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Hartford, CT 06103-3597
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August 2, 2012

RECEIVED
AUG - 3 2012
CONNECTICUT
SITING COUNCIL

Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-105-120125 – 125 Mile Creek Road, Old Lyme, Connecticut**
EM-VER-117-120306 – 80 Lonetown Road, Redding, Connecticut
EM-VER-108-120227 – 85 Quaker Farms Road, Seymour, Connecticut
EM-VER-056-120217 – 8 Upper Meadow Road, Granby, Connecticut
EM-VER-132-120605 – Burnham Street, South Windsor, Connecticut
EM-VER-064-120622 – 439-455 Homestead Avenue, Hartford, Connecticut
EM-VER-077-120412 – 60 Adams Street, Manchester, Connecticut

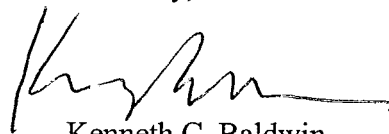
Completion of Construction Activity

Dear Ms. Roberts:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced Cellco Partnership d/b/a Verizon Wireless telecommunications facilities has been completed.

If you have any questions or need any additional information regarding this facility please do not hesitate to contact me.

Sincerely,



Kenneth C. Baldwin

Copy to:
Sandy M. Carter



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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

www.ct.gov/csc

June 22, 2012

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

RE: **EM-VER-132-120605**- Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 190 Burnham Street, South Windsor, 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 with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated June 4, 2012. 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. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

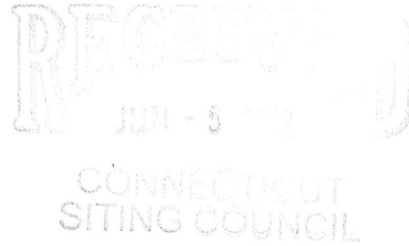
LR/CDM/jbw

c: The Honorable Thomas Delnicki, Mayor, Town of South Windsor
Michele R. Lipe, AICP, Town Planner, Town of South Windsor
Marcia Banach, Director of Planning, Town of South Windsor
Crown Castle USA, Inc.



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June 4, 2012



Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap
190 Burnham Street, South Windsor, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains fifteen (15) wireless telecommunications antennas at the top of the existing 110-foot tower at the above-referenced address. The tower is owned by Crown Castle. The Council approved Cellco’s shared use of this tower in 1990. Cellco now intends to replace six (6) of its antennas with six (6) model LPA-171080-8CF PCS antennas at the same height on tower. Attached behind Tab 1 are the specifications for the 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 Matthew B. Galligan, Town Manager for the Town of South Windsor. A copy of this letter is also being sent to Abraham and Beverly Glassman, Trustees, the owners 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 an increase in the height of the existing tower. Cellco’s replacement antennas will be located at the same level on the tower.



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ROBINSON & COLE^{LLP}

Linda Roberts
June 4, 2012
Page 2

2. The proposed modifications will not involve any change to 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) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower and foundation can support Cellco's 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:

Matthew B. Galligan, South Windsor Town Manager
Abraham and Beverly Glassman, Trustees
Sandy M. Carter

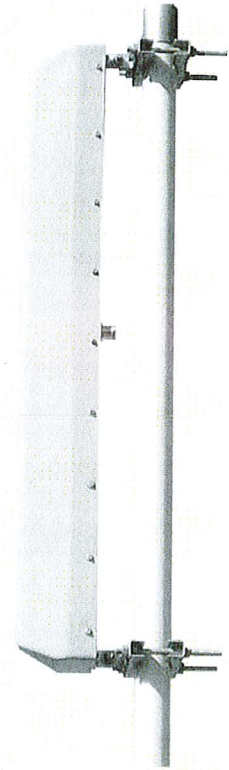


LPA-171080-8CF-EDIN-X

V-Pol | Log Periodic | 80° | 16.0-16.5 dBi

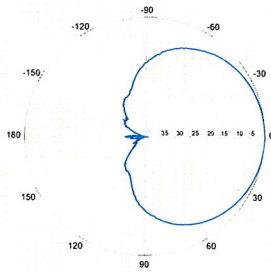
Replace 'X' with desired electrical downtilt.

Antenna is available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

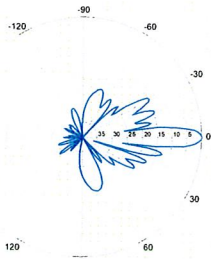


Electrical Characteristics		1710-2170 MHz			
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz		
Polarization	Vertical				
Horizontal beamwidth	78°	80°	77°		
Vertical beamwidth	6°	7°	6°		
Gain	13.9 dBd (16.0 dBi)	14.4 dBd (16.5 dBi)	13.9 dBd (16.0 dBi)		
Electrical downtilt (X)	0, 2				
Impedance	50Ω				
VSWR	≤ 1.5:1				
Null fill	5% (-26.02 dB)				
Input power	250 W				
Lightning protection	Direct Ground				
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)				
Mechanical Characteristics					
Dimensions Length x Width x Depth	1207 x 105 x 175 mm		47.5 x 4.1 x 6.9 in		
Weight without mounting brackets	3.9 kg		8.5 lbs		
Survival wind speed	>276 km/hr		>171 mph		
Wind area	Front: 0.14 m ² Side: 0.22 m ²		Front: 1.5 ft ² Side: 2.3 ft ²		
Wind load @ 161 km/hr (100 mph)	Front: 185 N Side: 317 N		Front: 42 lbf Side: 71 lbf		
Mounting Options		Part Number	Fits Pipe Diameter	Weight	
2-Point Mounting Bracket Kit		26799997	50-102 mm 2.0-4.0 in	2.3 kg	5.0 lbs
2-Point Mounting and Downtilt Bracket Kit		26799999	50-102 mm 2.0-4.0 in	2.3 kg	5.0 lbs

