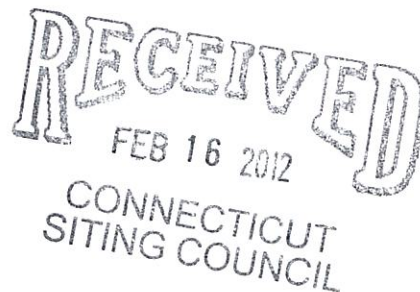


280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

February 15, 2012

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



Re: **Notice of Exempt Modification – Antenna Swap**
116 Grant Hill Road, Brooklyn, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 117-foot level on the existing 150-foot tower at the above-referenced address. The tower is owned by Crown Castle. The Council approved Cellco’s use of the tower in 2005. Cellco now intends to modify its installation by replacing all of its existing antennas with six (6) model LPA-80080-4CF cellular antennas; three (3) model BXA-171085-12CF PCS antennas; and three (3) model BXA-70063-6CF LTE antennas, all at the same 117-foot level on the tower. Cellco also intends to install six (6) additional coax cables attached to the outside of the monopole. The new cables will be installed adjacent to twelve (12) existing coax cables currently installed on the exterior of the monopole. Attached behind Tab 1 are the specifications for Cellco’s replacement antennas.



Law Offices

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www.rc.com

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 Austin Tanner, First Selectman of the Town of Brooklyn. A copy of this letter is also being sent to Jean Paul and Dawna G. Bernier, 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).

ROBINSON & COLE^{LLP}

Linda Roberts
February 15, 2012
Page 2

1. The proposed modifications will not result in an increase in the overall height of the existing tower. Cellco's replacement antennas will be located at the 117-foot level on the existing 150-foot tower.

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

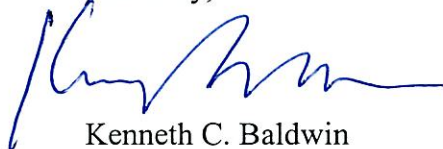
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

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

Austin Tanner, Brooklyn First Selectman
Jean Paul and Dawna G. Bernier
Sandy M. Carter



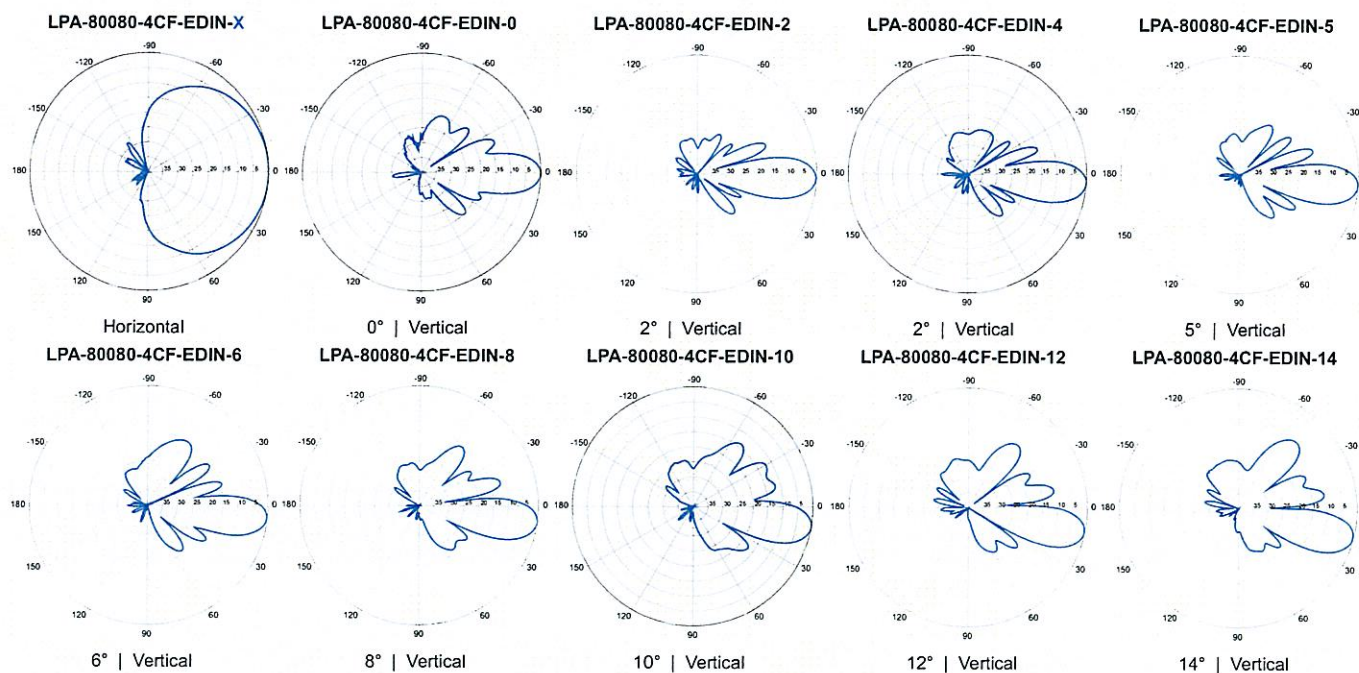
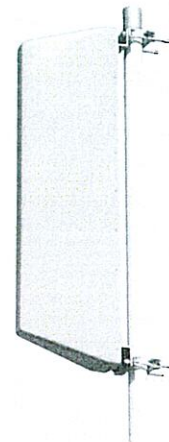
LPA-80080-4CF-EDIN-X

V-Pol | Log Periodic | 80° | 12.5 dBd

Replace "X" with desired electrical downtilt.

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

Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	80°
Vertical beamwidth	15°
Gain	12.5 dBd (14.6 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-14.2 dB
Front-to-back ratio (+/-30°)	-34.7 dB
Null fill	15% (-16.48 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)
Mechanical Characteristics	
Dimensions Length x Width x Depth	1200 x 140 x 335 mm 47.2 x 5.5 x 13.2 in
Depth of antenna with z-bracket	375 mm 14.8 in
Weight without mounting brackets	5.4 kg 12 lbs
Survival wind speed	> 201 km/hr > 125 mph
Wind area	Front: 0.17 m ² Side: 0.40 m ² Front: 1.8 ft ² Side: 4.3 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 254 N Side: 574 N Front: 57 lbf Side: 129 lbf
Mounting Options	
2-Point Mounting & Downtilt Bracket Kit (0-20°)	Part Number 21699999 Fits Pipe Diameter 50-102 mm 2.0-4.0 in Weight 5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.



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.

BXA-171085-12CF-EDIN-X

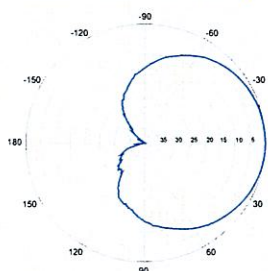
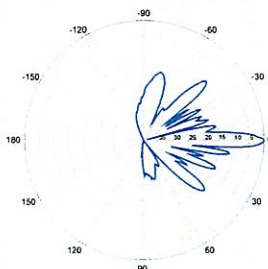
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 18.0 dBi

Electrical Characteristics	1710-2170 MHz				
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz		
Polarization	±45°	±45°	±45°		
Horizontal beamwidth	88°	85°	80°		
Vertical beamwidth	4.5°	4.5°	4.5°		
Gain	15.1 dBd / 17.2 dBi	15.5 dBd / 17.6 dBi	15.9 dBd / 18.0 dBi		
Electrical downtilt (X)	0, 2, 4				
Impedance	50Ω				
VSWR	≤1.5:1				
First upper sidelobe	< -17 dB				
Front-to-back ratio	> 30 dB				
In-band isolation	> 28 dB				
IM3 (20W carrier)	< -150 dBc				
Input power	300 W				
Lightning protection	Direct Ground				
Connector(s)	2 Ports / EDIN / Female / Center (Back)				
Operating temperature	-40° to +60° C / -40° to +140° F				
Mechanical Characteristics					
Dimensions Length x Width x Depth	1840 x 154 x 105 mm		72.4 x 6.1 x 4.1 in		
Depth with z-brackets	133 mm		5.2 in		
Weight without mounting brackets	6.8 kg		15 lbs		
Survival wind speed	> 201 km/hr		> 125 mph		
Wind area	Front: 0.28 m ² Side: 0.19 m ²	Front: 3.1 ft ² Side: 2.1 ft ²			
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 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 lbs
2-Point Mounting & Downtilt Bracket Kit		26799999	50-102 mm 2.0-4.0 in	3.6 kg	8 lbs
Concealment Configurations		For concealment configurations, order BXA-171085-12CF-EDIN-X-FP			

