1815	40.1629	45.9387
Bot Dia (in)	33.8024	36.1815	41.9395	47.8403	54.0000
Grade	A572-50			A139-52	
Weight (lb)	3255.7	1863.3	3980.2	7170.2	9872.4

26141.9





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Nudd 14' Low Profile Platform (VSI) (Verizon Wireless)	155	6' x 2" Antenna Mount Pipe (VSI) (Sprint)	147
(2) DB844H80E-XY w/Mount Pipe (Verizon Wireless)	155	6' x 2" Antenna Mount Pipe (VSI) (Sprint)	147
(2) DB844H80E-XY w/Mount Pipe (Verizon Wireless)	155	14' Low-Profile Platform (T-Mobile)	137
(2) DB844H80E-XY w/Mount Pipe (Verizon Wireless)	155	(2) 59212 w/Mount Pipe (T-Mobile)	137
(2) LPA-185080/12CF_2 w/ mount pipe (Verizon Wireless)	155	(2) 59212 w/Mount Pipe (T-Mobile)	137
(2) LPA-185080/12CF_2 w/ mount pipe (Verizon Wireless)	155	(2) 59212 w/Mount Pipe (T-Mobile)	137
(2) LPA-185080/12CF_2 w/ mount pipe (Verizon Wireless)	155	6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	137
Nudd 14' Low Profile Platform (VSI) (Sprint)	147	6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	137
(2) DB980H90E-M w/Mount Pipe (Sprint)	147	6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	137
(2) DB980H90E-M w/Mount Pipe (Sprint)	147	14' Low-Profile Platform (ATI)	127
(2) DB980H90E-M w/Mount Pipe (Sprint)	147	(4) 7184 w/Mount Pipe (ATI)	127
6' x 2" Antenna Mount Pipe (VSI) (Sprint)	147	(2) Generic TMA (ATI)	127
		(4) 7184 w/Mount Pipe (ATI)	127
		(2) Generic TMA (ATI)	127
		(4) 7184 w/Mount Pipe (ATI)	127
		(2) Generic TMA (ATI)	127

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A139-52	52 ksi	66 ksi

TOWER DESIGN NOTES

1. Tower is located in Windham 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: 104.6%

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

Job: *Danielson, CT (CT-00302-S)*		
Project: *Vertical Structures Job #2006-007-034*		
Client: SBA	Drawn by: ptaneja	App'd:
Code: TIA/EIA-222-F	Date: 10/20/06	Scale: NTS
Path: \\Nas1\ptaneja\Jobs Working\Monopoles\2006-007-034\Danielson, CT\RISA\Danielson.e		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 Windham 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	155.00-115.00	40.00	5.00	12	26.1250	33.8024	0.2500	1.0000	A572-50 (50 ksi)
L2	115.00-100.00	20.00	0.00	12	32.3427	36.1815	0.2500	1.0000	A572-50 (50 ksi)
L3	100.00-70.00	30.00	6.00	12	36.1815	41.9395	0.3125	1.2500	A139-52 (52 ksi)
L4	70.00-36.00	40.00	6.00	12	40.1629	47.8403	0.3750	1.5000	A139-52 (52 ksi)
L5	36.00-0.00	42.00		12	45.9387	54.0000	0.4331	1.7323	A139-52 (52 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	27.0466	20.8294	1780.0119	9.2632	13.5328	131.5336	3606.7867	10.2516	6.3315	25.326
	34.9948	27.0097	3881.0867	12.0118	17.5097	221.6541	7864.1338	13.2934	8.3890	33.556
L2	34.4772	25.8347	3396.2707	11.4892	16.7535	202.7196	6881.7653	12.7150	7.9979	31.991
	37.4578	28.9248	4766.5713	12.8635	18.7420	254.3258	9658.3658	14.2359	9.0266	36.107
L3	37.4578	36.0931	5927.1766	12.8411	18.7420	316.2512	12010.0668	17.7639	8.8591	28.349
	43.4190	41.8872	9264.4076	14.9025	21.7247	426.4464	18772.2014	20.6156	10.4023	33.287
L4	42.7719	48.0439	9707.9212	14.2441	20.8044	466.6286	19670.8802	23.6457	9.7587	26.023
	49.5279	57.3144	16481.7144	16.9926	24.7813	665.0871	33396.4218	28.2084	11.8162	31.51
L5	48.7515	63.4571	16772.4516	16.2910	23.7963	704.8359	33985.5342	31.2317	11.1509	25.749
	55.9049	74.6985	27358.4285	19.1770	27.9720	978.0648	55435.5933	36.7643	13.3114	30.737