1710-1880 MHz

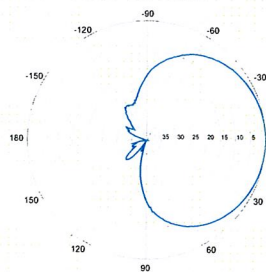


Horizontal

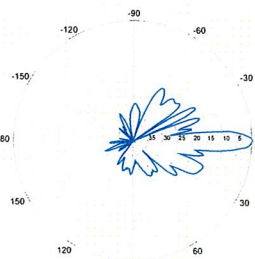


0° | Vertical

1850-1990 MHz

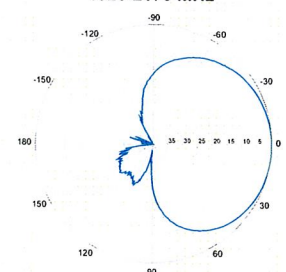


Horizontal

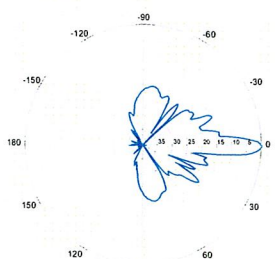


0° | Vertical

1920-2170 MHz



Horizontal

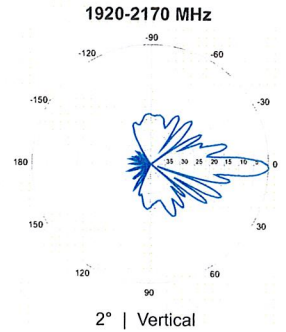
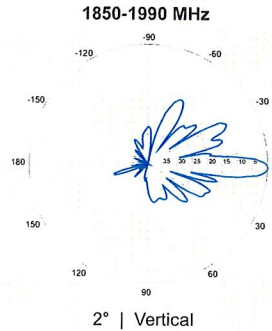
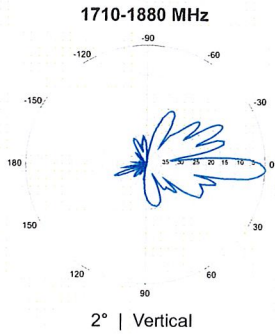


0° | Vertical

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

LPA-171080-8CF-EDIN-X

V-Pol | Log Periodic | 80° | 16.0-16.5 dBi



Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Site Name: Burnham St (South Windsor)		General		Power	Density				
Tower Height: Verizon @ 111Ft.		# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Nextel	9	100	100	851	0.0324	851	0.5673	5.70%	
*Clearwire	2	153	87	2496	0.0145	2496	1.0000	1.45%	
*Clearwire	1	211	82	11 GHz	0.0113	11 GHz	1.0000	1.13%	
Verizon PCS	11	262	111	1970	0.0872	1970	1.0000	8.72%	
Verizon Cellular	9	265	111	869	0.0722	869	0.5793	12.46%	
Verizon AWS	1	635	111	2145	0.0192	2145	1.0000	1.92%	
Verizon 700	1	865	111	698	0.0262	698	0.4653	5.63%	
									37.02%
* Source: Siting Council									

Date: April 10, 2012

Veronica Harris
Crown Castle
1200 McArthur Blvd
Mahwah, NJ 07430



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation:	Verizon Wireless Co-Locate	
	Carrier Site Number:	N/A
	Carrier Site Name:	Burnham Street / South Windsor
Crown Castle Designation:	Crown Castle BU Number:	806375
	Crown Castle Site Name:	HRT 095 943237
	Crown Castle JDE Job Number:	183188
	Crown Castle Work Order Number:	481486
	Crown Castle Application Number:	145986 Rev. 1
Engineering Firm Designation:	Crown Castle Project Number:	481486

Site Data: 190 BURNHAM ST, SOUTH WINDSOR, Hartford County, CT
Latitude 41° 48' 0.49", Longitude -72° 36' 57.15"
110 Foot - Monopole Tower

Dear Veronica Harris,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned 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 481486, in accordance with application 145986, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code requirements based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Tyler Stevens, EIT / MRC

Respectfully submitted by:

Douglas K. Pineo, P.E.
Manager Structural Design



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1) INTRODUCTION

This tower is a 110 ft Monopole tower designed by VALMONT in January of 1991. The tower was originally designed for a wind speed of 90 mph per EIA-222-D.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
108.0	111.0	6	antel	LPA-171080/8CFx2 w/ Mount Pipe	-	-	-

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	antel	BXA-70063/6CFx2 w/ Mount Pipe			
		2	antel	BXA-70063/6CFx6 w/ Mount Pipe	18	1-5/8	1
108.0	111.0	2	antel	LPA-80063/4CF w/ Mount Pipe			
		4	antel	LPA-80080/4CF w/ Mount Pipe			
		6	decibel	DB948F85T2E-M w/ Mount Pipe	-	-	2
	108.0	1	tower mounts	Platform Mount [LP 713-1]			1
		9	decibel	DB844H90E-XY w/ Mount Pipe			
97.0	97.0	2	gps	GPS_A	11	7/8	1
		1	tower mounts	Platform Mount [LP 713-1]			
		3	argus technologies	LLPX310R w/ Mount Pipe			
		1	dragonwave	A-ANT-18G-2-C			
86.0	87.0	1	dragonwave	HORIZON COMPACT	3	5/16	
		3	samsung telecommunications	WIMAX DAP HEAD	3	1/4	1
		1	tower mounts	Side Arm Mount [SO 101-3]	1	1/2	

Notes:

- 1) Existing Equipment
- 2) Equipment to be Removed, not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
107	107	4	rfs celwave	PD10017	-	-
100.5	100.5	12	rfs celwave	PD1132	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	EDP/TRIGGS	262109	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Leinweber & Assoc.	262107	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont	262106	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. 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 the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
- 5) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail	
L1	110 - 70	Pole	TP25.53x15.53x0.25	1	-6.53	1016.11	59.6	Pass	
L2	70 - 34.0833	Pole	TP34.02x24.03x0.3125	2	-11.38	1698.94	68.9	Pass	
L3	34.0833 - 0	Pole	TP41.9x32.1645x0.3438	3	-18.88	2385.98	72.1	Pass	
							Summary		
							Pole (L3)	72.1	Pass
							Rating =	72.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.4	Pass
1	Base Plate	0	42.0	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	78.5	Pass

Structure Rating (max from all components) =	78.5%
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Notes:

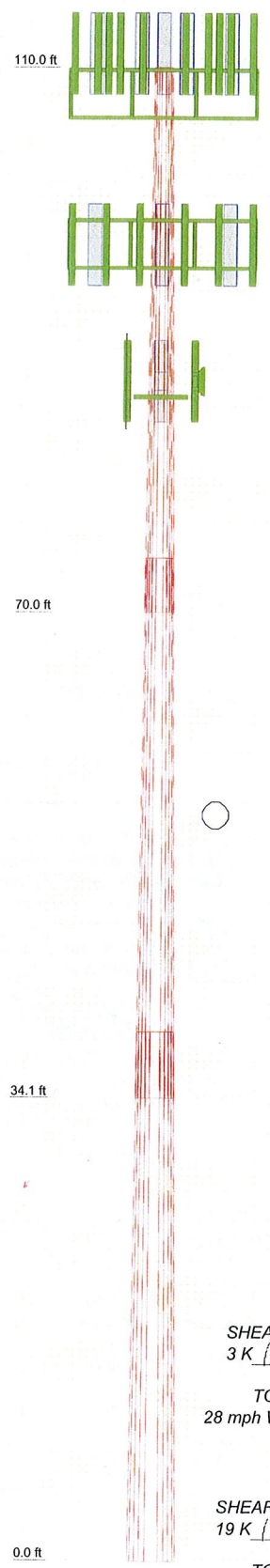
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	40.00	39.92	39.00
Number of Sides	12	12	12
Thickness (in)	0.2500	0.3125	0.3438
Socket Length (ft)	4.00	4.92	
Top Dia (in)	15.5300	24.0300	32.1645
Bot Dia (in)	25.5300	34.0200	41.9000
Grade		A572-65	
Weight (K)	2.2	3.9	5.4



DESIGNED APPURTENANCE LOADING

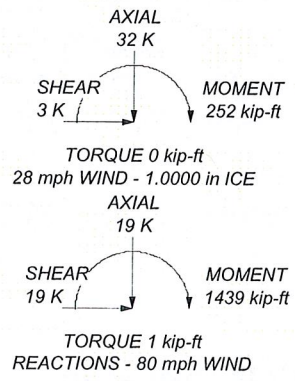
TYPE	ELEVATION	TYPE	ELEVATION
(2) LPA-80080/4CF w/ Mount Pipe	108	(3) DB844H90E-XY w/ Mount Pipe	97
(2) LPA-80080/4CF w/ Mount Pipe	108	(3) DB844H90E-XY w/ Mount Pipe	97
(2) LPA-80063/4CF w/ Mount Pipe	108	Platform Mount [LP 713-1]	97
BXA-70063/6CFx2 w/ Mount Pipe	108	LLPX310R w/ Mount Pipe	86
BXA-70063/6CFx6 w/ Mount Pipe	108	LLPX310R w/ Mount Pipe	86
BXA-70063/6CFx6 w/ Mount Pipe	108	LLPX310R w/ Mount Pipe	86
(2) LPA-171080/8CFx2 w/ Mount Pipe	108	WIMAX DAP HEAD	86
(2) LPA-171080/8CFx2 w/ Mount Pipe	108	WIMAX DAP HEAD	86
(2) LPA-171080/8CFx2 w/ Mount Pipe	108	WIMAX DAP HEAD	86
Platform Mount [LP 713-1]	108	HORIZON COMPACT	86
GPS_A	97	Side Arm Mount [SO 101-3]	86
GPS_A	97	7'x2" Antenna Mount Pipe	86
5' x 2' Pipe Mount	97	7'x2" Antenna Mount Pipe	86
5' x 2' Pipe Mount	97	7'x2" Antenna Mount Pipe	86
(3) DB844H90E-XY w/ Mount Pipe	97	A-ANT-18G-2-C	86

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 72.1%



 Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 We Are Solutions Phone: (724) 416-2000 FAX: (724) 416-4677	Job: BU #806375
	Project: Crown Castle Client: Crown Castle Code: TIA/EIA-222-F Path: R:\ISA Models - Letters\Work Area\TStevens\806375\906375.en
Drawn by: Tyler Stevens Date: 04/09/12	App'd: NTS Scale: NTS 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:

- 3) Tower is located in Hartford County, Connecticut.
- 4) Basic wind speed of 80 mph.
- 5) Nominal ice thickness of 1.0000 in.
- 6) Ice thickness is considered to increase with height.
- 7) Ice density of 56 pcf.
- 8) A wind speed of 28 mph is used in combination with ice.
- 9) Temperature drop of 50 °F.
- 10) Deflections calculated using a wind speed of 50 mph.
- 11) A non-linear (P-delta) analysis was used.
- 12) Pressures are calculated at each section.
- 13) Stress ratio used in pole design is 1.333.
- 14) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check Poles ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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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	110.00-70.00	40.00	4.00	12	15.5300	25.5300	0.2500	1.0000	A572-65 (65 ksi)
L2	70.00-34.08	39.92	4.92	12	24.0300	34.0200	0.3125	1.2500	A572-65 (65 ksi)
L3	34.08-0.00	39.00		12	32.1645	41.9000	0.3438	1.3750	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	I/Q in ²	w in	w/t
L1	16.0778	12.3004	366.5658	5.4702	8.0445	45.5670	742.7616	6.0539	3.4920	13.968
	26.4306	20.3504	1660.0189	9.0502	13.2245	125.5256	3363.6484	10.0158	6.1720	24.688
L2	25.9141	23.8657	1713.5571	8.4909	12.4475	137.6623	3472.1312	11.7460	5.6025	17.928