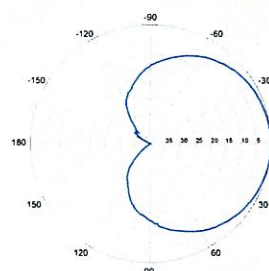
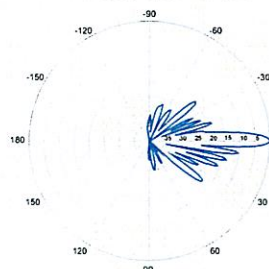


BXA-171085-12CF-EDIN-X

Horizontal | 1710-1880 MHz
BXA-171085-12CF-EDIN-0

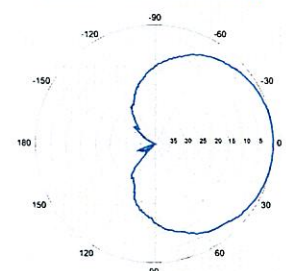
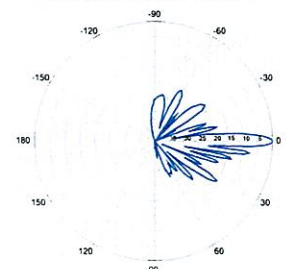
0° | Vertical | 1710-1880 MHz

BXA-171085-12CF-EDIN-X

Horizontal | 1850-1990 MHz
BXA-171085-12CF-EDIN-0

0° | Vertical | 1850-1990 MHz

BXA-171085-12CF-EDIN-X

Horizontal | 1920-2170 MHz
BXA-171085-12CF-EDIN-0

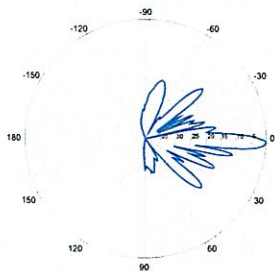
0° | Vertical | 1920-2170 MHz

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BXA-171085-12CF-EDIN-X

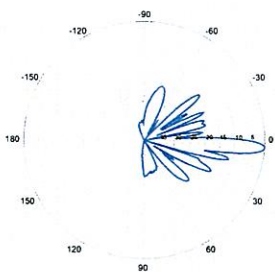
X-Pol | FET Panel | 85° | 18.0 dBi

BXA-171085-12CF-EDIN-2



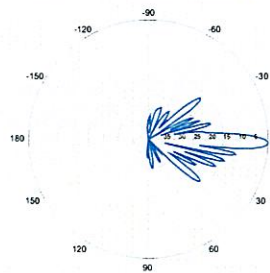
2° | Vertical | 1710-1880 MHz

BXA-171085-12CF-EDIN-4



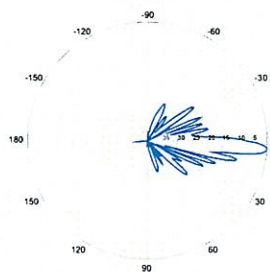
4° | Vertical | 1710-1880 MHz

BXA-171085-12CF-EDIN-2



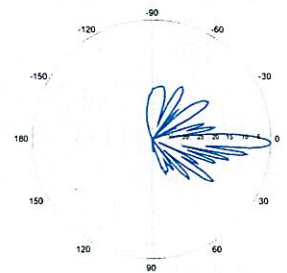
2° | Vertical | 1850-1990 MHz

BXA-171085-12CF-EDIN-4



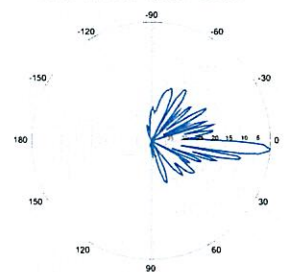
4° | Vertical | 1850-1990 MHz

BXA-171085-12CF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171085-12CF-EDIN-4



4° | Vertical | 1920-2170 MHz

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BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

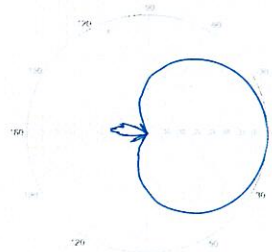
Replace "X" with desired electrical downtilt.

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

Electrical Characteristics	696-900 MHz			
Frequency bands	696-806 MHz		806-900 MHz	
Polarization	±45°			
Horizontal beamwidth	65°		63°	
Vertical beamwidth	13°		11°	
Gain	14.0 dBd (16.1 dBi)		14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10			
Impedance	50Ω			
VSWR	≤1.35:1			
Upper sidelobe suppression (0°)	-18.3 dB		-18.2 dB	
Front-to-back ratio (+/-30°)	-33.4 dB		-36.3 dB	
Null fill	5% (-26.02 dB)			
Isolation between ports	< -25 dB			
Input power with EDIN connectors	500 W			
Input power with NE connectors	300 W			
Lightning protection	Direct Ground			
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)			
Mechanical Characteristics				
Dimensions Length x Width x Depth	1804 x 285 x 132 mm		71.0 x 11.2 x 5.2 in	
Depth with z-brackets	172 mm		6.8 in	
Weight without mounting brackets	7.9 kg		17 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 0.51 m ²	Side: 0.24 m ²	Front: 5.5 ft ²	Side: 2.6 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 759 N	Side: 391 N	Front: 169 lbf	Side: 89 lbf
Mounting Options	Part Number	Fits Pipe Diameter		Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in		6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP			

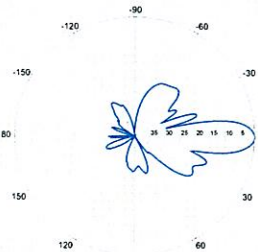


BXA-70063-6CF-EDIN-X



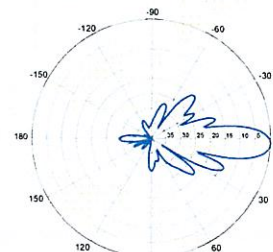
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

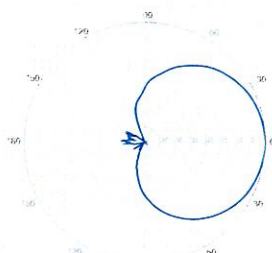


0° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-2



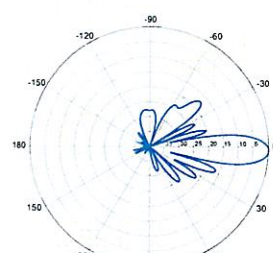
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



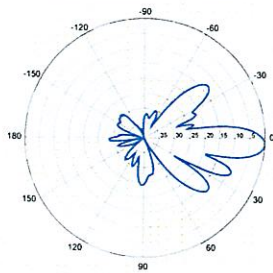
2° | Vertical | 850 MHz

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BXA-70063-6CF-EDIN-X

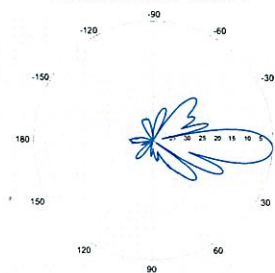
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



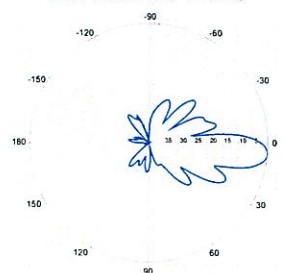
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

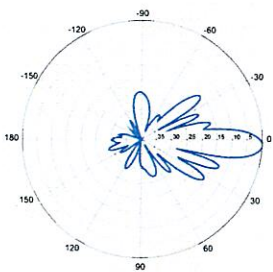


4° | Vertical | 750 MHz

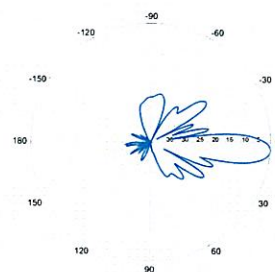
BXA-70063-6CF-EDIN-5



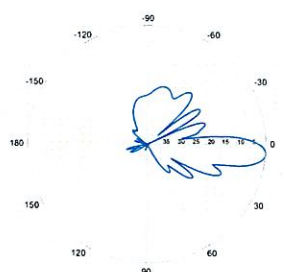
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