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 155.00-115.00				1	1	1		
L2 115.00-100.00				1	1	1		
L3 100.00-70.00				1	1	1		
L4 70.00-36.00				1	1	1		
L5 36.00-0.00				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
LDF7-50A (1-5/8 FOAM) (Verizon Wireless)	C	No	Inside Pole	155.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (Sprint)	A	No	Inside Pole	147.00 - 5.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (T-Mobile)	B	No	Inside Pole	137.00 - 5.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (AT&T)	C	No	Inside Pole	127.00 - 2.00	12	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	155.00-115.00	A	0.000	0.000	0.000	0.000	157.44

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
		B	0.000	0.000	0.000	0.000	108.24
		C	0.000	0.000	0.000	0.000	511.68
L2	115.00-100.00	A	0.000	0.000	0.000	0.000	73.80
		B	0.000	0.000	0.000	0.000	73.80
		C	0.000	0.000	0.000	0.000	295.20
L3	100.00-70.00	A	0.000	0.000	0.000	0.000	147.60
		B	0.000	0.000	0.000	0.000	147.60
		C	0.000	0.000	0.000	0.000	590.40
L4	70.00-36.00	A	0.000	0.000	0.000	0.000	167.28
		B	0.000	0.000	0.000	0.000	167.28
		C	0.000	0.000	0.000	0.000	669.12
L5	36.00-0.00	A	0.000	0.000	0.000	0.000	152.52
		B	0.000	0.000	0.000	0.000	152.52
		C	0.000	0.000	0.000	0.000	610.08

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	155.00-115.00	A	0.500	0.000	0.000	0.000	0.000	157.44
		B		0.000	0.000	0.000	0.000	108.24
		C		0.000	0.000	0.000	0.000	511.68
L2	115.00-100.00	A	0.500	0.000	0.000	0.000	0.000	73.80
		B		0.000	0.000	0.000	0.000	73.80
		C		0.000	0.000	0.000	0.000	295.20
L3	100.00-70.00	A	0.500	0.000	0.000	0.000	0.000	147.60
		B		0.000	0.000	0.000	0.000	147.60
		C		0.000	0.000	0.000	0.000	590.40
L4	70.00-36.00	A	0.500	0.000	0.000	0.000	0.000	167.28
		B		0.000	0.000	0.000	0.000	167.28
		C		0.000	0.000	0.000	0.000	669.12
L5	36.00-0.00	A	0.500	0.000	0.000	0.000	0.000	152.52
		B		0.000	0.000	0.000	0.000	152.52
		C		0.000	0.000	0.000	0.000	610.08