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L3	35.2201	33.9182	4918.9394	12.0673	17.6224	279.1306	9967.1048	16.6935	8.2799	26.496
	34.5698	35.2216	4552.1411	11.3918	16.6612	273.2179	9223.8721	17.3350	7.6988	22.397
	43.3781	45.9976	10138.964	14.8771	21.7042	467.1429	20544.289	22.6386	10.3080	29.987
			0				8			

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in
L1 110.00-70.00				1	1	1		
L2 70.00-34.08				1	1	1		
L3 34.08-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter r in	Perimeter r in	Weight klf
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight klf
AL7-50(1 5/8")	A	No	CaAa (Out Of Face)	108.00 - 0.00	1	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.01
						4" Ice	0.03
AL7-50(1 5/8")	A	No	CaAa (Out Of Face)	108.00 - 0.00	2	No Ice	0.20
						1/2" Ice	0.30
						1" Ice	0.40
						2" Ice	0.60
						4" Ice	1.00
HJ7-50A(1-5/8")	A	No	Inside Pole	108.00 - 0.00	15	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
LDF5-50A(7/8")	B	No	Inside Pole	97.00 - 0.00	11	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
FSJ1-50A(1/4")	A	No	Inside Pole	86.00 - 0.00	3	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.00
						4" Ice	0.00
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	86.00 - 0.00	1	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.01
						4" Ice	0.02
9207(5/16")	A	No	CaAa (Out Of Face)	86.00 - 0.00	1	No Ice	0.00
						1/2" Ice	0.00
						1" Ice	0.00
						2" Ice	0.01

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight klf
						ft ² /ft		
9207(5/16")	A	No	Inside Pole	86.00 - 0.00	2	4" Ice	0.00	0.02
						No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
						2" Ice	0.00	0.00
2-1/2" Rigid Conduit	A	No	CaAa (Out Of Face)	86.00 - 0.00	2	4" Ice	0.00	0.00
						No Ice	0.25	0.00
						1/2" Ice	0.35	0.00
						1" Ice	0.45	0.01
						2" Ice	0.65	0.01
						4" Ice	1.05	0.03

*

Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	110.00-70.00	A	0.000	0.000	0.000	22.896	0.78
		B	0.000	0.000	0.000	0.000	0.10
		C	0.000	0.000	0.000	0.000	0.00
L2	70.00-34.08	A	0.000	0.000	0.000	32.037	0.91
		B	0.000	0.000	0.000	0.000	0.13
		C	0.000	0.000	0.000	0.000	0.00
L3	34.08-0.00	A	0.000	0.000	0.000	30.402	0.86
		B	0.000	0.000	0.000	0.000	0.12
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	110.00-70.00	A	1.126	0.000	0.000	0.000	47.217	1.52
		B		0.000	0.000	0.000	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.00
L2	70.00-34.08	A	1.055	0.000	0.000	0.000	64.390	1.91
		B		0.000	0.000	0.000	0.000	0.13
		C		0.000	0.000	0.000	0.000	0.00
L3	34.08-0.00	A	1.000	0.000	0.000	0.000	59.170	1.72
		B		0.000	0.000	0.000	0.000	0.12
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	110.00-70.00	0.0000	-0.6813	0.0000	-1.0383
L2	70.00-34.08	0.0000	-0.9820	0.0000	-1.4899
L3	34.08-0.00	0.0000	-1.0418	0.0000	-1.6180

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front	C _A A _A Side	Weight	
						ft ²	ft ²	K	
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.00	0.0000	108.00	No Ice	2.86	7.23	0.03
			0.00			1/2"	3.22	7.92	0.07
			3.00			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
(2) LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.00	0.0000	108.00	No Ice	2.86	7.23	0.03
			0.00			1/2"	3.22	7.92	0.07
			3.00			Ice	3.59	8.63	0.13
						1" Ice	4.45	10.11	0.25
						2" Ice	6.32	13.34	0.61
(2) LPA-80063/4CF w/ Mount Pipe	C	From Leg	4.00	0.0000	108.00	No Ice	7.25	7.26	0.04
			0.00			1/2"	7.72	7.96	0.10
			3.00			Ice	8.20	8.67	0.18
						1" Ice	9.19	10.16	0.34
						2" Ice	11.32	13.39	0.80
BXA-70063/6CFx2 w/ Mount Pipe	A	From Leg	4.00	0.0000	108.00	No Ice	7.97	5.40	0.04
			0.00			1/2"	8.61	6.55	0.10
			3.00			Ice	9.22	7.41	0.17
						1" Ice	10.46	9.18	0.33
						2" Ice	13.07	12.93	0.79
BXA-70063/6CFx6 w/ Mount Pipe	B	From Leg	4.00	0.0000	108.00	No Ice	7.97	5.40	0.03
			0.00			1/2"	8.61	6.55	0.08
			3.00			Ice	9.22	7.41	0.15
						1" Ice	10.46	9.18	0.31
						2" Ice	13.07	12.93	0.77
BXA-70063/6CFx6 w/ Mount Pipe	C	From Leg	4.00	0.0000	108.00	No Ice	7.97	5.40	0.03
			0.00			1/2"	8.61	6.55	0.08
			3.00			Ice	9.22	7.41	0.15
						1" Ice	10.46	9.18	0.31
						2" Ice	13.07	12.93	0.77
(2) LPA-171080/8CFx2 w/ Mount Pipe	A	From Leg	4.00	0.0000	108.00	No Ice	2.49	4.41	0.03
			0.00			1/2"	2.85	5.07	0.06
			3.00			Ice	3.22	5.74	0.10
						1" Ice	3.99	7.15	0.20
						2" Ice	5.84	10.23	0.50
(2) LPA-171080/8CFx2 w/ Mount Pipe	B	From Leg	4.00	0.0000	108.00	No Ice	2.49	4.41	0.03
			0.00			1/2"	2.85	5.07	0.06
			3.00			Ice	3.22	5.74	0.10
						1" Ice	3.99	7.15	0.20
						2" Ice	5.84	10.23	0.50
(2) LPA-171080/8CFx2 w/ Mount Pipe	C	From Leg	4.00	0.0000	108.00	No Ice	2.49	4.41	0.03
			0.00			1/2"	2.85	5.07	0.06
			3.00			Ice	3.22	5.74	0.10
						1" Ice	3.99	7.15	0.20
						2" Ice	5.84	10.23	0.50
Platform Mount [LP 713-1]	C	None		0.0000	108.00	No Ice	31.27	31.27	1.51
						1/2"	39.68	39.68	1.93
						Ice	48.09	48.09	2.35
						1" Ice	64.91	64.91	3.19
						2" Ice	98.55	98.55	4.86
					4" Ice				