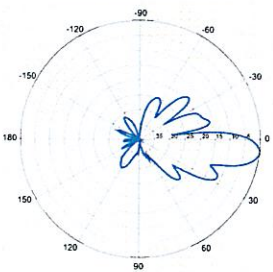


4° | Vertical | 850 MHz



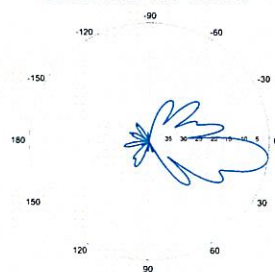
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



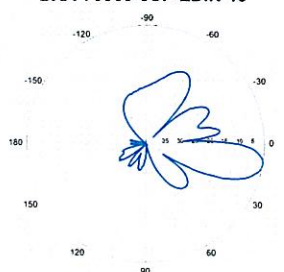
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

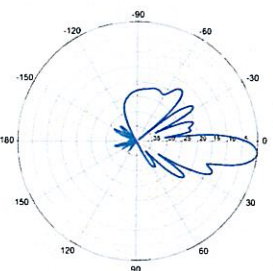


8° | Vertical | 750 MHz

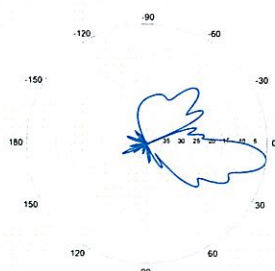
BXA-70063-6CF-EDIN-10



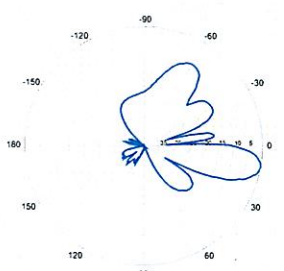
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

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	General	Power	Density				
Site Name: Brooklyn W							
Tower Height: Verizon @ 117ft							
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	PERMISS. EXP.	FRACTION MPE
*Sprint	11	250	147	0.0458	1960	1.0000	4.58%
*Cingular UMTS	1	500	127	0.0111	880	0.5867	1.90%
*Cingular GSM	2	427	127	0.0190	1900	1.0000	1.90%
*Cingular GSM	2	296	127	0.0132	880	0.5867	2.25%
*VoiceStream	8	246	137	0.0377	1970	1.0000	3.77%
Verizon PCS	11	264	117	0.0763	1970	1.0000	7.63%
Verizon Cellular	9	266	117	0.0629	869	0.5793	10.85%
Verizon AWS	1	670	117	0.0176	2145	1.0000	1.76%
Verizon 700	1	867	117	0.0228	698	0.4653	4.89%
							39.54%
* Source: Siting Council							



PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS

250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **December 22, 2011**

Eva Morales
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
518.433.6250

Paul J. Ford
250 East Broad Street, Suite 1500
Columbus, Ohio 43215
614.221.6679
kmahlum@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: Verizon Wireless Co-Locate
Carrier Site Number: 161836
Carrier Site Name: Brooklyn West CT

Crown Castle Designation: Crown Castle BU Number: 876390
Crown Castle Site Name: HAMPTON /
BERNIER
Crown Castle JDE Job Number: 174194
Crown Castle Work Order Number: 458044
Crown Castle Application Number: 137597 Rev. 1

Engineering Firm Designation: Paul J. Ford Project Number: 37511-1909

Site Data: 116 Grant Hill Rd., BROOKLYN, Windham County, CT
Latitude 41° 47' 30.53", Longitude -72° 0' 53.27"
150 Foot - Monopole Tower

Dear Eva Morales,

Paul J. Ford 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 443083, in accordance with application 137597, 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:

LC1: Existing + Reserved + Proposed Equipment

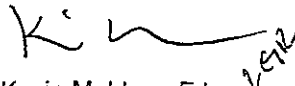
Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 1.0 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:


Kevin Mahlum, E.I.
Structural Engineer

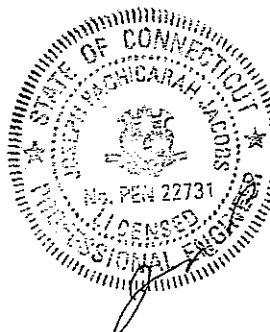


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3.2) Assumptions

4) ANALYSIS RESULTS

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RISATower Output

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Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in February of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 1.0 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
117.0	119.0	3	antel	BXA-171085-12CF-EDIN-2 w/ Pipe	6	1-5/8	-
		3		BXA-70063-6CF-2 w/ Pipe			
		6		LPA-80080/4CF w/ 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
149.0	151.0	9	sprint mla	SPRINT MLA_ ANTENNA w/ Pipe	9	1-5/8	2
		6	decibel	DB980H90E-M w/ Pipe	6	1-5/8	3
137.0	149.0	1	tower mounts	Platform Mount [LP 601-1]	-	-	1
	138.0	3	ems wireless	RR90-17-02DP w/ Pipe	6	1-5/8	1
		6	ericsson	KRY 112 71/2			
	137.0	1	tower mounts	Platform Mount [LP 403-1]	12	1-1/4	1
127.0	129.0	6	powerwave technologies	7770.00 w/ Mount Pipe			
		6		LGP 17201			
	127.0	6		LGP13519			
		1	tower mounts	Side Arm Mount [SO 602-3]			
117.0	119.0	6	antel	LPA-185090/8CF w/ Pipe	-	-	4
		6		LPA-80090/4CF w/ Pipe			
	117.0	1	tower mounts	Platform Mount [LP 303-1]	12	1-5/8	1
76.0	77.0	1	lucent	KS24019-L112A	1	1/2	1
	76.0	1	tower mounts	Side Arm Mount [SO 702-1]			

Notes:

- 1) Existing Equipment
- 2) MLA Equipment Controlling
- 3) Existing Equipment not Controlling
- 4) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	CSA, 99900.05, 08/09/99	1615347	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 072655, 01/23/09	2383064	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 6459-Spread, 02/22/00	1615410	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 6459, 02/22/00	1533003	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.3.0), 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) Monopole was fabricated and installed in accordance with the manufacturer's specifications.
- 2) Monopole has been properly maintained in accordance with manufacturer's specifications.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Monopole was reinforced in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P _{allow} (K)	% Capacity	Pass / Fail
L1	150 - 123.29	Pole	TP22.9x17x0.1875	1	-4.46	679.35	54.0	Pass
L2	123.29 - 88.8767	Pole	TP30x21.7703x0.3125	2	-10.01	1483.15	78.7	Pass
L3	88.8767 - 43.7967	Pole	TP39.2x28.4504x0.375	3	-18.42	2329.35	86.4	Pass
L4	43.7967 - 0	Pole	TP48x37.2696x0.4375	4	-31.57	3433.55	80.8	Pass
							Summary	
							Pole (L3)	86.4 Pass
							Rating =	86.4 Pass

Table 5 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	71.3	Pass
1	Base Plate	0	97.6	Pass
1	Base Foundation Steel Interaction	0	80.2	Pass
1	Base Foundation Soil Interaction	0	75.0	Pass

Structure Rating (max from all components) =	97.6%
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

APPENDIX A

TNXTOWER OUTPUT

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 1.0000 in.

Ice density of 56 pcf.