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	155.00-115.00	0.0000	0.0000	0.0000	0.0000
L2	115.00-100.00	0.0000	0.0000	0.0000	0.0000
L3	100.00-70.00	0.0000	0.0000	0.0000	0.0000
L4	70.00-36.00	0.0000	0.0000	0.0000	0.0000
L5	36.00-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Nudd 14' Low Profile Platform (VSI) (Verizon Wireless)	C	None		0.0000	155.00	No Ice 1/2" Ice	32.00 42.00	32.00 42.00	1350.00 1750.00
(2) DB844H80E-XY w/Mount Pipe (Verizon Wireless)	A	From Centroid-Face	4.04 0.81 2.00	10.0000	155.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB844H80E-XY w/Mount Pipe (Verizon Wireless)	B	From Centroid-Face	4.04 0.81 2.00	10.0000	155.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB844H80E-XY w/Mount Pipe (Verizon Wireless)	C	From Centroid-Face	4.04 0.81 2.00	10.0000	155.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) LPA-185080/12CF_2 w/ mount pipe (Verizon Wireless)	A	From Centroid-Face	4.04 0.81 2.00	10.0000	155.00	No Ice 1/2" Ice	3.55 3.99	5.99 6.94	32.40 72.35
(2) LPA-185080/12CF_2 w/ mount pipe (Verizon Wireless)	B	From Centroid-Face	4.04 0.81 2.00	10.0000	155.00	No Ice 1/2" Ice	3.55 3.99	5.99 6.94	32.40 72.35
(2) LPA-185080/12CF_2 w/ mount pipe (Verizon Wireless) **	C	From Centroid-Face	4.04 0.81 2.00	10.0000	155.00	No Ice 1/2" Ice	3.55 3.99	5.99 6.94	32.40 72.35
Nudd 14' Low Profile Platform (VSI) (Sprint)	C	None		0.0000	147.00	No Ice 1/2" Ice	32.00 42.00	32.00 42.00	1350.00 1750.00
(2) DB980H90E-M w/Mount Pipe (Sprint)	A	From Centroid-Face	4.04 0.00 0.00	0.0000	147.00	No Ice 1/2" Ice	4.27 4.86	3.86 4.95	34.05 69.84
(2) DB980H90E-M w/Mount Pipe (Sprint)	B	From Centroid-Face	4.04 0.00 0.00	0.0000	147.00	No Ice 1/2" Ice	4.27 4.86	3.86 4.95	34.05 69.84
(2) DB980H90E-M w/Mount Pipe (Sprint)	C	From Centroid-Face	4.04 0.00 0.00	0.0000	147.00	No Ice 1/2" Ice	4.27 4.86	3.86 4.95	34.05 69.84
6' x 2" Antenna Mount Pipe (VSI) (Sprint)	A	From Centroid-Face	4.04 0.00 0.00	0.0000	147.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
6' x 2" Antenna Mount Pipe (VSI) (Sprint)	B	From Centroid-Face	4.04 0.00 0.00	0.0000	147.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
6' x 2" Antenna Mount Pipe (VSI) (Sprint) **	C	From Centroid-Face	4.04 0.00 0.00	0.0000	147.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
14' Low-Profile Platform (T-Mobile)	C	None		0.0000	137.00	No Ice 1/2" Ice	25.00 31.00	25.00 31.00	1000.00 1300.00
(2) 59212 w/Mount Pipe (T-Mobile)	A	From Centroid-Face	4.04 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice	5.00 5.56	4.30 5.49	40.15 79.48
(2) 59212 w/Mount Pipe (T-Mobile)	B	From Centroid-Face	4.04 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice	5.00 5.56	4.30 5.49	40.15 79.48
(2) 59212 w/Mount Pipe (T-Mobile)	C	From Centroid-Face	4.04 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice	5.00 5.56	4.30 5.49	40.15 79.48
6' x 2" Antenna Mount Pipe (VSI)	A	From Centroid-	4.04 0.00	0.0000	137.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83

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
(T-Mobile)		Face	0.00						
6' x 2" Antenna Mount Pipe	B	From	4.04	0.0000	137.00	No Ice	1.43	1.43	23.00
(VSI)		Centroid-	0.00			1/2" Ice	1.92	1.92	33.83
(T-Mobile)		Face	0.00						
6' x 2" Antenna Mount Pipe	C	From	4.04	0.0000	137.00	No Ice	1.43	1.43	23.00
(VSI)		Centroid-	0.00			1/2" Ice	1.92	1.92	33.83
(T-Mobile)		Face	0.00						
**									
14' Low-Profile Platform	C	None		0.0000	127.00	No Ice	25.00	25.00	1000.00
(AT&T)						1/2" Ice	31.00	31.00	1300.00
(4) 7184 w/Mount Pipe	A	From	4.04	0.0000	127.00	No Ice	3.33	3.56	36.75
(AT&T)		Centroid-	0.00			1/2" Ice	3.94	4.60	68.31
		Face	0.00						
(2) Generic TMA	A	From	4.04	0.0000	127.00	No Ice	1.09	0.54	25.00
(AT&T)		Centroid-	0.00			1/2" Ice	1.24	0.67	32.36
		Face	0.00						
(4) 7184 w/Mount Pipe	B	From	4.04	0.0000	127.00	No Ice	3.33	3.56	36.75
(AT&T)		Centroid-	0.00			1/2" Ice	3.94	4.60	68.31
		Face	0.00						
(2) Generic TMA	B	From	4.04	0.0000	127.00	No Ice	1.09	0.54	25.00
(AT&T)		Centroid-	0.00			1/2" Ice	1.24	0.67	32.36
		Face	0.00						
(4) 7184 w/Mount Pipe	C	From	4.04	0.0000	127.00	No Ice	3.33	3.56	36.75
(AT&T)		Centroid-	0.00			1/2" Ice	3.94	4.60	68.31
		Face	0.00						
(2) Generic TMA	C	From	4.04	0.0000	127.00	No Ice	1.09	0.54	25.00
(AT&T)		Centroid-	0.00			1/2" Ice	1.24	0.67	32.36
		Face	0.00						
**									

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	155 - 115 (1)	TP33.8024x26.125x0.25	40.00	0.00	0.0	30.000	26.2372	-8398.93	787115.00	0.011
L2	115 - 100 (2)	TP36.1815x32.3427x0.25	20.00	0.00	0.0	29.173	28.9248	-11305.90	843829.00	0.013
L3	100 - 70 (3)	TP41.9395x36.1815x0.3125	30.00	0.00	0.0	31.200	40.7284	-15343.90	1270730.00	0.012
L4	70 - 36 (4)	TP47.8403x40.1629x0.375 H1-3 (1.35 CR) - 4	40.00	0.00	0.0	31.200	55.9238	-23598.70	1744820.00	0.014
L5	36 - 0 (5)	TP54x45.9387x0.4331 H1-3 (1.39 CR) - 5	42.00	0.00	0.0	31.200	74.6985	-36428.00	2330590.00	0.016

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	155 - 115 (1)	TP33.8024x26.125x0.25	388499.17	-22.294	30.000	0.743	0.00	0.000	30.000	0.000
L2	115 - 100 (2)	TP36.1815x32.3427x0.25	775775.00	-36.604	29.173	1.255	0.00	0.000	29.173	0.000
L3	100 - 70 (3)	TP41.9395x36.1815x0.3125	1310558.33	-39.015	31.200	1.250	0.00	0.000	31.200	0.000
L4	70 - 36 (4)	TP47.8403x40.1629x0.375	2203483.33	-41.767	31.200	1.339	0.00	0.000	31.200	0.000
L5	36 - 0 (5)	TP54x45.9387x0.4331	3507100.00	-43.029	31.200	1.379	0.00	0.000	31.200	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	155 - 115 (1)	TP33.8024x26.125x0.25	0.011	0.743	0.000	0.754 ✓	1.333	H1-3 ✓
L2	115 - 100 (2)	TP36.1815x32.3427x0.25	0.013	1.255	0.000	1.268 ✓	1.333	H1-3 ✓
L3	100 - 70 (3)	TP41.9395x36.1815x0.3125	0.012	1.250	0.000	1.263 ✓	1.333	H1-3 ✓
L4	70 - 36 (4)	TP47.8403x40.1629x0.375	0.014	1.339	0.000	1.352 ✗	1.333	H1-3 ✗
L5	36 - 0 (5)	TP54x45.9387x0.4331	0.016	1.379	0.000	1.395 ✗	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	155 - 115	Pole	TP33.8024x26.125x0.25	1	-8398.93	1049224.25	56.6	Pass
L2	115 - 100	Pole	TP36.1815x32.3427x0.25	2	-11305.90	1124824.01	95.1	Pass
L3	100 - 70	Pole	TP41.9395x36.1815x0.3125	3	-15343.90	1693883.02	94.7	Pass
L4	70 - 36	Pole	TP47.8403x40.1629x0.375	4	-23598.70	2325844.96	101.4	Fail ✗
L5	36 - 0	Pole	TP54x45.9387x0.4331	5	-36428.00	3106676.34	104.6	Fail ✗
							Summary	
						Pole (L5)	104.6	Fail ✗
						RATING =	**104.6**	**Fail ✗**