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
GPS_A	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	0.30	0.30	0.00
						1/2" Ice	0.37	0.37	0.00
						Ice	0.46	0.46	0.01
						1" Ice	0.65	0.65	0.02
						2" Ice	1.15	1.15	0.08
GPS_A	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	0.30	0.30	0.00
						1/2" Ice	0.37	0.37	0.00
						Ice	0.46	0.46	0.01
						1" Ice	0.65	0.65	0.02
						2" Ice	1.15	1.15	0.08
5' x 2' Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
5' x 2' Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	1.00	1.00	0.03
						1/2" Ice	1.39	1.39	0.04
						Ice	1.70	1.70	0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
(3) DB844H90E-XY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						Ice	4.12	6.28	0.12
						1" Ice	5.01	7.71	0.23
						2" Ice	6.92	10.83	0.56
(3) DB844H90E-XY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						Ice	4.12	6.28	0.12
						1" Ice	5.01	7.71	0.23
						2" Ice	6.92	10.83	0.56
(3) DB844H90E-XY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						Ice	4.12	6.28	0.12
						1" Ice	5.01	7.71	0.23
						2" Ice	6.92	10.83	0.56
Platform Mount [LP 713-1]	C	None		0.0000	97.00	No Ice	31.27	31.27	1.51
						1/2" Ice	39.68	39.68	1.93
						Ice	48.09	48.09	2.35
						1" Ice	64.91	64.91	3.19
						2" Ice	98.55	98.55	4.86
* LLPX310R w/ Mount Pipe	A	From Leg	2.00 0.00 1.00	0.0000	86.00	No Ice	5.07	2.98	0.05
						1/2" Ice	5.48	3.53	0.08
						Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
LLPX310R w/ Mount Pipe	B	From Leg	2.00 0.00 1.00	0.0000	86.00	No Ice	5.07	2.98	0.05
						1/2" Ice	5.48	3.53	0.08
						Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
LLPX310R w/ Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	No Ice	5.07	2.98	0.05
						1/2" Ice	5.48	3.53	0.08
						Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
WIMAX DAP HEAD	A	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	8.70	8.13	0.54
						4" Ice			
						No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
WIMAX DAP HEAD	B	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	3.51	2.14	0.20
						4" Ice			
						No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
WIMAX DAP HEAD	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	3.51	2.14	0.20
						4" Ice			
						No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
HORIZON COMPACT	B	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	3.51	2.14	0.20
						4" Ice			
						No Ice	0.84	0.43	0.01
						1/2" Ice	0.97	0.52	0.02
						1" Ice	1.10	0.63	0.03
						2" Ice	1.39	0.86	0.05
Side Arm Mount [SO 101-3]	C	None		0.0000	86.00	2" Ice	2.08	1.43	0.12
						4" Ice			
						No Ice	7.50	7.50	0.25
						1/2" Ice	8.90	8.90	0.33
						1" Ice	10.30	10.30	0.41
						2" Ice	13.10	13.10	0.58
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	18.70	18.70	0.90
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	5.58	5.58	0.27
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	5.58	5.58	0.27
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	5.58	5.58	0.27
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	5.58	5.58	0.27
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	5.58	5.58	0.27
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10
7'x2" Antenna Mount Pipe	C	From Leg	2.00 0.00 1.00	0.0000	86.00	2" Ice	5.58	5.58	0.27
						4" Ice			
						No Ice	1.66	1.66	0.03
						1/2" Ice	2.39	2.39	0.04
						1" Ice	2.83	2.83	0.06
						2" Ice	3.71	3.71	0.10

*

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz Lateral ft	Vert ft							
A-ANT-18G-2-C	B	Paraboloid w/o Radome	From Leg	2.00	0.0000	°	°	ft	ft	No Ice	3.72	0.03
				0.00						1/2" Ice	4.01	0.03
				1.00						1" Ice	4.30	0.36
										2" Ice	4.88	0.07
									4" Ice	6.04	0.19	

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	110 - 70	Pole	Max Tension	18	0.00	0.00	-0.00
			Max. Compression	14	-14.54	-0.25	-0.05
			Max. Mx	11	-6.53	292.77	-4.02
			Max. My	2	-6.56	-3.06	285.59
			Max. Vy	11	-11.59	292.77	-4.02
			Max. Vx	2	-11.36	-3.06	285.59
			Max. Torque	6			0.29
L2	70 - 34.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-21.64	-0.25	1.41
			Max. Mx	11	-11.39	761.03	-4.90
			Max. My	2	-11.40	-1.82	746.29
			Max. Vy	11	-15.21	761.03	-4.90
			Max. Vx	2	-14.99	-1.82	746.29
			Max. Torque	11			-0.30
L3	34.0833 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.79	-0.25	3.41
			Max. Mx	11	-18.88	1433.61	-5.69
			Max. My	2	-18.88	-0.41	1410.71
			Max. Vy	11	-19.34	1433.61	-5.69
			Max. Vx	2	-19.12	-0.41	1410.71
			Max. Torque	11			-0.68