A wind speed of 38 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 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	150.00-123.29	26.71	3.42	18	17.0000	22.9000	0.1875	0.7500	A572-65 (65 ksi)
L2	123.29-88.88	37.83	4.25	18	21.7703	30.0000	0.3125	1.2500	A572-65 (65 ksi)
L3	88.88-43.80	49.33	5.42	18	28.4504	39.2000	0.3750	1.5000	A572-65 (65 ksi)
L4	43.80-0.00	49.21		18	37.2696	48.0000	0.4375	1.7500	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	17.2623	10.0055	357.3078	5.9684	8.6360	41.3742	715.0858	5.0037	2.6620	14.197
	23.2533	13.5168	880.9281	8.0629	11.6332	75.7253	1763.0154	6.7597	3.7004	19.735
L2	22.8609	21.2834	1238.0804	7.6175	11.0593	111.9492	2477.7899	10.6437	3.2816	10.501
	30.4628	29.4463	3278.8026	10.5391	15.2400	215.1445	6561.9196	14.7259	4.7300	15.136
L3	29.8297	33.4168	3327.7839	9.9668	14.4528	230.2515	6659.9465	16.7116	4.3473	11.593
	39.8047	46.2115	8800.5544	13.7829	19.9136	441.9369	17612.688	23.1101	6.2392	16.638
L4	39.0438	51.1460	8766.0366	13.0754	18.9330	463.0036	17543.607	25.5779	5.7895	13.233
	48.7405	66.0465	18876.281	16.8847	24.3840	774.1257	37777.401	33.0295	7.6780	17.55

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontal
ft	ft ²	in					in	in
L1 150.00- 123.29				1	1	1		
L2 123.29- 88.88				1	1	1		
L3 88.88- 43.80				1	1	1		
L4 43.80-0.00				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 in	Perimeter r in	Weight plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8") (MLA - Sprint)	C	No	Inside Pole	149.00 - 0.00	9	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.82

LDF7-50A(1-5/8") (E - TMO)	C	No	Inside Pole	137.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.82

LDF6-50A(1-1/4") (E - ATT)	C	No	Inside Pole	127.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.66

LDF7-50A(1-5/8") (E - Verizon)	C	No	CaAa (Out Of Face)	117.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.20 0.30 4.46
LDF7-50A(1-5/8") (E - Verizon)	C	No	CaAa (Out Of Face)	117.00 - 0.00	10	No Ice 1/2" Ice 1" Ice	0.00 0.00 4.46
LDF7-50A(1-5/8") (P - Verizon)	C	No	CaAa (Out Of Face)	117.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 4.46

LDF4-50A(1/2") (Installed)	C	No	Inside Pole	76.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf

Feed Line/Linear Appurtenances Section Areas

Tower Section 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	150.00-123.29	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	0.29
L2	123.29-88.88	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	11.137	1.11
L3	88.88-43.80	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	17.852	1.58
L4	43.80-0.00	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	17.343	1.54

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section 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	150.00-123.29	A	1.000	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	0.29
L2	123.29-88.88	A	1.000	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	22.386	2.95
L3	88.88-43.80	A	1.000	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	35.884	4.54
L4	43.80-0.00	A	1.000	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	34.863	4.41

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	150.00-123.29	0.0000	0.0000	0.0000	0.0000
L2	123.29-88.88	-0.3758	0.2170	-0.6313	0.3645
L3	88.88-43.80	-0.4518	0.2608	-0.7735	0.4466
L4	43.80-0.00	-0.4635	0.2676	-0.8160	0.4711

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 ft ²	C _A A _A Side ft ²	Weight K
Platform Mount [LP 601-1] (E)	C	None		0.0000	149.00	No Ice	28.47	28.47	1.12
						1/2"	33.59	33.59	1.51
						Ice	38.71	38.71	1.91
						1" Ice			
8-ft Ladder	C	From Face	4.00	0.0000	149.00	No Ice	7.07	7.07	0.04
			0.00			1/2"	9.73	9.73	0.07
			-2.00			Ice	11.19	11.19	0.08
						1" Ice			
(3) SPRINT MLA_ANTENNA w/ Mount Pipe	A	From Face	4.00	0.0000	149.00	No Ice	8.64	6.95	0.07
			0.00			1/2"	9.29	8.13	0.13
			2.00			Ice	9.91	9.02	0.21
(MLA - Sprint)						1" Ice			
(3) SPRINT MLA_ANTENNA w/ Mount Pipe	B	From Face	4.00	0.0000	149.00	No Ice	8.64	6.95	0.07
			0.00			1/2"	9.29	8.13	0.13
			2.00			Ice	9.91	9.02	0.21
						1" Ice			
(MLA - Sprint)						1" Ice			
(3) SPRINT MLA_ANTENNA w/ Mount Pipe	C	From Face	4.00	0.0000	149.00	No Ice	8.64	6.95	0.07
			0.00			1/2"	9.29	8.13	0.13
			2.00			Ice	9.91	9.02	0.21
						1" Ice			
(MLA - Sprint) ***									
Platform Mount [LP 403-1] (E)	C	None		0.0000	137.00	No Ice	18.85	18.85	1.50
						1/2"	24.30	24.30	1.80
						Ice	29.75	29.75	2.09
						1" Ice			
2.375" OD x 5' Mount Pipe	A	From Face	4.00	0.0000	137.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice			
2.375" OD x 5' Mount Pipe	B	From Face	4.00	0.0000	137.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice			
2.375" OD x 5' Mount Pipe	C	From Face	4.00	0.0000	137.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice			
RR90-17-02DP w/ Mount Pipe (E - TMO)	A	From Face	4.00	0.0000	137.00	No Ice	4.59	3.32	0.03
			0.00			1/2"	5.09	4.09	0.07
			1.00			Ice	5.58	4.78	0.11
						1" Ice			
RR90-17-02DP w/ Mount Pipe (E - TMO)	B	From Face	4.00	0.0000	137.00	No Ice	4.59	3.32	0.03
			0.00			1/2"	5.09	4.09	0.07
			1.00			Ice	5.58	4.78	0.11
						1" Ice			
RR90-17-02DP w/ Mount Pipe (E - TMO)	C	From Face	4.00	0.0000	137.00	No Ice	4.59	3.32	0.03
			0.00			1/2"	5.09	4.09	0.07
			1.00			Ice	5.58	4.78	0.11
						1" Ice			
(2) KRY 112 71/2 (E - TMO)	A	From Face	4.00	0.0000	137.00	No Ice	0.68	0.51	0.01
			0.00			1/2"	0.80	0.62	0.02
			1.00			Ice	0.93	0.74	0.03
						1" Ice			
(2) KRY 112 71/2 (E - TMO)	B	From Face	4.00	0.0000	137.00	No Ice	0.68	0.51	0.01
			0.00			1/2"	0.80	0.62	0.02
			1.00			Ice	0.93	0.74	0.03
						1" Ice			
(2) KRY 112 71/2 (E - TMO)	C	From Face	4.00	0.0000	137.00	No Ice	0.68	0.51	0.01
			0.00			1/2"	0.80	0.62	0.02
			1.00			Ice	0.93	0.74	0.03
						1" Ice			

Side Arm Mount [SO 602- 3] (E)	C	None		0.0000	127.00	No Ice	17.61	17.61	0.44
						1/2"	24.67	24.67	0.67
						Ice	31.73	31.73	0.90

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) 7770.00 w/ Mount Pipe (E - ATT)	A	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe (E - ATT)	B	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe (E - ATT)	C	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
(2) LGP 17201 (E - ATT)	A	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	1.95 2.13 2.33	0.52 0.64 0.77	0.03 0.04 0.06
(2) LGP 17201 (E - ATT)	B	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	1.95 2.13 2.33	0.52 0.64 0.77	0.03 0.04 0.06
(2) LGP 17201 (E - ATT)	C	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	1.95 2.13 2.33	0.52 0.64 0.77	0.03 0.04 0.06
(2) LGP13519 (E - ATT)	A	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	0.34 0.42 0.51	0.21 0.28 0.36	0.01 0.01 0.01
(2) LGP13519 (E - ATT)	B	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	0.34 0.42 0.51	0.21 0.28 0.36	0.01 0.01 0.01
(2) LGP13519 (E - ATT)	C	From Face	4.00 0.00 2.00	0.0000	127.00	1" Ice No Ice 1/2" Ice	0.34 0.42 0.51	0.21 0.28 0.36	0.01 0.01 0.01
***						1" Ice			
Platform Mount [LP 303-1] (E)	C	None		0.0000	117.00	No Ice 1/2" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
(2) LPA-80080/4CF w/ Mount Pipe (P - Verizon)	A	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	2.86 3.22 3.59	7.23 7.92 8.63	0.03 0.07 0.13
(2) LPA-80080/4CF w/ Mount Pipe (P - Verizon)	B	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	2.86 3.22 3.59	7.23 7.92 8.63	0.03 0.07 0.13
(2) LPA-80080/4CF w/ Mount Pipe (P - Verizon)	C	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	2.86 3.22 3.59	7.23 7.92 8.63	0.03 0.07 0.13
BXA-70063-6CF-2 w/ Mount Pipe (P - Verizon)	A	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	7.97 8.61 9.22	5.80 6.95 7.82	0.04 0.10 0.17
BXA-70063-6CF-2 w/ Mount Pipe (P - Verizon)	B	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	7.97 8.61 9.22	5.80 6.95 7.82	0.04 0.10 0.17
BXA-70063-6CF-2 w/ Mount Pipe (P - Verizon)	C	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	7.97 8.61 9.22	5.80 6.95 7.82	0.04 0.10 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	A	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	5.34 6.03 6.69	5.60 6.90 8.11	0.05 0.09 0.15
BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	B	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	5.34 6.03 6.69	5.60 6.90 8.11	0.05 0.09 0.15
BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	C	From Face	4.00 0.00 2.00	0.0000	117.00	1" Ice No Ice 1/2" Ice	5.34 6.03 6.69	5.60 6.90 8.11	0.05 0.09 0.15
*** Side Arm Mount [SO 702- 1] (E)	C	None		0.0000	76.00	No Ice 1/2" Ice	1.00 1.00 1.00	1.43 2.05 2.67	0.03 0.04 0.05
KS24019-L112A (E - Sprint)	C	From Face	4.00 0.00 1.00	0.0000	76.00	1" Ice No Ice 1/2" Ice	0.16 0.22 0.30	0.16 0.22 0.30	0.01 0.01 0.01
*****						1" Ice			

