



# 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](mailto:siting.council@ct.gov)

Internet: [ct.gov/csc](http://ct.gov/csc)

Daniel F. Caruso

Chairman

February 2, 2009

Steven L. Levine

Real Estate Consultant

New Cingular Wireless PCS, LLC

500 Enterprise Drive

Rocky Hill, CT 06067-3900

RE: **EM-CING-032-081209** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 712 Bread and Milk Street, Coventry, Connecticut.

Dear Mr. Levine:

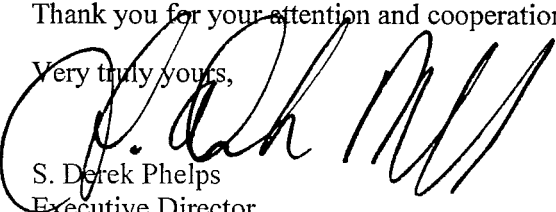
The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated December 9, 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  
Executive Director

SDP/MP/laf

c: The Honorable James E. Clark, Chairman Town Council, Town of Coventry  
John A. Elsesser, Town Manager, Town of Coventry  
Eric M. Trott, Director of Planning & Development, Town of Coventry  
SBA Communications Corporation



CONNECTICUT SITING COUNCIL  
Affirmative Action / Equal Opportunity Employer



EM-CING-032-081209

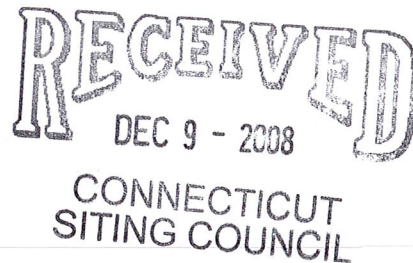
New Cingular Wireless PCS, LLC  
500 Enterprise Drive  
Rocky Hill, Connecticut 06067-3900  
Phone: (860) 513-7636  
Fax: (860) 513-7190

ORIGINAL

Steven L. Levine  
Real Estate Consultant

HAND DELIVERED

December 9, 2008



Honorable Daniel F. Caruso, Chairman,  
and Members of the Connecticut Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing tele-communications facility located at 712 Bread and Milk Street, Coventry (owner, SBA)

Dear Chairman Caruso and Members of the Council:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile (GSM) communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall

squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected. Modifications to the existing site include all or some of the following as necessary to bring the site into conformance with the plan:

- Replacement of existing panel antennas with new antennas or, installation of additional antennas of a size required to accommodate UMTS.
- Installation of small tower mount amplifiers ("TMA's") and/or diplexers to the platform on which the panel antennas are mounted to enhance signal reception.
- Installation of additional or larger coaxial cables as required.
- Installation of an additional equipment cabinet in existing shelters, or on existing or enlarged concrete pads.
- Radome enlargement for flagpole and "stick" structures to accommodate larger antennas and additional associated equipment.

None of these modifications will extend the height of the tower.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. Radio frequency power density may increase due to use of one or more GSM channel for UMTS transmissions. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, New Cingular Wireless respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 513-7636 with questions concerning this matter. Thank you for your consideration.

Sincerely,



Steven L. Levine  
Real Estate Consultant

Attachments

**NEW CINGULAR WIRELESS  
Equipment Modification**

712 Bread and Milk Street, Coventry  
Site Number 5818  
Former AT&T cell site  
Exempt Modification approved 10/02

**Tower Owner/Manager:** SBA

**Equipment Configuration:** Monopole

**Current and/or Approved:** Three Allgon 7250 panel antennas @ 162 ft AGL  
Six runs 1 5/8 inch coax cable  
Concrete pad with outdoor cabinets

**Planned Modifications:** Remove all existing antennas  
Install six Powerwave 7770 antennas (or equivalent) @ 162 ft  
Install six TMA's and six diplexers @ 162 ft  
Install six additional lines 1 5/8 inch coax  
Remove one existing outdoor cabinet  
Install one new outdoor cabinet for UMTS

**Power Density:**

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 5.4 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 7.4 % of the standard.

**Existing**

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm <sup>2</sup> )	Standard Limits (mW/cm <sup>2</sup> )	Percent of Limit
Other Users *							2.31
AT&T GSM *	162	1900 Band	16	140	0.0307	1.0000	3.07
<b>Total</b>							<b>5.4%</b>

\* Per CSC records

### Proposed

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm <sup>2</sup> )	Standard Limits (mW/cm <sup>2</sup> )	Percent of Limit
Other Users							2.31
AT&T UMTS	162	880 - 894	1	500	0.0069	0.5867	1.17
AT&T GSM	162	1900 Band	2	427	0.0117	1.0000	1.17
AT&T GSM	162	880 - 894	4	296	0.0162	0.5867	2.76
<b>Total</b>							<b>7.4%</b>

\* Per CSC records

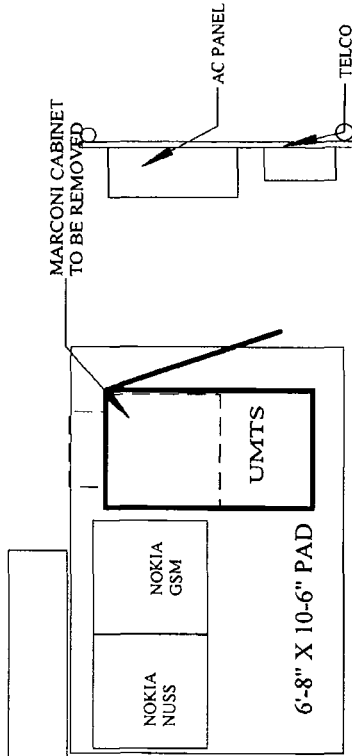
### Structural information:

The attached structural analysis demonstrates that the tower and foundation have adequate structural capacity to accommodate the proposed equipment modifications. (Vertical Structures, Inc., 12/5/08)



SITE NUMBER  
5818  
SITE NAME  
Coventry West

TITLE:	EQUIPMENT PLAN
MISC. INFO:	
DWG. BY:	SGB
DATE:	07/07/08
SCALE:	N.T.S.
SHEET:	1 OF 1





**New Cingular Wireless PCS, LLC**  
500 Enterprise Drive  
Rocky Hill, Connecticut 06067-3900  
Phone: (860) 513-7636  
Fax: (860) 513-7190

**Steven L. Levine**  
Real Estate Consultant

December 9, 2008

John A. Elsesser, Town Manager  
Town of Coventry  
Town Office Bldg. 1712 Main Street  
Coventry, CT 06238

Re: Telecommunications Facility – Bread and Milk Street

Dear Mr. Elsesser:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System (“UMTS”) capability, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC (“AT&T”) will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (“R.C.S.A.”) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T’s proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes AT&T’s proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council’s procedures, please call me at (860) 513-7636 or Mr. Derek Phelps, Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine  
Real Estate Consultant

Enclosure



December 5, 2008

Mr. Shawn Nottage  
SBA Communications  
18 Ballou Street, #7  
Putnam, CT 06260  
(860) 816-6608

Subject:

Structural Analysis Report  
AT&T Mobility Change-Out  
AT&T Mobility Site ID: N/A  
SBA Site Name: Coventry 2, CT  
SBA Site Number: CT-02573-S  
175' Nudd MQ-180 Monopole Tower  
Vertical Structures Job Number: 2008-007-033

# 5818  
BREAD : MILK STREET  
COVENTRY

Dear Mr. Nottage,

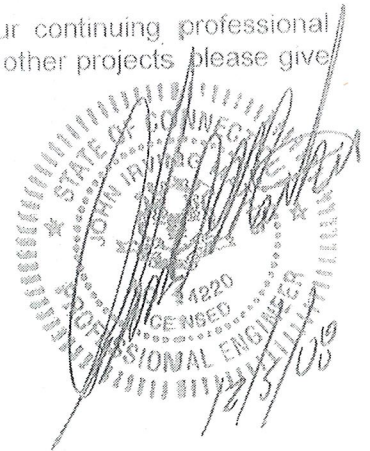
Vertical Structures is pleased to provide you with the results of the structural analysis performed on the 175' tall monopole tower at the Coventry 2 site in Connecticut. The purpose of the analysis was to determine the suitability of the tower upon replacing the three (3) existing panel antennas mounted on three (3) existing sidearms at 162' with six (6) proposed Powerwave 7770.00 panel antennas, six (6) proposed Powerwave LGP21401 tower mounted amplifiers, and six (6) proposed Powerwave LGP21901 diplexers mounted on one (1) proposed low profile platform for AT&T Mobility 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 100 MPH basic "3-second gust" wind speed per 2006 IRC Equation 1b-34.

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,

Ben Greenwell  
Project Engineer





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## INTRODUCTION

The subject tower is located in Coventry, Connecticut. The 175' Nudd MQ-180 monopole tower was designed and manufactured in 2002 for SBA Network Services with the option of being extended 15', up to 190'. The tower was designed and built to replace the previously existing tower at this site. The existing structure consists of four (4) 18-sided tapered polygonal sections joined via slip joint connections and is founded on a 32' square by 4' thick mat bearing 6' below grade.

## ANALYSIS CRITERIA

The Coventry 2 monopole tower was analyzed in accordance with the current EIA-222-F publication, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." The design antennas, lines, and mounts considered in this analysis are listed in Table 1. The applied forces for this analysis 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 radial ice accumulation. The original design loads are listed in Table 2. The EIA minimum basic wind speed for Tolland County, Connecticut is 85 MPH. All coax are assumed to be routed up the interior of the tower unless otherwise noted.

**Table 1 – Proposed, Existing, and Reserved Loads**

Mount Elevation	Carrier Name	Status	Antennas	Mounts	Feedlines
173'	T-Mobile	Existing	(3) EMS Wireless RR90-17-02DP Panels	(1) 14' L.P. Platform	(6) 1 5/8" Coax
			(6) Allen Telecom FE15501P77/75 TMA's		
		Reserved	(3) EMS Wireless RR90-17-02DP Panels		(6) 1 5/8" Coax
162'	AT&T Mobility	Remove	(3) Panels	(3) 2' Sidearms	
		Existing			(6) 1 5/8" Coax
		Proposed	(6) Powerwave 7770.00 Panels	(1) 14' L.P. Platform	(6) 1 5/8" Coax
(6) Powerwave LGP21401 TMA's					
			(6) Powerwave LGP21901 Diplexers		

**Table 2 – Original Design Loads**

Mount Elevation	Carrier Name	Status	Antennas	Mounts	Feedlines
190'		Design	(12) Decibel DB896	(1) 14' L.P. Platform	
180'		Design	(12) Swedcom ALP 9212 Panels	(1) 14' L.P. Platform	
170'		Design	(12) Swedcom ALP 9212 Panels	(1) 14' L.P. Platform	
160'		Design	(12) Swedcom ALP 9212 Panels	(1) 14' L.P. Platform	
150'		Design	(12) Swedcom ALP 9212 Panels	(1) 14' L.P. Platform	
140'		Design	(12) Swedcom ALP 9212 Panels	(1) 14' L.P. Platform	
130'		Design	(12) Swedcom ALP 9212 Panels	(1) 14' L.P. Platform	

## ANALYSIS PROCEDURE

**Table 3 – Resources Utilized**

<b>Resource</b>	<b>Remarks</b>
Proposed Loads	SBA Email Communication Dated "November 10, 2008"
Existing Loads	SBA Email Communication Dated "November 10, 2008"
Tower Design	Nudd Project No. 7491R Rev. A
Foundation Information	Nudd Project No. 7491R Rev. A
Geotechnical Report	Jaworski Geotech, Inc. Project No. 00214G

### ***Analysis Methods***

RISA Tower (Version 5.2), 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/TIA/EIA-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**

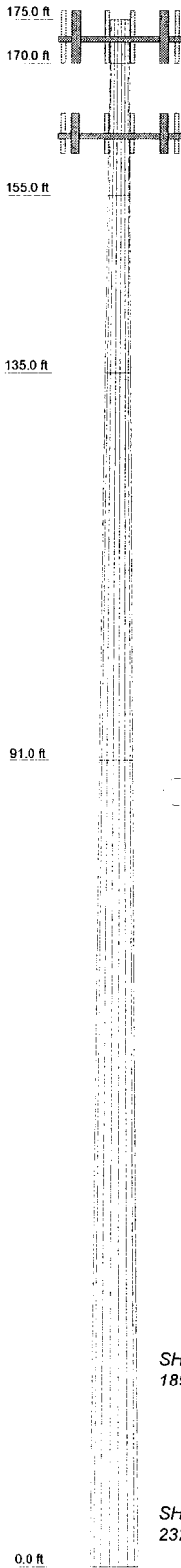
The Coventry 2 tower superstructure is found to be adequate for the intended loading at the wind and ice conditions considered. Calculated foundation reactions are within the original design limits. Table 4 summarizes the condition of the tower. Capacities up to 100% are considered acceptable based on the analysis procedures used.

**Table 4 – Tower Component Capacities**

Section Number	Elevation	Percent Capacity Used		
		Pole	Flange Plate	Splice Bolts
1	175' – 170'	2.3	-	-
2	170' – 155'	14.6	-	-
3	155' – 135'	24.3	-	-
4	135' – 91'	34.7	-	-
6	91' – 0'	42.6	-	-
Anchor Bolts – Tension		49.8		
Base Plate – Bending		45.7		
Foundation – Moment		42.8		

## APPENDIX A

Section	5	4	3	2	•1
Length (ft)	91.00	44.00	20.00	15.00	5.00
Number of Sides	18	18	18	18	18
Thickness (in)	0.4375	0.3750	0.3125	0.2500	0.2500
Top Dia (in)	44.0250	34.1250	29.6250	26.2500	25.1250
Bot Dia (in)	64.5000	44.0250	34.1250	29.6250	26.2500
Grade	A572-65	A572-65	A572-65	A572-65	A572-65
Weight (lb)	23144.4	6896.6	2130.6	1121.4	343.4



### DESIGNED APPURTENANCE LOADING

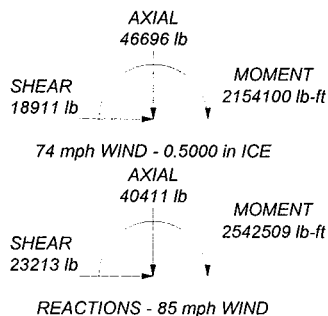
TYPE	ELEVATION	TYPE	ELEVATION
Nudd 14' Low Profile Platform (VSI) (T-Mobile)	173	Nudd 14' Low Profile Platform (VSI) (ATTI Mobility)	162
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	173	(2) 7770.00 (ATTI Mobility)	162
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	173	(2) 7770.00 (ATTI Mobility)	162
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	173	(2) 7770.00 (ATTI Mobility)	162
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	173	(2) LGP21401 TMA (VSI) (ATTI Mobility)	162
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	173	(2) LGP21401 TMA (VSI) (ATTI Mobility)	162
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	173	(2) LGP21401 TMA (VSI) (ATTI Mobility)	162
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	173	(2) LGP 21901 Diplexer (VSI) (ATTI Mobility)	162
(2) Generic TMA (T-Mobile)	173	(2) LGP 21901 Diplexer (VSI) (ATTI Mobility)	162
(2) Generic TMA (T-Mobile)	173	(2) LGP 21901 Diplexer (VSI) (ATTI Mobility)	162
(2) Generic TMA (T-Mobile)	173	(2) LGP 21901 Diplexer (VSI) (ATTI Mobility)	162


### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower is located in Tolland 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: 42.6%



 <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	Job: <b>Coventry 2, CT (CT-02573-S)</b>
	Project: <b>Vertical Structures Job No. 2008-007-033</b>
	Client: <b>SBA</b> Drawn by: <b>Ben Greenwell</b> App'd:
	Code: <b>TIA/EIA-222-F</b> Date: <b>12/05/08</b> Scale: <b>NTS</b>
	Path: <b>...</b> Dwg No: <b>E-1</b>

<b>RISATower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Coventry 2, CT (CT-02573-S)	<b>Page</b> 1 of 6
	<b>Project</b> Vertical Structures Job No. 2008-007-033	<b>Date</b> 13:17:48 12/05/08
	<b>Client</b> SBA	<b>Designed by</b> Ben Greenwell

## 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 Tolland 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	175.00-170.00	5.00	0.00	18	25.1250	26.2500	0.2500	1.0000	A572-65 (65 ksi)
L2	170.00-155.00	15.00	0.00	18	26.2500	29.6250	0.2500	1.0000	A572-65 (65 ksi)
L3	155.00-135.00	20.00	0.00	18	29.6250	34.1250	0.3125	1.2500	A572-65 (65 ksi)
L4	135.00-91.00	44.00	0.00	18	34.1250	44.0250	0.3750	1.5000	A572-65 (65 ksi)
L5	91.00-0.00	91.00		18	44.0250	64.5000	0.4375	1.7500	A572-65 (65 ksi)

<b>RISATower</b>  <b>Vertical Structures, Inc.</b> 309 Spangler Drive, Suite E Richmond, KY 40475 Phone: (859) 624-8360 FAX: (859) 624-8369	<b>Job</b> Coventry 2, CT (CT-02573-S)	<b>Page</b> 2 of 6
	<b>Project</b> Vertical Structures Job No. 2008-007-033	<b>Date</b> 13:17:48 12/05/08
	<b>Client</b> SBA	<b>Designed by</b> Ben Greenwell

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q <sup>2</sup> in <sup>2</sup>	w in	w/t
L1	25.5126	19.7383	1543.0274	8.8306	12.7635	120.8938	3088.0852	9.8710	3.9820	15.928
	26.6549	20.6310	1761.9940	9.2300	13.3350	132.1330	3526.3065	10.3175	4.1800	16.72
L2	26.6549	20.6310	1761.9940	9.2300	13.3350	132.1330	3526.3065	10.3175	4.1800	16.72
	30.0820	23.3091	2541.0781	10.4281	15.0495	168.8480	5085.4997	11.6567	4.7740	19.096
L3	30.0820	29.0743	3156.1161	10.4059	15.0495	209.7157	6316.3852	14.5399	4.6640	14.925
	34.6514	33.5378	4844.2466	12.0034	17.3355	279.4408	9694.8674	16.7721	5.4560	17.459
L4	34.6514	40.1709	5780.9202	11.9812	17.3355	333.4729	11569.4470	20.0893	5.3460	14.256
	44.7042	51.9544	12506.2868	15.4957	22.3647	559.1976	25029.0297	25.9821	7.0884	18.902
L5	44.7042	60.5267	14528.0830	15.4736	22.3647	649.5988	29075.2823	30.2691	6.9784	15.951
	65.4950	88.9588	46124.7556	22.7422	32.7660	1407.7018	92310.2034	44.4878	10.5820	24.187

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft <sup>2</sup>	in					in	in
L1 175.00-170.00				1	1	1		
L2 170.00-155.00				1	1	1		
L3 155.00-135.00				1	1	1		
L4 135.00-91.00				1	1	1		
L5 91.00-0.00				1	1	1		

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C <sub>MA</sub>	Weight
				ft		ft <sup>2</sup> /ft	plf
LDF7-50A (1-5/8 FOAM) (T-Mobile)	C	No	Inside Pole	173.00 - 5.00	12	No Ice 1/2" Ice	0.00 0.82
LDF7-50A (1-5/8 FOAM) (AT&T Mobility)	C	No	Inside Pole	162.00 - 5.00	12	No Ice 1/2" Ice	0.00 0.82

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>MA</sub> In Face ft <sup>2</sup>	C <sub>MA</sub> Out Face ft <sup>2</sup>	Weight lb
L1	175.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	29.52
L2	170.00-155.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	216.48



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Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight lb
L3	155.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	393.60
L4	135.00-91.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	865.92
L5	91.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1692.48

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight lb
L1	175.00-170.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	29.52
L2	170.00-155.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	216.48
L3	155.00-135.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	393.60
L4	135.00-91.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	865.92
L5	91.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1692.48

### Feed Line Center of Pressure

Section	Elevation ft	$CP_x$ in	$CP_z$ in	$CP_x$ Ice in	$CP_z$ Ice in
L1	175.00-170.00	0.0000	0.0000	0.0000	0.0000
L2	170.00-155.00	0.0000	0.0000	0.0000	0.0000
L3	155.00-135.00	0.0000	0.0000	0.0000	0.0000
L4	135.00-91.00	0.0000	0.0000	0.0000	0.0000
L5	91.00-0.00	0.0000	0.0000	0.0000	0.0000

### Discrete Tower Loads

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub> Front	C <sub>A</sub> A <sub>A</sub> Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
Nudd 14' Low Profile Platform (VSI) (T-Mobile)	C	None			0.0000	173.00	No Ice 1/2" Ice	32.00 42.00	32.00 42.00	1350.00 1750.00
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	A	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	B	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(2) 6' x 2" Antenna Mount Pipe (VSI) (T-Mobile)	C	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	A	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	4.91 5.57	3.64 4.70	43.55 81.64
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	B	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	4.91 5.57	3.64 4.70	43.55 81.64
(2) RR90-17-02DP w/Mount Pipe (T-Mobile)	C	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	4.91 5.57	3.64 4.70	43.55 81.64
(2) Generic TMA (T-Mobile)	A	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	1.09 1.24	0.54 0.67	25.00 32.36
(2) Generic TMA (T-Mobile)	B	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	1.09 1.24	0.54 0.67	25.00 32.36
(2) Generic TMA (T-Mobile)	C	From Centroid-Face	4.50 0.00	0.00	0.0000	173.00	No Ice 1/2" Ice	1.09 1.24	0.54 0.67	25.00 32.36
**										
Nudd 14' Low Profile Platform (VSI) (AT&T Mobility)	C	None			0.0000	162.00	No Ice 1/2" Ice	32.00 42.00	32.00 42.00	1350.00 1750.00
(2) 7770.00 (AT&T Mobility)	A	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	35.00 67.63
(2) 7770.00 (AT&T Mobility)	B	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	35.00 67.63
(2) 7770.00 (AT&T Mobility)	C	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	35.00 67.63
(2) LGP21401 TMA (VSI) (AT&T Mobility)	A	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	14.10 21.26
(2) LGP21401 TMA (VSI) (AT&T Mobility)	B	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	14.10 21.26
(2) LGP21401 TMA (VSI) (AT&T Mobility)	C	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	14.10 21.26
(2) LGP 21901 Diplexer (VSI) (AT&T Mobility)	A	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	0.27 0.34	0.18 0.25	5.50 7.92
(2) LGP 21901 Diplexer (VSI)	B	From Centroid-Face	4.50 0.00	0.00	0.0000	162.00	No Ice 1/2" Ice	0.27 0.34	0.18 0.25	5.50 7.92

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	$C_A A_A$ Front	$C_A A_A$ Side	Weight
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(AT&T Mobility)		Face	0.00					
(2) LGP 21901 Diplexer (VSI)	C	From Centroid-Face	4.50	0.0000	162.00	No Ice	0.27	5.50
(AT&T Mobility)		Face	0.00			1/2" Ice	0.34	7.92

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	$F_a$ ksi	A in <sup>2</sup>	Actual P lb	Allow. $P_a$ lb	Ratio $\frac{P}{P_a}$
L1	175 - 170 (1)	TP26.25x25.125x0.25	5.00	0.00	0.0	39.000	20.6310	-2091.64	804609.00	0.003
L2	170 - 155 (2)	TP29.625x26.25x0.25	15.00	0.00	0.0	39.000	23.3091	-4921.35	909053.00	0.005
L3	155 - 135 (3)	TP34.125x29.625x0.3125	20.00	0.00	0.0	39.000	33.5378	-7418.73	1307970.00	0.006
L4	135 - 91 (4)	TP44.025x34.125x0.375	44.00	0.00	0.0	39.000	51.9544	-15201.60	2026220.00	0.008
L5	91 - 0 (5)	TP64.5x44.025x0.4375	91.00	0.00	0.0	39.000	88.9588	-40396.70	3469390.00	0.012

### 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	175 - 170 (1)	TP26.25x25.125x0.25	11857.1	-1.077	39.000	0.028	0.00	0.000	39.000	0.000
L2	170 - 155 (2)	TP29.625x26.25x0.25	103541.67	-7.359	39.000	0.189	0.00	0.000	39.000	0.000
L3	155 - 135 (3)	TP34.125x29.625x0.3125	289350.83	-12.426	39.000	0.319	0.00	0.000	39.000	0.000
L4	135 - 91 (4)	TP44.025x34.125x0.375	827794.17	-17.764	39.000	0.455	0.00	0.000	39.000	0.000
L5	91 - 0 (5)	TP64.5x44.025x0.4375	2542508.33	-21.674	39.000	0.556	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	175 - 170 (1)	TP26.25x25.125x0.25	0.003	0.028	0.000	0.030 ✓	1.333	H1-3 ✓

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Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P}{P_a}$	$\frac{f_{bx}}{F_{bx}}$	$\frac{f_{by}}{F_{by}}$			
L2	170 - 155 (2)	TP29.625x26.25x0.25	0.005	0.189	0.000	0.194 ✓	1.333	H1-3 ✓
L3	155 - 135 (3)	TP34.125x29.625x0.3125	0.006	0.319	0.000	0.324 ✓	1.333	H1-3 ✓
L4	135 - 91 (4)	TP44.025x34.125x0.375	0.008	0.455	0.000	0.463 ✓	1.333	H1-3 ✓
L5	91 - 0 (5)	TP64.5x44.025x0.4375	0.012	0.556	0.000	0.567 ✓	1.333	H1-3 ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P <sub>allow</sub> lb	% Capacity	Pass Fail	
L1	175 - 170	Pole	TP26.25x25.125x0.25	1	-2091.64	1072543.75	2.3	Pass	
L2	170 - 155	Pole	TP29.625x26.25x0.25	2	-4921.35	1211767.60	14.6	Pass	
L3	155 - 135	Pole	TP34.125x29.625x0.3125	3	-7418.73	1743523.94	24.3	Pass	
L4	135 - 91	Pole	TP44.025x34.125x0.375	4	-15201.60	2700951.15	34.7	Pass	
L5	91 - 0	Pole	TP64.5x44.025x0.4375	5	-40396.70	4624696.68	42.6	Pass	
							Summary		
							Pole (L5)	42.6	Pass
							<b>RATING =</b>	<b>42.6</b>	<b>Pass</b>