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	17	31.79	-2.80	1.61
	Max. H _x	11	18.89	19.33	-0.03
	Max. H _z	2	18.89	0.04	19.11
	Max. M _x	2	1410.71	0.04	19.11
	Max. M _z	5	1427.82	-19.27	0.13
	Max. Torsion	5	0.50	-19.27	0.13
	Min. Vert	1	18.89	0.00	0.00
	Min. H _x	5	18.89	-19.27	0.13
	Min. H _z	8	18.89	0.12	-19.06
	Min. M _x	8	-1404.03	0.12	-19.06
	Min. M _z	11	-1433.61	19.33	-0.03
	Min. Torsion	11	-0.68	19.33	-0.03

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	18.89	0.00	0.00	-0.85	0.08	0.00
Dead+Wind 0 deg - No Ice	18.89	-0.04	-19.11	-1410.71	-0.41	-0.13
Dead+Wind 30 deg - No Ice	18.89	9.72	-16.54	-1222.65	-724.95	-0.34
Dead+Wind 60 deg - No Ice	18.89	16.74	-9.63	-715.64	-1243.14	-0.47
Dead+Wind 90 deg - No Ice	18.89	19.27	-0.13	-16.57	-1427.82	-0.50
Dead+Wind 120 deg - No Ice	18.89	16.64	9.44	690.07	-1230.40	-0.49
Dead+Wind 150 deg - No Ice	18.89	9.52	16.46	1209.91	-700.30	-0.33
Dead+Wind 180 deg - No Ice	18.89	-0.12	19.06	1404.03	14.35	0.02
Dead+Wind 210 deg - No Ice	18.89	-9.72	16.54	1221.06	724.87	0.37
Dead+Wind 240 deg - No Ice	18.89	-16.87	9.53	704.45	1254.47	0.62
Dead+Wind 270 deg - No Ice	18.89	-19.33	0.03	5.69	1433.61	0.68
Dead+Wind 300 deg - No Ice	18.89	-16.70	-9.47	-694.80	1235.74	0.46

Load Combination	Vertical	Shear _x	Shear _z	Overturing Moment, M _x	Overturing Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg - No Ice	18.89	-9.64	-16.46	-1211.94	711.19	0.13
Dead+Ice+Temp	31.79	0.00	-0.00	-3.41	-0.25	0.00
Dead+Wind 0 deg+Ice+Temp	31.79	-0.01	-3.20	-250.73	-0.09	-0.04
Dead+Wind 30 deg+Ice+Temp	31.79	1.62	-2.77	-217.61	-126.50	-0.10
Dead+Wind 60 deg+Ice+Temp	31.79	2.80	-1.61	-128.38	-217.29	-0.14
Dead+Wind 90 deg+Ice+Temp	31.79	3.22	-0.02	-5.61	-249.87	-0.15
Dead+Wind 120 deg+Ice+Temp	31.79	2.79	1.59	118.22	-215.64	-0.12
Dead+Wind 150 deg+Ice+Temp	31.79	1.60	2.76	209.17	-123.27	-0.07
Dead+Wind 180 deg+Ice+Temp	31.79	-0.01	3.20	242.95	1.60	0.02
Dead+Wind 210 deg+Ice+Temp	31.79	-1.62	2.77	210.59	125.93	0.10
Dead+Wind 240 deg+Ice+Temp	31.79	-2.82	1.60	119.93	218.42	0.16
Dead+Wind 270 deg+Ice+Temp	31.79	-3.23	0.00	-2.79	250.18	0.17
Dead+Wind 300 deg+Ice+Temp	31.79	-2.79	-1.59	-125.71	215.88	0.12
Dead+Wind 330 deg+Ice+Temp	31.79	-1.61	-2.76	-216.27	124.32	0.04
Dead+Wind 0 deg - Service	18.89	-0.01	-7.47	-551.97	-0.11	-0.06
Dead+Wind 30 deg - Service	18.89	3.80	-6.46	-478.47	-283.34	-0.14
Dead+Wind 60 deg - Service	18.89	6.54	-3.76	-280.28	-485.91	-0.19
Dead+Wind 90 deg - Service	18.89	7.53	-0.05	-7.01	-558.10	-0.19
Dead+Wind 120 deg - Service	18.89	6.50	3.69	269.22	-480.91	-0.19
Dead+Wind 150 deg - Service	18.89	3.72	6.43	472.41	-273.69	-0.13
Dead+Wind 180 deg - Service	18.89	-0.05	7.44	548.30	5.66	0.00
Dead+Wind 210 deg - Service	18.89	-3.80	6.46	476.79	283.41	0.14
Dead+Wind 240 deg - Service	18.89	-6.59	3.72	274.85	490.44	0.24
Dead+Wind 270 deg - Service	18.89	-7.55	0.01	1.70	560.46	0.27
Dead+Wind 300 deg - Service	18.89	-6.52	-3.70	-272.13	483.10	0.18
Dead+Wind 330 deg - Service	18.89	-3.76	-6.43	-474.27	278.05	0.05