Tower Pressures - No Ice

$$G_H = 1.690$$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 150.00- 123.29	135.99	1.499	28	44.405	A	0.000	44.405	44.405	100.00	0.000	0.000
					B	0.000	44.405		100.00	0.000	0.000
					C	0.000	44.405		100.00	0.000	0.000
L2 123.29- 88.88	105.46	1.394	26	75.299	A	0.000	75.299	75.299	100.00	0.000	0.000
					B	0.000	75.299		100.00	0.000	0.000
					C	0.000	75.299		100.00	0.000	11.137
L3 88.88- 43.80	65.81	1.218	22	128.81	A	0.000	128.810	128.810	100.00	0.000	0.000
				0	B	0.000	128.810		100.00	0.000	0.000
					C	0.000	128.810		100.00	0.000	17.852
L4 43.80-0.00	21.09	1	18	157.76	A	0.000	157.761	157.761	100.00	0.000	0.000
				1	B	0.000	157.761		100.00	0.000	0.000
					C	0.000	157.761		100.00	0.000	17.343

Tower Pressure - With Ice

$$G_H = 1.690$$

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 150.00- 123.29	135.99	1.499	5	1.0000	48.857	A	0.000	48.857	48.857	100.00	0.000	0.000
						B	0.000	48.857		100.00	0.000	0.000

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L2 123.29-88.88	105.46	1.394	5	1.0000	81.034	C	0.000	48.857		100.00	0.000	0.000
						A	0.000	81.034	81.034	100.00	0.000	0.000
						B	0.000	81.034		100.00	0.000	0.000
						C	0.000	81.034		100.00	0.000	22.386
L3 88.88-43.80	65.81	1.218	4	1.0000	136.323	A	0.000	136.323	136.323	100.00	0.000	0.000
						B	0.000	136.323		100.00	0.000	0.000
						C	0.000	136.323		100.00	0.000	35.884
L4 43.80-0.00	21.09	1	4	1.0000	165.060	A	0.000	165.060	165.060	100.00	0.000	0.000
						B	0.000	165.060		100.00	0.000	0.000
						C	0.000	165.060		100.00	0.000	34.863

Tower Pressure - Service

$$G_H = 1.690$$

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 150.00-123.29	135.99	1.499	14	44.405	A	0.000	44.405	44.405	100.00	0.000	0.000
					B	0.000	44.405		100.00	0.000	0.000
					C	0.000	44.405		100.00	0.000	0.000
L2 123.29-88.88	105.46	1.394	13	75.299	A	0.000	75.299	75.299	100.00	0.000	0.000
					B	0.000	75.299		100.00	0.000	0.000
					C	0.000	75.299		100.00	0.000	11.137
L3 88.88-43.80	65.81	1.218	11	128.810	A	0.000	128.810	128.810	100.00	0.000	0.000
				0	B	0.000	128.810		100.00	0.000	0.000
					C	0.000	128.810		100.00	0.000	17.852
L4 43.80-0.00	21.09	1	9	157.761	A	0.000	157.761	157.761	100.00	0.000	0.000
				1	B	0.000	157.761		100.00	0.000	0.000
					C	0.000	157.761		100.00	0.000	17.343

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

Comb. No.	Description
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	150 - 123.29	Pole	Max Tension	14	0.00	-0.00	0.00
			Max. Compression	14	-10.57	0.05	-0.43
			Max. Mx	11	-4.46	163.20	-0.05
			Max. My	8	-4.46	0.01	-163.36
			Max. Vy	11	-11.25	163.20	-0.05
			Max. Vx	8	11.25	0.01	-163.36
			Max. Torque	5			-1.59
L2	123.29 - 88.8767	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-20.73	2.16	-1.67
			Max. Mx	11	-10.01	681.65	-0.35
			Max. My	8	-10.01	0.38	-681.62
			Max. Vy	11	-17.69	681.65	-0.35
			Max. Vx	8	17.69	0.38	-681.62
			Max. Torque	5			-1.62
L3	88.8767 - 43.7967	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.27	6.65	-4.33
			Max. Mx	11	-18.42	1540.02	-0.88
			Max. My	8	-18.42	1.18	-1539.61
			Max. Vy	11	-21.32	1540.02	-0.88
			Max. Vx	8	21.31	1.18	-1539.61
			Max. Torque	5			-1.72
L4	43.7967 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.53	12.75	-7.86
			Max. Mx	11	-31.57	2678.51	-1.53
			Max. My	8	-31.57	2.30	-2677.55
			Max. Vy	11	-24.87	2678.51	-1.53
			Max. Vx	8	24.87	2.30	-2677.55
			Max. Torque	5			-1.82

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	51.53	-0.00	0.00
	Max. H _x	11	31.59	24.85	-0.00
	Max. H _z	2	31.59	-0.00	24.85
	Max. M _x	2	2674.47	-0.00	24.85
	Max. M _z	5	2673.91	-24.85	-0.00
	Max. Torsion	11	1.82	24.85	-0.00
	Min. Vert	8	31.59	-0.00	-24.85
	Min. H _x	5	31.59	-24.85	-0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H _z	8	31.59	-0.00	-24.85
	Min. M _x	8	-2677.55	-0.00	-24.85
	Min. M _z	11	-2678.51	24.85	-0.00
	Min. Torsion	5	-1.82	-24.85	-0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	31.59	0.00	-0.00	1.49	2.23	0.00
Dead+Wind 0 deg - No Ice	31.59	0.00	-24.85	-2674.47	2.30	-0.37
Dead+Wind 30 deg - No Ice	31.59	12.42	-21.52	-2316.30	-1335.89	0.59
Dead+Wind 60 deg - No Ice	31.59	21.52	-12.42	-1336.67	-2315.53	1.39
Dead+Wind 90 deg - No Ice	31.59	24.85	0.00	1.53	-2673.91	1.82
Dead+Wind 120 deg - No Ice	31.59	21.52	12.42	1339.73	-2315.54	1.76
Dead+Wind 150 deg - No Ice	31.59	12.42	21.52	2319.37	-1335.90	1.23
Dead+Wind 180 deg - No Ice	31.59	0.00	24.85	2677.55	2.30	0.37
Dead+Wind 210 deg - No Ice	31.59	-12.42	21.52	2319.36	1340.51	-0.59
Dead+Wind 240 deg - No Ice	31.59	-21.52	12.42	1339.73	2320.13	-1.39
Dead+Wind 270 deg - No Ice	31.59	-24.85	0.00	1.53	2678.51	-1.82
Dead+Wind 300 deg - No Ice	31.59	-21.52	-12.42	-1336.67	2320.12	-1.76
Dead+Wind 330 deg - No Ice	31.59	-12.42	-21.52	-2316.29	1340.50	-1.23
Dead+Ice+Temp	51.53	0.00	-0.00	7.86	12.75	-0.00
Dead+Wind 0 deg+Ice+Temp	51.53	0.00	-6.22	-693.79	12.89	-0.15
Dead+Wind 30 deg+Ice+Temp	51.53	3.11	-5.39	-599.78	-337.98	0.17
Dead+Wind 60 deg+Ice+Temp	51.53	5.39	-3.11	-342.93	-594.83	0.44
Dead+Wind 90 deg+Ice+Temp	51.53	6.22	-0.00	7.94	-688.85	0.60
Dead+Wind 120 deg+Ice+Temp	51.53	5.39	3.11	358.81	-594.84	0.59
Dead+Wind 150 deg+Ice+Temp	51.53	3.11	5.39	615.66	-337.98	0.43
Dead+Wind 180 deg+Ice+Temp	51.53	0.00	6.22	709.67	12.89	0.15
Dead+Wind 210 deg+Ice+Temp	51.53	-3.11	5.39	615.66	363.75	-0.17
Dead+Wind 240 deg+Ice+Temp	51.53	-5.39	3.11	358.80	620.60	-0.44
Dead+Wind 270 deg+Ice+Temp	51.53	-6.22	-0.00	7.94	714.62	-0.60
Dead+Wind 300 deg+Ice+Temp	51.53	-5.39	-3.11	-342.93	620.60	-0.59
Dead+Wind 330 deg+Ice+Temp	51.53	-3.11	-5.39	-599.78	363.75	-0.43
Dead+Wind 0 deg - Service	31.59	0.00	-12.38	-1333.82	2.31	-0.18
Dead+Wind 30 deg - Service	31.59	6.19	-10.72	-1155.05	-665.45	0.30
Dead+Wind 60 deg - Service	31.59	10.72	-6.19	-666.22	-1154.29	0.70
Dead+Wind 90 deg - Service	31.59	12.38	0.00	1.54	-1333.06	0.92
Dead+Wind 120 deg - Service	31.59	10.72	6.19	669.31	-1154.29	0.89
Dead+Wind 150 deg - Service	31.59	6.19	10.72	1158.14	-665.46	0.62
Dead+Wind 180 deg - Service	31.59	0.00	12.38	1336.91	2.31	0.18
Dead+Wind 210 deg - Service	31.59	-6.19	10.72	1158.14	670.07	-0.30
Dead+Wind 240 deg - Service	31.59	-10.72	6.19	669.31	1158.91	-0.70
Dead+Wind 270 deg - Service	31.59	-12.38	0.00	1.54	1337.67	-0.92
Dead+Wind 300 deg - Service	31.59	-10.72	-6.19	-666.22	1158.90	-0.89

Load Combination	Vertical K	Shear _x K	Shear _y K	Overturing Moment, M _x kip-ft	Overturing Moment, M _y kip-ft	Torque kip-ft
Service Dead+Wind 330 deg - Service	31.59	-6.19	-10.72	-1155.05	670.07	-0.62

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	-31.59	0.00	-0.00	31.59	0.00	0.000%
2	0.00	-31.59	-24.85	-0.00	31.59	24.85	0.008%
3	12.42	-31.59	-21.52	-12.42	31.59	21.52	0.000%
4	21.52	-31.59	-12.42	-21.52	31.59	12.42	0.000%
5	24.85	-31.59	0.00	-24.85	31.59	-0.00	0.004%
6	21.52	-31.59	12.42	-21.52	31.59	-12.42	0.000%
7	12.42	-31.59	21.52	-12.42	31.59	-21.52	0.000%
8	0.00	-31.59	24.85	-0.00	31.59	-24.85	0.008%
9	-12.42	-31.59	21.52	12.42	31.59	-21.52	0.000%
10	-21.52	-31.59	12.42	21.52	31.59	-12.42	0.000%
11	-24.85	-31.59	0.00	24.85	31.59	-0.00	0.004%
12	-21.52	-31.59	-12.42	21.52	31.59	12.42	0.000%
13	-12.42	-31.59	-21.52	12.42	31.59	21.52	0.000%
14	0.00	-51.53	0.00	-0.00	51.53	0.00	0.001%
15	0.00	-51.53	-6.22	-0.00	51.53	6.22	0.002%
16	3.11	-51.53	-5.39	-3.11	51.53	5.39	0.002%
17	5.39	-51.53	-3.11	-5.39	51.53	3.11	0.002%
18	6.22	-51.53	0.00	-6.22	51.53	0.00	0.002%
19	5.39	-51.53	3.11	-5.39	51.53	-3.11	0.002%
20	3.11	-51.53	5.39	-3.11	51.53	-5.39	0.002%
21	0.00	-51.53	6.22	-0.00	51.53	-6.22	0.002%
22	-3.11	-51.53	5.39	3.11	51.53	-5.39	0.002%
23	-5.39	-51.53	3.11	5.39	51.53	-3.11	0.002%
24	-6.22	-51.53	0.00	6.22	51.53	0.00	0.002%
25	-5.39	-51.53	-3.11	5.39	51.53	3.11	0.002%
26	-3.11	-51.53	-5.39	3.11	51.53	5.39	0.002%
27	0.00	-31.59	-12.38	-0.00	31.59	12.38	0.005%
28	6.19	-31.59	-10.72	-6.19	31.59	10.72	0.001%
29	10.72	-31.59	-6.19	-10.72	31.59	6.19	0.001%
30	12.38	-31.59	0.00	-12.38	31.59	-0.00	0.005%
31	10.72	-31.59	6.19	-10.72	31.59	-6.19	0.001%
32	6.19	-31.59	10.72	-6.19	31.59	-10.72	0.001%
33	0.00	-31.59	12.38	-0.00	31.59	-12.38	0.005%
34	-6.19	-31.59	10.72	6.19	31.59	-10.72	0.001%
35	-10.72	-31.59	6.19	10.72	31.59	-6.19	0.001%
36	-12.38	-31.59	0.00	12.38	31.59	-0.00	0.005%
37	-10.72	-31.59	-6.19	10.72	31.59	6.19	0.001%
38	-6.19	-31.59	-10.72	6.19	31.59	10.72	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	16	0.00007728	0.00010254
3	Yes	21	0.00000001	0.00009089
4	Yes	21	0.00000001	0.00008696
5	Yes	17	0.00003898	0.00010676
6	Yes	21	0.00000001	0.00009265
7	Yes	21	0.00000001	0.00008797
8	Yes	16	0.00007726	0.00010265
9	Yes	21	0.00000001	0.00008856
10	Yes	21	0.00000001	0.00009269

11	Yes	17	0.00003897	0.00010690
12	Yes	21	0.00000001	0.00008701
13	Yes	21	0.00000001	0.00009151
14	Yes	11	0.00000001	0.00000907
15	Yes	17	0.00010161	0.00004696
16	Yes	17	0.00010146	0.00009213
17	Yes	17	0.00010147	0.00008794
18	Yes	17	0.00010164	0.00004928
19	Yes	17	0.00010144	0.00009811
20	Yes	17	0.00010143	0.00009069
21	Yes	17	0.00010158	0.00004796
22	Yes	17	0.00010136	0.00009629
23	Yes	17	0.00010135	0.00010182
24	Yes	17	0.00010155	0.00005083
25	Yes	17	0.00010138	0.00009111
26	Yes	17	0.00010139	0.00009762
27	Yes	16	0.00008224	0.00006825
28	Yes	18	0.00000001	0.00012087
29	Yes	18	0.00000001	0.00011040
30	Yes	16	0.00008224	0.00009031
31	Yes	18	0.00000001	0.00012584
32	Yes	18	0.00000001	0.00011303
33	Yes	16	0.00008223	0.00006841
34	Yes	18	0.00000001	0.00011465
35	Yes	18	0.00000001	0.00012600
36	Yes	16	0.00008223	0.00009057
37	Yes	18	0.00000001	0.00011061
38	Yes	18	0.00000001	0.00012258

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.29	56.676	35	3.5308	0.0206
L2	126.707 - 88.8767	40.149	35	3.1448	0.0086
L3	93.1267 - 43.7967	20.816	35	2.2528	0.0037
L4	49.2134 - 0	5.478	35	1.0455	0.0012

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	Platform Mount [LP 601-1]	35	55.945	3.5163	0.0200	10505
137.00	Platform Mount [LP 403-1]	35	47.266	3.3339	0.0132	4039
127.00	Side Arm Mount [SO 602-3]	35	40.345	3.1509	0.0087	2348
117.00	Platform Mount [LP 303-1]	35	33.917	2.9212	0.0059	2195
76.00	Side Arm Mount [SO 702-1]	35	13.448	1.7582	0.0027	2000

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.29	113.215	11	7.0554	0.0410
L2	126.707 - 88.8767	80.236	11	6.2866	0.0170

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	93.1267 - 43.7967	41.625	11	4.5056	0.0072
L4	49.2134 - 0	10.962	10	2.0922	0.0023

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	Platform Mount [LP 601-1]	11	111.758	7.0266	0.0398	5381
137.00	Platform Mount [LP 403-1]	11	94.441	6.6635	0.0262	2068
127.00	Side Arm Mount [SO 602-3]	11	80.628	6.2987	0.0172	1200
117.00	Platform Mount [LP 303-1]	11	67.796	5.8403	0.0117	1118
76.00	Side Arm Mount [SO 702-1]	11	26.898	3.5171	0.0053	1007

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 K	Allow. P _a K	Ratio P P _a
L1	150 - 123.29 (1)	TP22.9x17x0.1875	26.71	0.00	0.0	39.000	13.0676	-4.46	509.64	0.009
L2	123.29 - 88.8767 (2)	TP30x21.7703x0.3125	37.83	0.00	0.0	39.000	28.5292	-10.01	1112.64	0.009
L3	88.8767 - 43.7967 (3)	TP39.2x28.4504x0.375	49.33	0.00	0.0	39.000	44.8065	-18.42	1747.45	0.011
L4	43.7967 - 0 (4)	TP48x37.2696x0.4375	49.21	0.00	0.0	39.000	66.0465	-31.57	2575.81	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} F _{by}
L1	150 - 123.29 (1)	TP22.9x17x0.1875	163.36	27.705	39.000	0.710	0.00	0.000	39.000	0.000
L2	123.29 - 88.8767 (2)	TP30x21.7703x0.3125	681.85	40.529	39.000	1.039	0.00	0.000	39.000	0.000
L3	88.8767 - 43.7967 (3)	TP39.2x28.4504x0.375	1540.4 3	44.505	39.000	1.141	0.00	0.000	39.000	0.000
L4	43.7967 - 0 (4)	TP48x37.2696x0.4375	2679.1 6	41.531	39.000	1.065	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} F _{vt}
L1	150 - 123.29	TP22.9x17x0.1875	11.25	0.861	26.000	0.066	0.79	0.066	26.000	0.003

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L2	(1) 123.29 - 88.8767 (2)	TP30x21.7703x0.3125	17.69	0.620	26.000	0.048	1.37	0.040	26.000	0.002
L3	88.8767 - 43.7967 (3)	TP39.2x28.4504x0.375	21.32	0.476	26.000	0.037	1.39	0.020	26.000	0.001
L4	43.7967 - 0 (4)	TP48x37.2696x0.4375	24.87	0.377	26.000	0.029	1.39	0.010	26.000	0.000

Pole Interaction Design Data

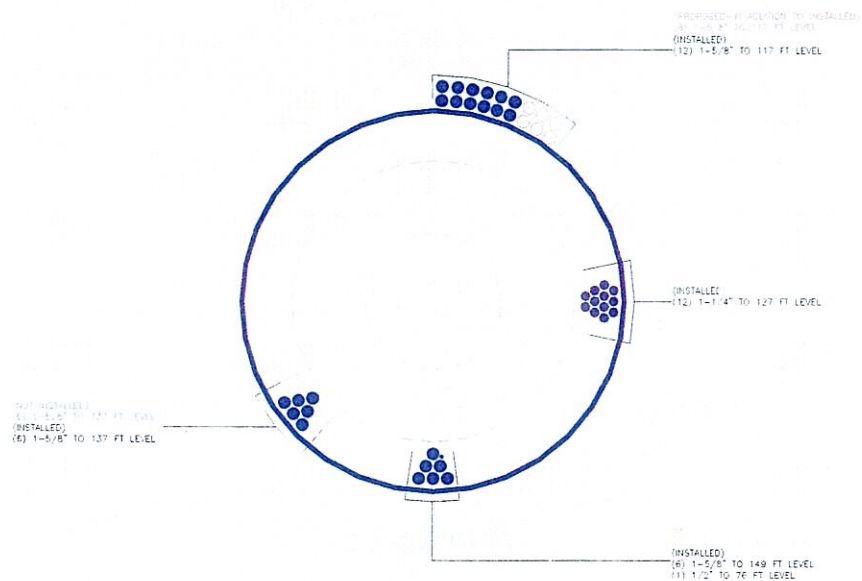
Section No.	Elevation ft	Ratio P P_a	Ratio f_{bx} F_{bx}	Ratio f_{by} F_{by}	Ratio f_v F_v	Ratio f_{vt} F_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 123.29 (1)	0.009	0.710	0.000	0.066	0.003	0.720	1.333	H1-3+VT ✓
L2	123.29 - 88.8767 (2)	0.009	1.039	0.000	0.048	0.002	1.049	1.333	H1-3+VT ✓
L3	88.8767 - 43.7967 (3)	0.011	1.141	0.000	0.037	0.001	1.152	1.333	H1-3+VT ✓
L4	43.7967 - 0 (4)	0.012	1.065	0.000	0.029	0.000	1.077	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail
L1	150 - 123.29	Pole	TP22.9x17x0.1875	1	-4.46	679.35	54.0	Pass
L2	123.29 - 88.8767	Pole	TP30x21.7703x0.3125	2	-10.01	1483.15	78.7	Pass
L3	88.8767 - 43.7967	Pole	TP39.2x28.4504x0.375	3	-18.42	2329.35	86.4	Pass
L4	43.7967 - 0	Pole	TP48x37.2696x0.4375	4	-31.57	3433.55	80.8	Pass
							Summary	
							Pole (L3)	86.4
							RATING =	86.4
								Pass

APPENDIX B

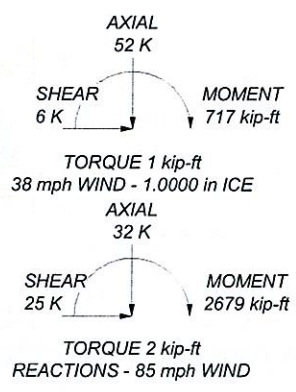
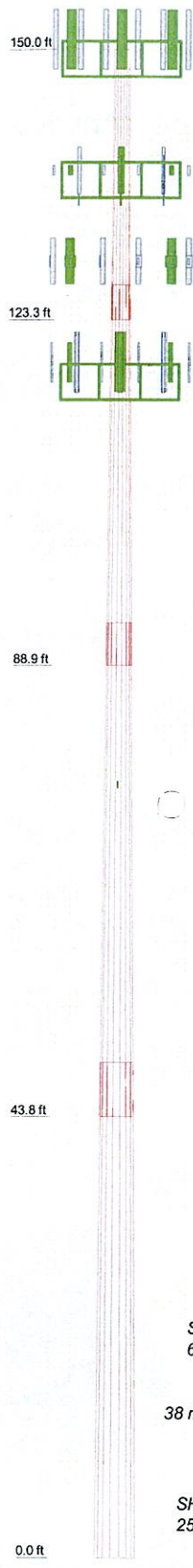
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4
Length (ft)	26.71	37.83	49.33	49.21
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.3125	0.3750	0.4375
Socket Length (ft)	3.42	4.25	5.42	37.2596
Top Dia (in)	17.0000	21.7703	28.4504	48.0000
Bot Dia (in)	22.9000	30.0000	39.2000	
Grade			A572-65	
Weight (K)	1.1	3.3	6.7	9.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 601-1] (E)	149	(2) LGP 17201 (E - ATT)	127
8-ft Ladder	149	(2) LGP 17201 (E - ATT)	127
(3) SPRINT MLA ANTENNA w/ Mount Pipe (MLA - Sprint)	149	(2) LGP13519 (E - ATT)	127
(3) SPRINT MLA ANTENNA w/ Mount Pipe (MLA - Sprint)	149	(2) LGP13519 (E - ATT)	127
(3) SPRINT MLA ANTENNA w/ Mount Pipe (MLA - Sprint)	149	Platform Mount [LP 303-1] (E)	117
Platform Mount [LP 403-1] (E)	137	(2) LPA-80080/4CF w/ Mount Pipe (P - Verizon)	117
2.375" OD x 5' Mount Pipe	137	(2) LPA-80080/4CF w/ Mount Pipe (P - Verizon)	117
2.375" OD x 5' Mount Pipe	137	(2) LPA-80080/4CF w/ Mount Pipe (P - Verizon)	117
2.375" OD x 5' Mount Pipe	137	BXA-70063-6CF-2 w/ Mount Pipe (P - Verizon)	117
RR90-17-02DP w/ Mount Pipe (E - TMO)	137	BXA-70063-6CF-2 w/ Mount Pipe (P - Verizon)	117
RR90-17-02DP w/ Mount Pipe (E - TMO)	137	BXA-70063-6CF-2 w/ Mount Pipe (P - Verizon)	117
RR90-17-02DP w/ Mount Pipe (E - TMO)	137	BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	117
(2) KRY 112 71/2 (E - TMO)	137	BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	117
(2) KRY 112 71/2 (E - TMO)	137	BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	117
(2) KRY 112 71/2 (E - TMO)	137	BXA-171085-12CF-EDIN-2 w/ Mount Pipe (P - Verizon)	117
Side Arm Mount [SO 602-3] (E)	127	Side Arm Mount [SO 702-1] (E)	76
(2) 7770.00 w/ Mount Pipe (E - ATT)	127	KS24019-L112A (E - Sprint)	76
(2) 7770.00 w/ Mount Pipe (E - ATT)	127		
(2) 7770.00 w/ Mount Pipe (E - ATT)	127		
(2) LGP 17201 (E - ATT)	127		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 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 38 mph basic wind with 1.00 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 86.4%



Paul J. Ford
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Phone: 614.221.6679
FAX: 614.448.4118

Job: **150' Monopole (Hampton / Brooklyn, CT)**
Project: **PJF #37511-1909 / BU #876390**
Client: **CCI** Drawn by: **Kevin Mahlum** App'd:
Code: **TIA/EIA-222-F** Date: **12/23/11** Scale: **NTS**
Path: **T:\375 Crown Castle\2011\37511-1909 BU 876390\37511-1909.en** Dwg No. **E-1**

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

TIA Rev F

Site Data

BU#: 876390
Site Name:
App #:
Pole Manufacturer: Other

Reactions		
Moment:	2679	ft-kips
Axial:	32	kips
Shear:	25	kips

Anchor Rod Data

Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	57	in

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

Anchor Rod Results

Maximum Rod Tension:	139.0 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	71.3% Pass

Stiffened
Service, ASD
Fty*ASIF

Plate Data

Diam:	63	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	9.76	in

Base Plate Results

Base Plate Stress:	37.0 ksi
Allowable Plate Stress:	60.0 ksi
Base Plate Stress Ratio:	61.6% Pass

Flexural Check

Stiffened
Service, ASD
0.75*Fy*ASIF
Y.L. Length:
N/A, Roark

Stiffener Data (Welding at both sides)

Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	18	in
Thick:	0.75	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	70	ksi

Stiffener Results

Horizontal Weld :	97.6% Pass
Vertical Weld:	38.8% Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	16.1% Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	50.9% Pass
Plate Comp. (AISC Bracket):	56.8% Pass

Pole Results

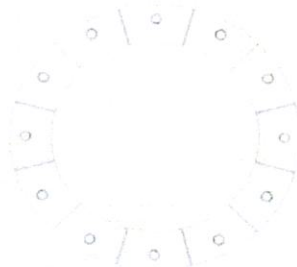
Pole Punching Shear Check:	9.9% Pass
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Pole Data

Diam:	49.21	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------



* 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

spColumn v4.60 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections
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General Information:

File Name: T:\375_Crown_Castle\2011\37511-1909 BU 876390\37511-1909.col
 Project: PJF #37511-1909 / BU #876390
 Column: Engineer: KMM
 Code: ACI 318-02 Units: English
 Run Option: Investigation Slenderness: Not considered
 Run Axis: X-axis Column Type: Structural

Material Properties:

f'c = 4 ksi fy = 60 ksi
 Ec = 3605 ksi Es = 29000 ksi
 Ultimate strain = 0.003 in/in
 Betal = 0.85

Section:

Rectangular: Width = 78 in Depth = 78 in
 Gross section area, Ag = 6084 in^2
 Ix = 3.08459e+006 in^4 Iy = 3.08459e+006 in^4
 rx = 22.5167 in ry = 22.5167 in
 Xo = 0 in Yo = 0 in

Reinforcement:

Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #4 ties with #10 bars, #4 with larger bars.
 phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
 Pattern: All Sides Equal (Cover to transverse reinforcement)
 Total steel area: As = 27.00 in^2 at rho = 0.44% (Note: rho < 0.50%)
 Minimum clear spacing = 6.98 in

27 #9 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu NA	depth in	Dt depth in	eps_t	Phi
1	32.00	3580.20	4464.18	1.247	6.05	73.70	0.03366	0.900

*** End of output ***

Foundation Loads:

Pole weight or tower leg compression = 32 (kips)
 Horizontal load at top of pier = 25 (kips)
 Overturning moment at top of pier = 2679 (ft-kips)

Design criteria:

Safety factor against overturning = 1.5

Soil Properties:

Soil density = 125 (pcf)
 Allowable soil bearing = 6 (ksf)
 Depth to water table = 4 (ft)

Dimensions:

Pier shape (round or square) S ("R" or "S")
 Pier width = 6.5 (ft)
 Pier height above grade = 1 (ft)
 depth to bottom of footing = 5 (ft)
 Footing thickness = 3 (ft)
 Footing width = 25.25 (ft)
 Footing length = 25.25 (ft)

Concrete:

Concrete strength = 4 (ksi)
 Rebar strength = 60 (ksi)
 ultimate load factor = 1.3

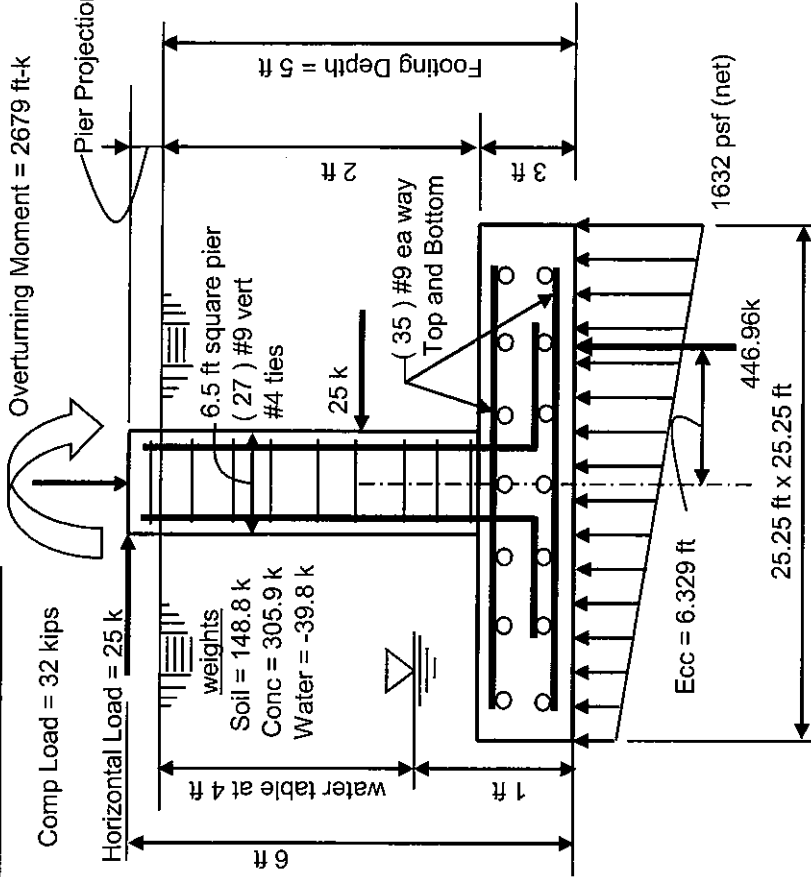
Reinforcing Steel:

minimum cover over rebar = 3 inches
 size of pad rebar = #9 bar
 quantity of pad rebar = 35 (ea direction)

Reinforcing Steel:

size of vert rebar in pier = #9 bar
 vertical rebar quantity = 27
 size of pier ties = #4 bar
 minimum cover over rebar = 3 inches

Total volume of concrete = 75.5 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 1.632 ksf	Ult Bending Shear Capacity = 126 psi
Allowable Net Soil Bearing = 6 ksf	Ult Bending Shear Stress = 27 psi
Soil Bearing Stress Ratio = 0.27 Okay	Bending Shear Stress Ratio = 0.22 Okay
Fig Overturning Resistance = 5643 ft-kips	Pad Bending Moment Capacity = 4771 ft-k
Overturning Moment = 2829 ft-kips	Pad Bending Moment = 1337 ft-k
Required Overturning Safety Factor = 1.5	Bending Moment Stress Ratio = 0.28 OK
Overturning Safety Factor = 1.995	
Ratio = 0.75 Okay	