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-18.89	0.00	0.00	18.89	0.00	0.000%
2	-0.04	-18.89	-19.11	0.04	18.89	19.11	0.000%
3	9.72	-18.89	-16.54	-9.72	18.89	16.54	0.000%
4	16.74	-18.89	-9.63	-16.74	18.89	9.63	0.000%
5	19.27	-18.89	-0.13	-19.27	18.89	0.13	0.000%
6	16.64	-18.89	9.44	-16.64	18.89	-9.44	0.000%
7	9.52	-18.89	16.46	-9.52	18.89	-16.46	0.000%
8	-0.12	-18.89	19.06	0.12	18.89	-19.06	0.000%
9	-9.72	-18.89	16.54	9.72	18.89	-16.54	0.000%
10	-16.87	-18.89	9.53	16.87	18.89	-9.53	0.000%
11	-19.33	-18.89	0.03	19.33	18.89	-0.03	0.000%
12	-16.70	-18.89	-9.47	16.70	18.89	9.47	0.000%
13	-9.64	-18.89	-16.46	9.64	18.89	16.46	0.000%
14	0.00	-31.79	0.00	-0.00	31.79	0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
15	-0.01	-31.79	-3.20	0.01	31.79	3.20	0.000%
16	1.62	-31.79	-2.77	-1.62	31.79	2.77	0.000%
17	2.80	-31.79	-1.61	-2.80	31.79	1.61	0.000%
18	3.22	-31.79	-0.02	-3.22	31.79	0.02	0.000%
19	2.79	-31.79	1.59	-2.79	31.79	-1.59	0.000%
20	1.60	-31.79	2.76	-1.60	31.79	-2.76	0.000%
21	-0.01	-31.79	3.20	0.01	31.79	-3.20	0.000%
22	-1.62	-31.79	2.77	1.62	31.79	-2.77	0.000%
23	-2.82	-31.79	1.60	2.82	31.79	-1.60	0.000%
24	-3.23	-31.79	0.00	3.23	31.79	-0.00	0.000%
25	-2.79	-31.79	-1.59	2.79	31.79	1.59	0.000%
26	-1.61	-31.79	-2.76	1.61	31.79	2.76	0.000%
27	-0.01	-18.89	-7.47	0.01	18.89	7.47	0.000%
28	3.80	-18.89	-6.46	-3.80	18.89	6.46	0.000%
29	6.54	-18.89	-3.76	-6.54	18.89	3.76	0.000%
30	7.53	-18.89	-0.05	-7.53	18.89	0.05	0.000%
31	6.50	-18.89	3.69	-6.50	18.89	-3.69	0.000%
32	3.72	-18.89	6.43	-3.72	18.89	-6.43	0.000%
33	-0.05	-18.89	7.44	0.05	18.89	-7.44	0.000%
34	-3.80	-18.89	6.46	3.80	18.89	-6.46	0.000%
35	-6.59	-18.89	3.72	6.59	18.89	-3.72	0.000%
36	-7.55	-18.89	0.01	7.55	18.89	-0.01	0.000%
37	-6.52	-18.89	-3.70	6.52	18.89	3.70	0.000%
38	-3.76	-18.89	-6.43	3.76	18.89	6.43	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00003676
3	Yes	5	0.00000001	0.00008434
4	Yes	5	0.00000001	0.00008578
5	Yes	4	0.00000001	0.00012508
6	Yes	5	0.00000001	0.00008029
7	Yes	5	0.00000001	0.00008081
8	Yes	4	0.00000001	0.00009076
9	Yes	5	0.00000001	0.00008516
10	Yes	5	0.00000001	0.00008398
11	Yes	4	0.00000001	0.00004700
12	Yes	5	0.00000001	0.00008206
13	Yes	5	0.00000001	0.00008177
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00068461
16	Yes	4	0.00000001	0.00073658
17	Yes	4	0.00000001	0.00074179
18	Yes	4	0.00000001	0.00068790
19	Yes	4	0.00000001	0.00071721
20	Yes	4	0.00000001	0.00071019
21	Yes	4	0.00000001	0.00066926
22	Yes	4	0.00000001	0.00072220
23	Yes	4	0.00000001	0.00073001
24	Yes	4	0.00000001	0.00068720
25	Yes	4	0.00000001	0.00072762
26	Yes	4	0.00000001	0.00072429
27	Yes	4	0.00000001	0.00001703
28	Yes	4	0.00000001	0.00029894
29	Yes	4	0.00000001	0.00030909
30	Yes	4	0.00000001	0.00002177
31	Yes	4	0.00000001	0.00027863
32	Yes	4	0.00000001	0.00028285
33	Yes	4	0.00000001	0.00001731
34	Yes	4	0.00000001	0.00030459
35	Yes	4	0.00000001	0.00029706
36	Yes	4	0.00000001	0.00002111

37	Yes	4	0.00000001	0.00029092
38	Yes	4	0.00000001	0.00028770

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 70	21.844	35	1.7831	0.0012
L2	74 - 34.0833	9.774	35	1.2858	0.0006
L3	39 - 0	2.646	35	0.6277	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	(2) LPA-80080/4CF w/ Mount Pipe	35	21.120	1.7585	0.0012	19379
97.00	GPS_A	35	17.182	1.6207	0.0010	7453
87.00	A-ANT-18G-2-C	35	13.768	1.4860	0.0008	4212
86.00	LLPX310R w/ Mount Pipe	35	13.440	1.4718	0.0008	4036

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 70	55.809	10	4.5580	0.0038
L2	74 - 34.0833	24.991	10	3.2881	0.0017
L3	39 - 0	6.769	10	1.6058	0.0009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	(2) LPA-80080/4CF w/ Mount Pipe	10	53.961	4.4952	0.0036	7667
97.00	GPS_A	10	43.909	4.1433	0.0029	2947
87.00	A-ANT-18G-2-C	10	35.191	3.7995	0.0023	1664
86.00	LLPX310R w/ Mount Pipe	10	34.354	3.7631	0.0023	1595

Compression Checks

Pole Design Data

Section No.	Elevation <i>ft</i>	Size	L <i>ft</i>	L_u <i>ft</i>	Kl/r	F_a <i>ksi</i>	A <i>in²</i>	Actual P <i>K</i>	Allow. P_a <i>K</i>	Ratio $\frac{P}{P_a}$
L1	110 - 70 (1)	TP25.53x15.53x0.25	40.00	0.00	0.0	39.000	19.5454	-6.53	762.27	0.009
L2	70 - 34.0833 (2)	TP34.02x24.03x0.3125	39.92	0.00	0.0	39.000	32.6800	-11.38	1274.52	0.009
L3	34.0833 - 0 (3)	TP41.9x32.1645x0.3438	39.00	0.00	0.0	38.914	45.9976	-18.88	1789.93	0.011

Pole Bending Design Data

Section No.	Elevation <i>ft</i>	Size	Actual M_x <i>kip-ft</i>	Actual f_{bx} <i>ksi</i>	Allow. F_{bx} <i>ksi</i>	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y <i>kip-ft</i>	Actual f_{by} <i>ksi</i>	Allow. F_{by} <i>ksi</i>	Ratio $\frac{f_{by}}{F_{by}}$
L1	110 - 70 (1)	TP25.53x15.53x0.25	295.35	30.621	39.000	0.785	0.00	0.000	39.000	0.000
L2	70 - 34.0833 (2)	TP34.02x24.03x0.3125	764.86	35.433	39.000	0.909	0.00	0.000	39.000	0.000
L3	34.0833 - 0 (3)	TP41.9x32.1645x0.3438	1438.7 3	36.958	38.914	0.950	0.00	0.000	38.914	0.000

Pole Shear Design Data

Section No.	Elevation <i>ft</i>	Size	Actual V <i>K</i>	Actual f_v <i>ksi</i>	Allow. F_v <i>ksi</i>	Ratio $\frac{f_v}{F_v}$	Actual T <i>kip-ft</i>	Actual f_{vt} <i>ksi</i>	Allow. F_{vt} <i>ksi</i>	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	110 - 70 (1)	TP25.53x15.53x0.25	11.63	0.595	26.000	0.046	0.03	0.002	26.000	0.000
L2	70 - 34.0833 (2)	TP34.02x24.03x0.3125	15.25	0.467	26.000	0.036	0.29	0.006	26.000	0.000
L3	34.0833 - 0 (3)	TP41.9x32.1645x0.3438	19.38	0.421	26.000	0.033	0.62	0.007	26.000	0.000

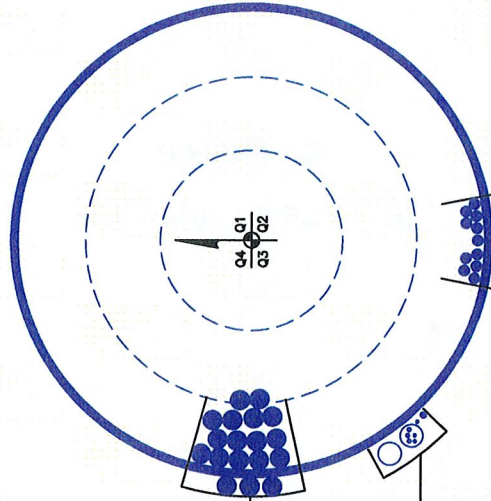
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 70 (1)	0.009	0.785	0.000	0.046	0.000	0.794	1.333	H1-3+VT ✓
L2	70 - 34.0833 (2)	0.009	0.909	0.000	0.036	0.000	0.918	1.333	H1-3+VT ✓
L3	34.0833 - 0 (3)	0.011	0.950	0.000	0.033	0.000	0.961	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF \cdot P_{allow}$ K	% Capacity	Pass Fail	
L1	110 - 70	Pole	TP25.53x15.53x0.25	1	-6.53	1016.11	59.6	Pass	
L2	70 - 34.0833	Pole	TP34.02x24.03x0.3125	2	-11.38	1698.94	68.9	Pass	
L3	34.0833 - 0	Pole	TP41.9x32.1645x0.3438	3	-18.88	2385.98	72.1	Pass	
							Summary		
							Pole (L3)	72.1	Pass
							RATING =	72.1	Pass

APPENDIX B
BASE LEVEL DRAWING



(18) 1-5/8" TO 108 FT LEVEL

(3) 5/16" TO 86 FT LEVEL
(3) 1/4" TO 88 FT LEVEL
(1) 1/2" TO 88 FT LEVEL

(11) 7/8" TO 97 FT LEVEL

BUSINESS UNIT: 806375 TOWER ID: C_BASELEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

FOUNDATION REACTION COMPARISON

BU# 806375
WO# 481486

REACTIONS	DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	1947.4	1439.0	73.9%
SHEAR (kips)	24.2	19.0	78.5%

Design loads from: CCI sites Doc. 262106

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: 806375
Site Name: HRT 095 943237
App #: 145986; Rev. 1
Pole Manufacturer: <i>Other</i>

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	49.88	in

Plate Data

Diam:	55.88	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	11.23	in

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	41.9	in
Thick:	0.34375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
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Reactions		
Moment:	1439	ft-kips
Axial:	19	kips
Shear:	19	kips

If No stiffeners, Criteria: **AISC ASD** <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 113.8 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 58.4% **Pass**

Rigid
Service ASD
Fty*ASIF

Base Plate Results

Base Plate Stress: 25.2 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 42.0% **Pass**

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
27.06

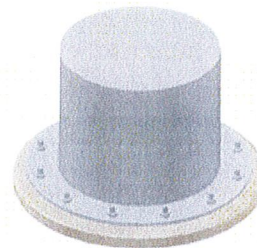
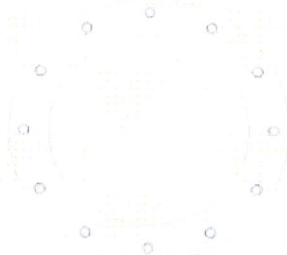
n/a

Stiffener Results

Horizontal Weld : n/a
 Vertical Weld: n/a
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: n/a
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: n/a
 Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** **Note:** for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes