



Daniel F. Caruso
Chairman

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

March 22, 2010

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

RE: **EM-VER-043-100216** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 1455 Forbes Street, East Hartford, Connecticut.

Dear Attorney Baldwin:

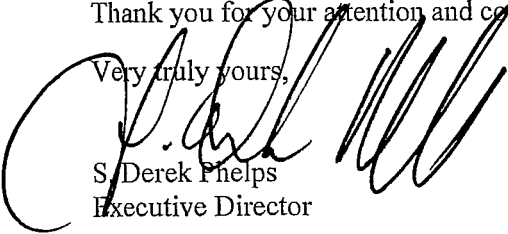
The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated February 16, 2010, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,


S. Derek Phelps
Executive Director

SDP/MP/laf

c: The Honorable Melody A. Currey, Mayor, Town of East Hartford
Michael J. Dayton, Town Planner, Town of East Hartford
Crown Castle USA, Inc.

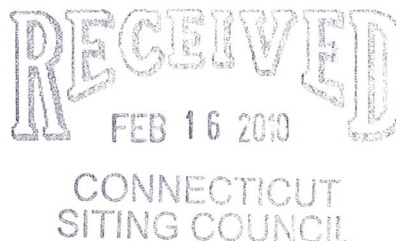
280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

ORIGINAL

February 16, 2010

Via Hand Delivery

S. Derek Phelps
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051



Re: **Notice of Exempt Modification – Antenna Swap
1455 Forbes Street, East Hartford, Connecticut**

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains wireless telecommunications antennas at the 109-foot level on the existing 131-foot tower at the above-referenced address. The tower is owned by Crown Castle. The Council approved Cellco’s use of the existing tower in 1991 through Docket No. 139. Cellco now intends to modify its installation by replacing six (6) of its existing PCS with two (2) model BXA-185090/8CF PCS antennas; one (1) model BXA-185060/8CF_2 PCS antenna; and three (3) model BXA-70063/6CF_4 LTE antennas, all at the same 109-foot level on the tower. Attached behind Tab 1 are the specifications for the proposed replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Melody A. Currey, Mayor for the Town of East Hartford. A copy of this letter is being sent to Jessie K. Handel, the owner of the property on which the tower is located.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in any increase in the height of the existing tower. Cellco’s antennas will be located at the same 109-foot level on the existing 131-foot tower.



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S. Derek Phelps
February 16, 2010
Page 2

2. The proposed modifications will not involve any modifications 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 antennas modification. (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:

Melody A. Currey, East Hartford Mayor
Jessie K. Handel
Sandy M. Carter



Slant +/- 45° Dual Polarized, Panel 90° / 16.5 dBi

BXA-185090/8CF

When ordering replace "___" with connector type.

Mechanical specifications

Length	1225 mm	48.2 in
Width	154 mm	6.1 in
Depth	105 mm	4.1 in
Depth with t-bracket	133 mm	5.2 in
4) Weight	5.0 kg	11.0 lbs
Wind Area		
Fore/Aft	0.19 m ²	2.0 ft ²
Side	0.13 m ²	1.4 ft ²
Rated Wind Velocity (Safety factor 2.0)		
	>322 km/hr	>200 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	283 N	64.0 lbs
Side	211 N	47.5 lbs

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

Mounting and Downtilting

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in).

Mounting bracket kit #26799997

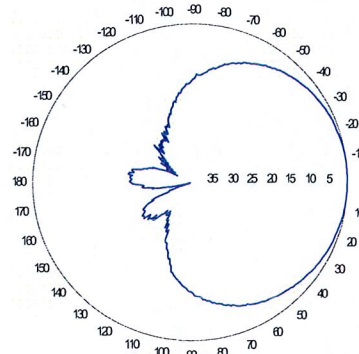
Downtilt bracket kit #26799999

The downtilt bracket kit includes the mounting bracket kit.

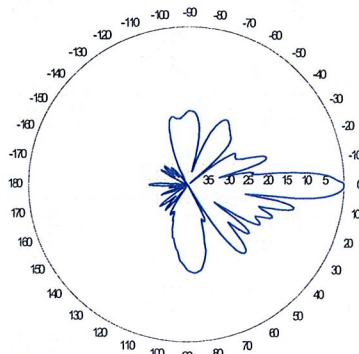
Electrical specifications

Frequency Range	1850-1990 MHz
Impedance	50Ω
3) Connector(s)	NE or E-DIN 2 ports / center
1) VSWR	≤ 1.4:1
Polarization	Slant ± 45°
1) Isolation Between Ports	< -30 dB
1) Gain	16.5 dBi
2) Power Rating	250 W
1) Half Power Angle	
H-Plane	90°
E-Plane	7°
1) Electrical Downtilt	0°
1) Null Fill	5%
Lightning Protection	Direct Ground

Radiation pattern¹⁾



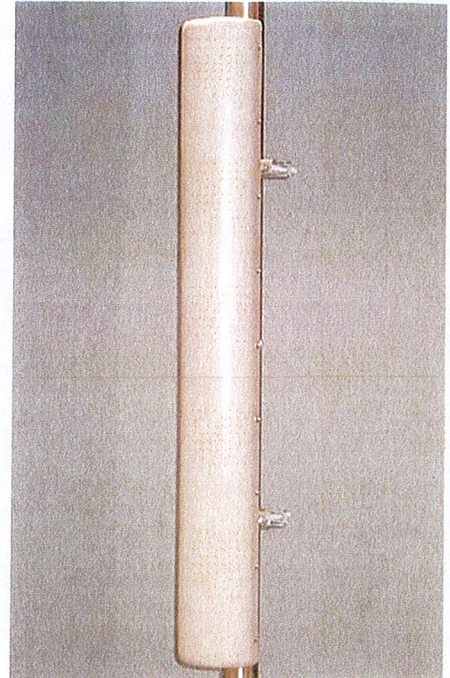
Horizontal



Vertical

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

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



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

- Watercut brass feedline assembly for consistent performance.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

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

Antenna available with center-fed connectors only.

Patented Dipole Design: U.S. Patent No. 6,597,324 B2

- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector. E-DIN indicates an elongated DIN connector.
- 4) The antenna weight listed above does not include the bracket weight.

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

CF Denotes a Center-Fed Connector.

1850-1990 MHz

Amphenol Antel, Inc. 1300 Capital Drive Rockford, Illinois 61109 USA Tel. (815) 399-0001
Toll-Free (888) 417-9562 Fax. (815) 399-0156 antel@antelinc.com www.antelinc.com

Amphenol Antel, Inc.
The Antenna Technology Company

Revision Date: 7/11/07

BXA-185060/8CF __ 2°

When ordering replace " __ " with connector type.

Mechanical specifications

Length	1238 mm	48.8 in
Width	154 mm	6.1 in
Depth	80 mm	3.2 in
Depth with t-bracket	108 mm	4.3 in
4) Weight	4.5 kg	10.0 lbs
Wind Area		
Fore/Aft	0.19 m ²	2.1 ft ²
Side	0.10 m ²	1.1 ft ²
Rated Wind Velocity (Safety factor 2.0)		
	>322 km/hr	>200 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	288 N	65 lbs
Side	170 N	38 lbs

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

Mounting and Downtilting

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in).

Mounting bracket kit #26799997

Downtilt bracket kit #26799999

The downtilt bracket kit includes the mounting bracket kit.

Electrical specifications

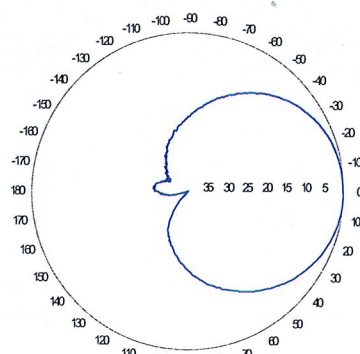
Frequency Range	1850-1990 MHz
Impedance	50Ω
3) Connector(s)	NE or E-DIN 2 ports / center
1) VSWR	≤ 1.4:1
Polarization	Slant ± 45°
1) Isolation Between Ports	< -30 dB
1) Gain	18.5 dBi
2) Power Rating	250 W
1) Half Power Angle	
H-Plane	60°
E-Plane	7°
1) Electrical Downtilt	2°
1) Null Fill	5%
Lightning Protection	Direct Ground

Patented Dipole Design: U.S. Patent No. 6,597,324 B2

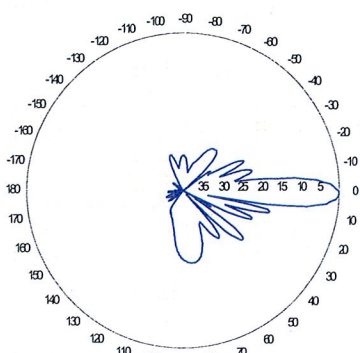
- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector.
E-DIN indicates an elongated DIN connector.
- 4) The antenna weight listed above does not include the bracket weight.

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

Radiation pattern¹⁾



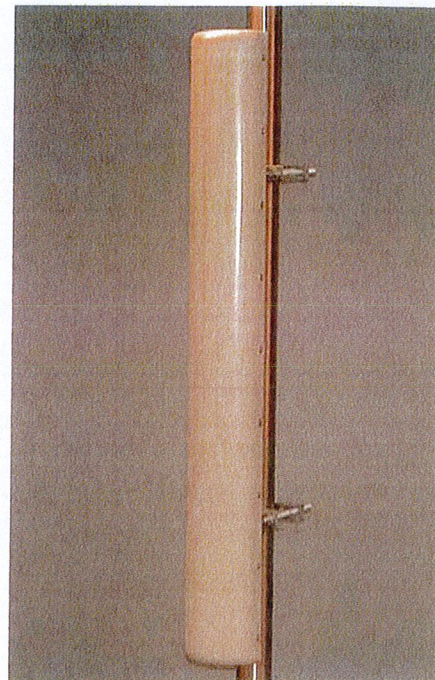
Horizontal



Vertical

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

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



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

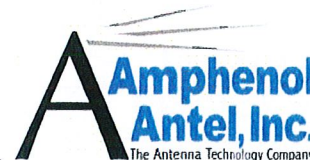
- Watercut brass feedline assembly for consistent performance.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

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

Antenna available with center-fed connectors only.

CF Denotes a Center-Fed Connector.

1850-1990 MHz



Revision Date: 7/11/07

Mechanical specifications

Length	1804 mm	71.0 in
Width	285 mm	11.2 in
Depth	114 mm	4.5 in
Depth with z-bracket	154 mm	6.1 in
Weight ⁴⁾	7.9 kg	17.0 lbs
Wind Area Fore/Aft	0.51 m ²	5.5 ft ²
Wind Area Side	0.21 m ²	2.2 ft ²
Max Wind Survivability	>201 km/hr	>125 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	753 N	169 lbf
Side	351 N	79 lbf

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

Mounting & Downtilting

Mounting hardware attaches to pipe diameter $\varnothing 50$ -160 mm; $\varnothing 2.0$ -6.3 in

Mounting Bracket Kit	36210003
Downtilt Bracket Kit	36210004

Electrical specifications

Frequency Range	696-900 MHz
Impedance	50 Ω
Connector ³⁾	NE or E-DIN Female 2 ports / Center

VSWR ¹⁾	$\leq 1.35:1$
Polarization	Slant $\pm 45^\circ$
Isolation Between Ports ¹⁾	< -25 dB
Gain ¹⁾	14.5 dBd 16.5 dBi

Power Rating ²⁾	500 W
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Half Power Angle ¹⁾	
Horizontal Beamwidth	63°
Vertical Beamwidth	11°

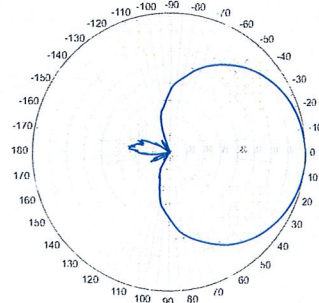
Electrical downtilt ⁵⁾	4°
Null fill ¹⁾	5%
Lightning protection	Direct ground

Patented Dipole Design: U.S. Patent No. 6,608,600 B2

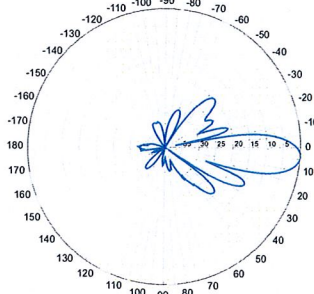
- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector.
E-DIN indicates an elongated DIN connector.
- 4) Antenna weight does not include brackets.
- 5) Add'l downtilts may be available. Check website for details.

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

Radiation-pattern¹⁾
750 MHz

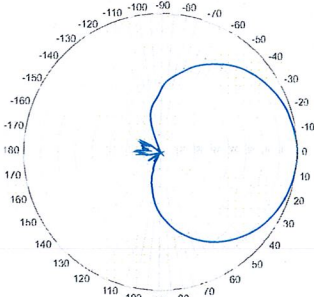


Horizontal

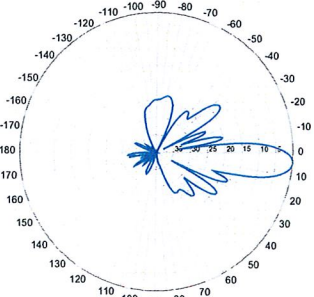


Vertical

850 MHz



Horizontal

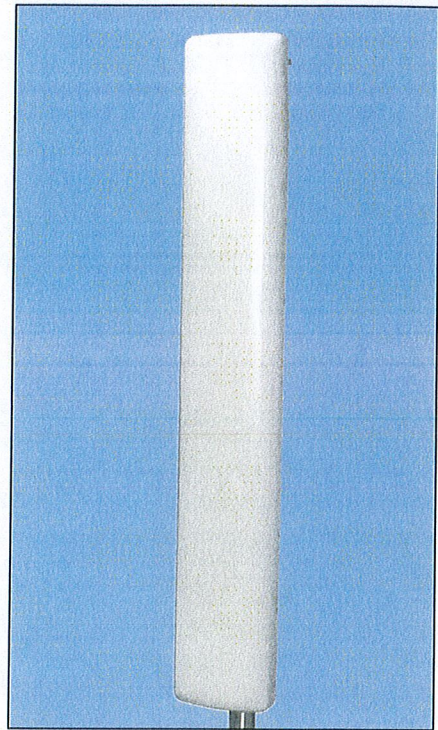


Vertical

696-900 MHz

BXA-70063/6CF __ 4°

When ordering replace "__" with connector type.



Featuring our Exclusive
3T Technology™
Antenna Design:

- Watercut brass feedline assembly for consistent performance.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Warranty:

This antenna is under a five-year limited warranty for repair or replacement.

Revision Date 04/09/09

		General		Power	Density						
Site Name: Forbes (East Hartford)											
Tower Height: Verizon @ 109Ft.											
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total			
*XM Satellite Radio	2	3981	130	0.1694	2300	1.0000	16.94%				
*Sprint	11	126	90	0.0615	1900	1.0000	6.15%				
*Pocket	3	631	128	0.0415	2130	1.0000	4.15%				
*Cingular GSM	3	640	120	0.0479	1900	1.0000	4.79%				
*Cingular UMTS	1	500	120	0.0125	880	0.5867	2.13%				
*T-Mobile UMTS	2	731	87	0.0695	2100	1.0000	6.95%				
*T-Mobile GSM	8	166	87	0.0631	1945	1.0000	6.31%				
Verizon	7	474	109	0.1004	970	1.0000	10.04%				
Verizon	9	428	109	0.1166	869	0.5793	20.12%				
Verizon	1	873	109	0.0264	757	0.4973	5.31%				
								82.90%			
* Source: Siting Council											

Date: **January 11, 2010**

John Eigenbrode
Crown Castle USA Inc.
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6616



GPD Associates
520 S. Main St. Suite 2531
Akron, OH 44311
(614) 859-1618
londecker@gpdgroup.com

Subject: **Structural Analysis Report**

Carrier Designation: **Verizon Wireless Co-Locate**
Carrier Site Number: 119711
Carrier Site Name: Forbes Street

Crown Castle Designation: **Crown Castle BU Number:** 806376
Crown Castle Site Name: HRT 100 943239
Crown Castle JDE Job Number: 129194
Crown Castle Work Order Number: 312052

Engineering Firm Designation: **GPD Associates Project Number:** 2010175.17

Site Data: **1455 Forbes St., East Hartford, CT 06118, Hartford County**
Latitude 41° 43' 53.3", Longitude -72° 36' 28"
131 Foot – Valmont Monopole Tower

Dear John Eigenbrode,

GPD Associates 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 358057, in accordance with application 93193, revision 0.

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

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

Sufficient Capacity

The analysis has been performed in accordance with the TIA/EIA-222-F standard based upon a wind speed of 80 mph fastest mile.

We at GPD Associates 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:

David B. Granger P.E.
Connecticut #: 17557

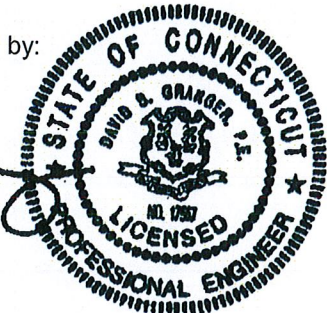


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 - Tower Component Stresses vs. Capacity

4.1) Recommendations

5) DISCLAIMER OF WARRANTIES

6) APPENDIX A

RISATower Output

7) APPENDIX B

Base Level Drawing

8) APPENDIX C

Additional Calculations

1) INTRODUCTION

The existing 131' monopole has 12 sides and is evenly tapered from 41.9" (flat-flat) at the base to 10.525" (flat-flat) at 120'. It has four major sections connected with two slip joints and a butt joint. The structure is galvanized and has no tower lighting.

The tower was originally designed by Valmont in November of 1991 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 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, 69.3 mph with 0.5 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
107	109	1	Antel	BXA-185060/8CFx2	6	1-5/8	1
		2	Antel	BXA-185090/8CF			
		3	Antel	BXA-70063/6CFx4			

Notes:

- 1) See Appendix B for proposed coax layout.

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
128	128	3	Kathrein	742-213	6	1-5/8	
118	120	3	Powerwave Technologies	7770.00	6	1-1/4	
		6	Powerwave Technologies	LGP21401 TMA			
107	109	2	ADC	Dual 800/1900 Full Band	12	1-5/8	3
		6	Decibel	DB844G65ZAXY			
		6	Decibel	DB948F85TZE-M			
97	107	1		12' Platform Mount [LP 101-1]			
		1		12' Platform Mount [LP 101-1]			
87	87	6	Decibel	DB980H90E-M	6	1-1/4	1
		3		10' T-Arm Mount [TA 601-1]			
		3	Andrew	ETW190VS12UB TMA			
87	87	6	RFS Celwave	APXV18-206516S-C-A20	12	1-5/8	2
		3	RFS Celwave	ATMAA1412D-1A20 TMA			

Notes:

- 1) The existing and SLA coax were considered. In this case, the SLA coax controls.
 2) Reserved Equipment
 3) To be replaced with the proposed loading.

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)
130	130	1		Lightning Rod		
129	129	1		TA-2350-LCC-H		
119	119	3		FR90-16-00DP		
108	108	1		13' Platform w/ rail		
		12		7130.16		
98	98	1		13' Platform w/ rail		
		4		7184.05		
		2		DB980H		
87	87	3		Antenna Mount Standoff		
		3		RR90-17-00NP		
12	12	1		Std. MW dish, 3' Dia.		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Manufacturer's Drawings	Valmont Industries, Inc., dated 11/12/91	Doc ID#: 262386	Crown DMZ
Foundation Drawings	Valmont Industries, Inc., Valmont #: 10613-91, dated 11/30/91	Doc ID#: 262389	Crown DMZ
Geotechnical Report	P.C. Geotechnical Engineering, Project: 1455 Forbes St., dated 11/11/91	Doc ID#: 262381	Crown DMZ
Previous Structural Analysis	Tower Engineering Professionals, Project #: 083376, dated 1/5/09	Doc ID#: 2370805	Crown DMZ
Extension Drawings	Valmont Industries, Inc., Valmont #: 10888-91, dated 8/08/01	Doc ID#: 645113	Crown DMZ

3.1) Analysis Method

RISATower (version 5.3.1.0), 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) Mount sizes, weights, and manufacturers are best estimates based on site photos provided and are determined without the benefit of a site visit by GPD.

This analysis may be affected if any assumptions are not valid or have been made in error. GPD Associates 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	131 - 110	Pole	TP15.525x10.525x0.1875	1	-1.83	22.49	32.2	Pass	
L2	110 - 70	Pole	TP25.531x15.525x0.25	2	-7.96	118.96	90.6	Pass	
L3	70 - 34.08	Pole	TP34.015x24.0304x0.313	3	-13.08	355.69	89.1	Pass	
L4	34.08 - 0	Pole	TP41.9x32.1584x0.344	4	-17.52	603.78	85.7	Pass	
							Summary		
							Pole (L2)	90.6	Pass
							Rating =	90.6	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods		68.1%	Pass
1	Base Plate		48.9%	Pass
1	Base Foundation		53.6%	Pass

Structure Rating (max from all components) =	90.6%
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Notes:

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

4.1) Recommendations

The design of the tower and its foundation is sufficient for the proposed loading and does not require modification.

5) DISCLAIMER OF WARRANTIES

GPD ASSOCIATES has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD ASSOCIATES in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD ASSOCIATES does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD ASSOCIATES provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

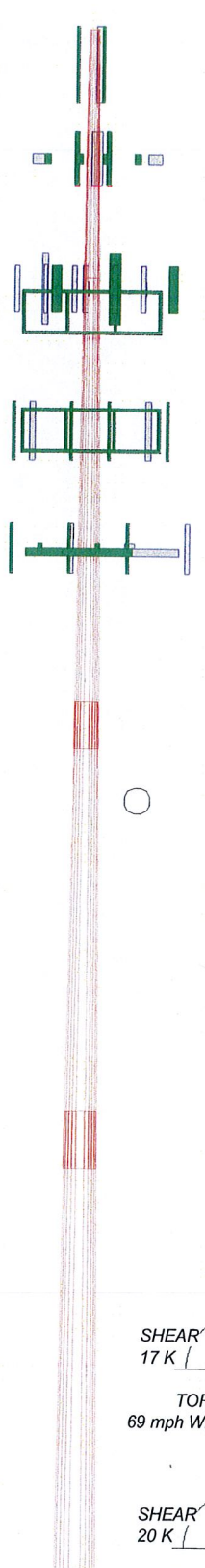
The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD ASSOCIATES, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD ASSOCIATES makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD ASSOCIATES will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD ASSOCIATES pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A
RISA TOWER OUTPUT

Section	1	2	3	4
Length (ft)	21.00	40.00	39.92	39.00
Number of Sides	12	12	12	12
Thickness (in)	0.1875	0.2500	0.3125	0.3438
Lap Splice (ft)				4.92
Top Dia (in)	10.5250	15.5250	24.0304	32.1594
Bot Dia (in)	15.5250	25.5310	34.0150	41.9000
Grade			A572-65	
Weight (K)	0.6	2.2	3.9	5.4



DESIGNED APPURTENANCE LOADING

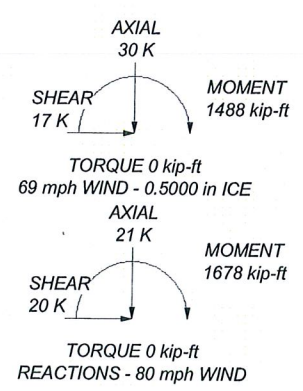
TYPE	ELEVATION	TYPE	ELEVATION
Pipe Mount [PM 501-1]	128	BXA-185090/8CF w/Mount Pipe	107
Pipe Mount [PM 501-1]	128	BXA-185060/8CFx2 w/Mount Pipe	107
Pipe Mount [PM 501-1]	128	(2) Dual 800/1900 Full Band	107
742-213 w/Mount Pipe	128	Platform Mount (LP 101-1)	97
742-213 w/Mount Pipe	128	(2) DB980H90E-M w/Mount Pipe	97
742-213 w/Mount Pipe	128	(2) DB980H90E-M w/Mount Pipe	97
Pipe Mount [PM 501-1]	118	(2) DB980H90E-M w/Mount Pipe	97
Pipe Mount [PM 501-1]	118	T-Arm Mount [TA 601-1]	87
Pipe Mount [PM 501-1]	118	T-Arm Mount [TA 601-1]	87
7770.00 w/ Mount Pipe	118	T-Arm Mount [TA 601-1]	87
7770.00 w/ Mount Pipe	118	(2) APXV18-206516S-C-A20 w/ Mount Pipe	87
7770.00 w/ Mount Pipe	118	(2) APXV18-206516S-C-A20 w/ Mount Pipe	87
(2) LGP21401	118	(2) APXV18-206516S-C-A20 w/ Mount Pipe	87
(2) LGP21401	118	(2) APXV18-206516S-C-A20 w/ Mount Pipe	87
(2) LGP21401	118	(2) APXV18-206516S-C-A20 w/ Mount Pipe	87
Platform Mount (LP 101-1)	107	ETW190VS12UB	87
(2) DB844G65ZAXY w/Mount Pipe	107	ETW190VS12UB	87
(2) DB844G65ZAXY w/Mount Pipe	107	ETW190VS12UB	87
(2) DB844G65ZAXY w/Mount Pipe	107	ETW190VS12UB	87
BXA-70063/6CFx4 w/ Mount Pipe	107	ATMAA1412D-1A20	87
BXA-70063/6CFx4 w/ Mount Pipe	107	ATMAA1412D-1A20	87
BXA-70063/6CFx4 w/ Mount Pipe	107	ATMAA1412D-1A20	87
BXA-185090/8CF w/Mount Pipe	107		

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 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 90.6%

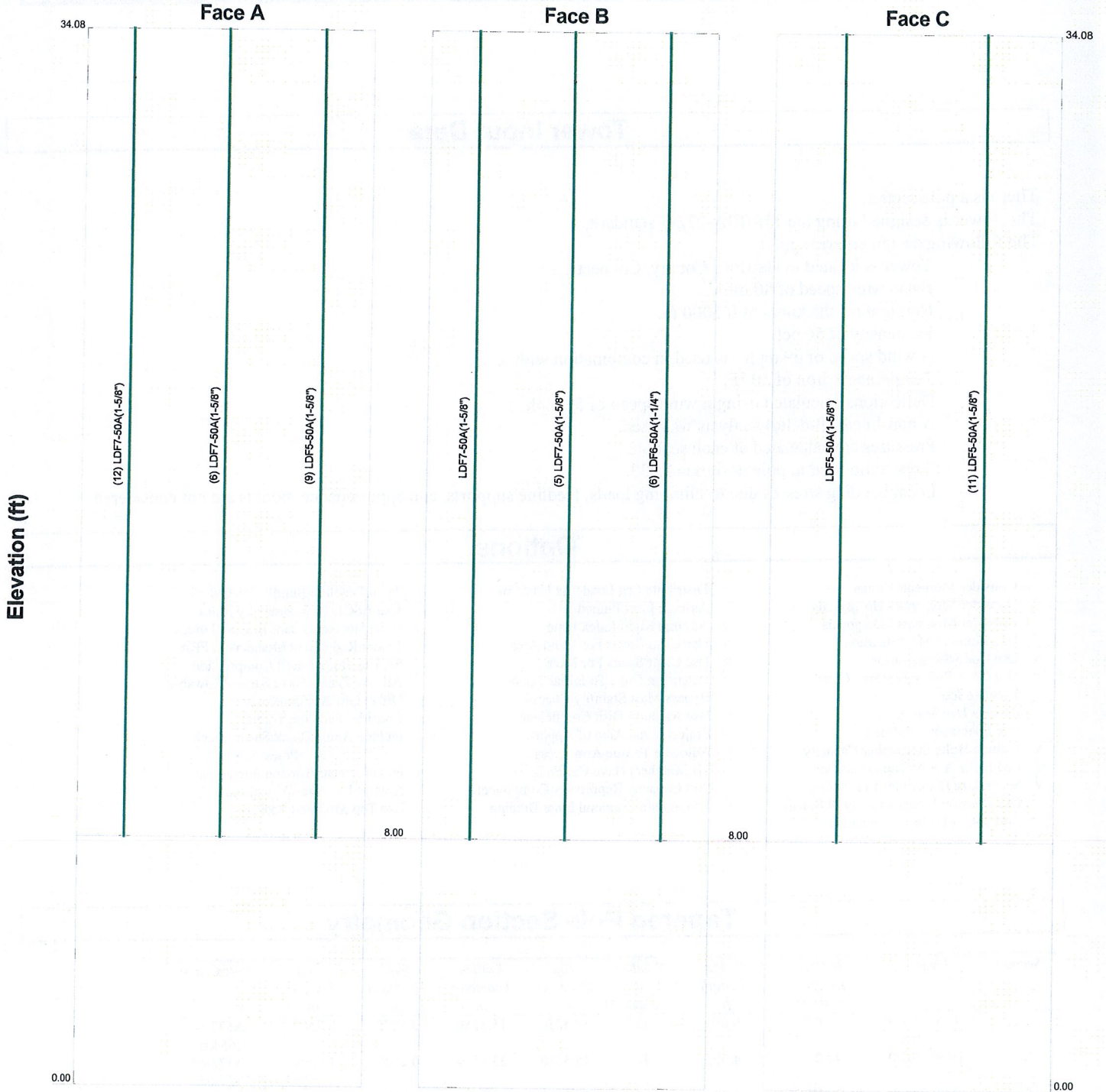


<p>GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101</p>	<p>Job: HRT 100 943239</p>
	<p>Project: 2010175.17</p>
	<p>Client: Crown Castle USA Drawn by: londecker App'd:</p>
	<p>Code: TIA/EIA-222-F Date: 01/11/10 Scale: NTS</p>
<p>Path: N:\2010\2010175\17\RSA\806378_e.r</p>	<p>Dwg No. E-1</p>

Feedline Distribution Chart

0' - 34'31/32"

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



 GPD GROUP Consulting Engineers	GPD Associates		Job: HRT 100 943239		
	520 S. Main St. Suite 2531		Project: 2010175.17		
	Akron, OH 44311		Client: Crown Castle USA	Drawn by: londecker	App'd:
	Phone: (614) 859-1618		Code: TIA/EIA-222-F	Date: 01/11/10	Scale: NTS
	FAX: (330) 572-2101		Path: N:\2010\2010175\17\RISA\B06376.eri	Dwg No. E-7	

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	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

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 Hartford County, Connecticut.

Basic wind speed of 80 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 69 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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 <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

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	131.00-110.00	21.00	0.00	12	10.5250	15.5250	0.1875	0.7500	A572-65 (65 ksi)
L2	110.00-70.00	40.00	4.00	12	15.5250	25.5310	0.2500	1.0000	A572-65 (65 ksi)
L3	70.00-34.08	39.92	4.92	12	24.0304	34.0150	0.3125	1.2500	A572-65 (65 ksi)
L4	34.08-0.00	39.00		12	32.1594	41.9000	0.3438	1.3750	A572-65 (65 ksi)

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	Project 2010175.17	Date 13:44:05 01/11/10
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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	10.8963	6.2413	85.1314	3.7008	5.4520	15.6148	172.4993	3.0718	2.3182	12.364
	16.0727	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
L2	16.0727	12.2964	366.2060	5.4684	8.0419	45.5370	742.0327	6.0519	3.4907	13.963
	26.4316	20.3512	1660.2159	9.0506	13.2251	125.5356	3364.0476	10.0162	6.1723	24.689
L3	25.9139	23.8661	1713.6438	8.4910	12.4477	137.6670	3472.3069	11.7462	5.6026	17.928
	35.2149	33.9131	4916.7508	12.0655	17.6198	279.0474	9962.6701	16.6910	8.2785	26.491
L4	34.5661	35.2160	4549.9674	11.3900	16.6586	273.1305	9219.4674	17.3322	7.6975	22.393
	43.3781	45.9976	10138.9640	14.8771	21.7042	467.1429	20544.2898	22.6386	10.3080	29.987

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 131.00-110.00				1	1	1		
L2 110.00-70.00				1	1	1		
L3 70.00-34.08				1	1	1		
L4 34.08-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _{AA}	Weight
				ft		ft ² /ft	plf
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	128.00 - 8.00	1	No Ice 1/2" Ice	0.20 0.30
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	128.00 - 8.00	5	No Ice 1/2" Ice	0.00 2.33
LDF6-50A(1-1/4")	B	No	CaAa (Out Of Face)	118.00 - 8.00	6	No Ice 1/2" Ice	0.00 0.66
LDF7-50A(1-5/8")	A	No	Inside Pole	107.00 - 8.00	12	No Ice 1/2" Ice	0.00 0.82
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	107.00 - 8.00	6	No Ice 1/2" Ice	0.00 0.82
LDF5-50A(1-5/8")	A	No	Inside Pole	97.00 - 8.00	9	No Ice 1/2" Ice	0.00 0.33
LDF5-50A(1-5/8")	C	No	CaAa (Out Of Face)	87.00 - 8.00	1	No Ice 1/2" Ice	0.11 0.33
LDF5-50A(1-5/8")	C	No	CaAa (Out Of Face)	87.00 - 8.00	11	No Ice 1/2" Ice	0.21 0.33
							1.30

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight
	ft		ft ²	ft ²	ft ²	ft ²	K
L1	131.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	3.564	0.12

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	3 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L2	110.00-70.00	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	0.000	0.000	0.63
		B	0.000	0.000	0.000	7.920	0.36
L3	70.00-34.08	C	0.000	0.000	0.000	1.853	0.07
		A	0.000	0.000	0.000	0.000	0.64
		B	0.000	0.000	0.000	7.112	0.32
L4	34.08-0.00	C	0.000	0.000	0.000	3.915	0.14
		A	0.000	0.000	0.000	0.000	0.46
		B	0.000	0.000	0.000	5.164	0.23
		C	0.000	0.000	0.000	2.843	0.10

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	131.00-110.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	5.364	0.34
		C		0.000	0.000	0.000	0.000	0.00
L2	110.00-70.00	A	0.500	0.000	0.000	0.000	0.000	0.96
		B		0.000	0.000	0.000	11.920	1.02
		C		0.000	0.000	0.000	3.553	0.27
L3	70.00-34.08	A	0.500	0.000	0.000	0.000	0.000	0.96
		B		0.000	0.000	0.000	10.704	0.92
		C		0.000	0.000	0.000	7.507	0.56
L4	34.08-0.00	A	0.500	0.000	0.000	0.000	0.000	0.70
		B		0.000	0.000	0.000	7.772	0.66
		C		0.000	0.000	0.000	5.451	0.41

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Pipe Mount [PM 501-1]	A	From Leg	0.43	30.0000	128.00	No Ice	3.47	1.67	0.05
			0.25			1/2" Ice	4.45	2.10	0.06
			0.00						
Pipe Mount [PM 501-1]	B	From Leg	0.43	30.0000	128.00	No Ice	3.47	1.67	0.05
			0.25			1/2" Ice	4.45	2.10	0.06
			0.00						
Pipe Mount [PM 501-1]	C	From Leg	0.43	30.0000	128.00	No Ice	3.47	1.67	0.05
			0.25			1/2" Ice	4.45	2.10	0.06
			0.00						
742-213 w/Mount Pipe	A	From Leg	0.87	30.0000	128.00	No Ice	5.42	4.63	0.05
			0.50			1/2" Ice	5.95	6.02	0.09
			0.00						
742-213 w/Mount Pipe	B	From Leg	0.87	30.0000	128.00	No Ice	5.42	4.63	0.05
			0.50			1/2" Ice	5.95	6.02	0.09
			0.00						
742-213 w/Mount Pipe	C	From Leg	0.87	30.0000	128.00	No Ice	5.42	4.63	0.05

RISA Tower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job HRT 100 943239	Page 4 of 19
	Project 2010175.17	Date 13:44:05 01/11/10
	Client Crown Castle USA	Designed by londecker

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
			0.50			1/2" Ice	5.95	6.02	0.09
			0.00						
Pipe Mount [PM 501-1]	A	From Leg	0.47		20.0000	118.00	No Ice	3.47	0.05
			0.17				1/2" Ice	4.45	0.06
			0.00						
Pipe Mount [PM 501-1]	B	From Leg	0.50		0.0000	118.00	No Ice	3.47	0.05
			0.00				1/2" Ice	4.45	0.06
			0.00						
Pipe Mount [PM 501-1]	C	From Leg	0.50		0.0000	118.00	No Ice	3.47	0.05
			0.00				1/2" Ice	4.45	0.06
			0.00						
7770.00 w/ Mount Pipe	A	From Leg	0.94		20.0000	118.00	No Ice	6.12	0.06
			0.34				1/2" Ice	6.63	0.10
			2.00						
7770.00 w/ Mount Pipe	B	From Leg	1.00		0.0000	118.00	No Ice	6.12	0.06
			0.00				1/2" Ice	6.63	0.10
			2.00						
7770.00 w/ Mount Pipe	C	From Leg	1.00		0.0000	118.00	No Ice	6.12	0.06
			0.00				1/2" Ice	6.63	0.10
			2.00						
(2) LGP21401	A	From Leg	0.94		20.0000	118.00	No Ice	1.29	0.01
			0.34				1/2" Ice	1.45	0.02
			2.00						
(2) LGP21401	B	From Leg	1.00		0.0000	118.00	No Ice	1.29	0.01
			0.00				1/2" Ice	1.45	0.02
			2.00						
(2) LGP21401	C	From Leg	1.00		0.0000	118.00	No Ice	1.29	0.01
			0.00				1/2" Ice	1.45	0.02
			2.00						
Platform Mount (LP 101-1)	C	None			0.0000	107.00	No Ice	36.21	1.50
							1/2" Ice	42.82	2.30
(2) DB844G65ZAXY w/Mount Pipe	B	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	5.38	0.04
		ce	-2.00				1/2" Ice	6.07	0.09
			2.00						
(2) DB844G65ZAXY w/Mount Pipe	C	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	5.38	0.04
		ce	-2.00				1/2" Ice	6.07	0.09
			2.00						
(2) DB844G65ZAXY w/Mount Pipe	A	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	5.38	0.04
		ce	-2.00				1/2" Ice	6.07	0.09
			2.00						
BXA-70063/6CFx4 w/ Mount Pipe	B	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	8.00	0.04
		ce	-2.00				1/2" Ice	8.65	0.10
			2.00						
BXA-70063/6CFx4 w/ Mount Pipe	C	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	8.00	0.04
		ce	-2.00				1/2" Ice	8.65	0.10
			2.00						
BXA-70063/6CFx4 w/ Mount Pipe	A	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	8.00	0.04
		ce	-2.00				1/2" Ice	8.65	0.10
			2.00						
BXA-185090/8CF w/Mount Pipe	B	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	3.72	0.04
		ce	-2.00				1/2" Ice	4.34	0.07
			2.00						
BXA-185090/8CF w/Mount Pipe	C	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	3.72	0.04
		ce	-2.00				1/2" Ice	4.34	0.07
			2.00						
BXA-185060/8CFx2 w/Mount Pipe	A	From Centroid-Fa	3.46		-30.0000	107.00	No Ice	3.72	0.04
		ce	-2.00				1/2" Ice	4.34	0.07

RISA Tower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job HRT 100 943239	Page 5 of 19
	Project 2010175.17	Date 13:44:05 01/11/10
	Client Crown Castle USA	Designed by londecker

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
(2) Dual 800/1900 Full Band	B	ce	2.00							
			From	3.46	-30.0000	107.00	No Ice	1.54	0.80	0.03
			Centroid-Fa	-2.00			1/2" Ice	1.71	0.94	0.04
		ce	2.00							
Platform Mount (LP 101-1)	C	None		0.0000	97.00	No Ice	36.21	36.21	1.50	
(2) DB980H90E-M w/Mount Pipe	A	From Leg	4.00		0.0000	97.00	No Ice	42.82	42.82	2.30
			0.00				1/2" Ice	4.27	3.86	0.03
			0.00				1/2" Ice	4.86	4.95	0.07
(2) DB980H90E-M w/Mount Pipe	B	From Leg	4.00		0.0000	97.00	No Ice	4.27	3.86	0.03
			0.00				1/2" Ice	4.86	4.95	0.07
			0.00							
(2) DB980H90E-M w/Mount Pipe	C	From Leg	4.00		0.0000	97.00	No Ice	4.27	3.86	0.03
			0.00				1/2" Ice	4.86	4.95	0.07
			0.00							
T-Arm Mount [TA 601-1]	A	From Leg	1.00	60.0000	87.00	No Ice	6.67	3.02	0.24	
			1.73			1/2" Ice	8.82	4.20	0.31	
			0.00							
T-Arm Mount [TA 601-1]	B	From Leg	1.00	60.0000	87.00	No Ice	6.67	3.02	0.24	
			1.73			1/2" Ice	8.82	4.20	0.31	
			0.00							
T-Arm Mount [TA 601-1]	C	From Leg	1.00	60.0000	87.00	No Ice	6.67	3.02	0.24	
			1.73			1/2" Ice	8.82	4.20	0.31	
			0.00							
(2) APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	2.00	60.0000	87.00	No Ice	3.12	2.71	0.03	
			3.46			1/2" Ice	3.53	3.42	0.06	
			0.00							
(2) APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	2.00	60.0000	87.00	No Ice	3.12	2.71	0.03	
			3.46			1/2" Ice	3.53	3.42	0.06	
			0.00							
(2) APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	2.00	60.0000	87.00	No Ice	3.12	2.71	0.03	
			3.46			1/2" Ice	3.53	3.42	0.06	
			0.00							
ETW190VS12UB	A	From Leg	2.00	60.0000	87.00	No Ice	0.66	0.35	0.01	
			3.46			1/2" Ice	0.78	0.44	0.02	
			0.00							
ETW190VS12UB	B	From Leg	2.00	60.0000	87.00	No Ice	0.66	0.35	0.01	
			3.46			1/2" Ice	0.78	0.44	0.02	
			0.00							
ETW190VS12UB	C	From Leg	2.00	60.0000	87.00	No Ice	0.66	0.35	0.01	
			3.46			1/2" Ice	0.78	0.44	0.02	
			0.00							
ATMAA1412D-1A20	A	From Leg	2.00	60.0000	87.00	No Ice	1.17	0.47	0.01	
			3.46			1/2" Ice	1.31	0.57	0.02	
			0.00							
ATMAA1412D-1A20	B	From Leg	2.00	60.0000	87.00	No Ice	1.17	0.47	0.01	
			3.46			1/2" Ice	1.31	0.57	0.02	
			0.00							
ATMAA1412D-1A20	C	From Leg	2.00	60.0000	87.00	No Ice	1.17	0.47	0.01	
			3.46			1/2" Ice	1.31	0.57	0.02	
			0.00							

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	6 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 131.00-110.00	119.83	1.445	24	22.794	A	0.000	22.794	22.794	100.00	0.000	0.000
					B	0.000	22.794	100.00	0.000	3.564	
					C	0.000	22.794	100.00	0.000	0.000	
L2 110.00-70.00	88.69	1.326	22	68.427	A	0.000	68.427	68.427	100.00	0.000	0.000
					B	0.000	68.427	100.00	0.000	7.920	
					C	0.000	68.427	100.00	0.000	1.853	
L3 70.00-34.08	51.58	1.136	19	88.372	A	0.000	88.372	88.372	100.00	0.000	0.000
					B	0.000	88.372	100.00	0.000	7.112	
					C	0.000	88.372	100.00	0.000	3.915	
L4 34.08-0.00	16.40	1	16	106.909	A	0.000	106.909	106.909	100.00	0.000	0.000
					B	0.000	106.909	100.00	0.000	5.164	
					C	0.000	106.909	100.00	0.000	2.843	

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation	z	K _z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 131.00-110.00	119.83	1.445	18	0.5000	24.544	A	0.000	24.544	24.544	100.00	0.000	0.000
						B	0.000	24.544	100.00	0.000	5.364	
						C	0.000	24.544	100.00	0.000	0.000	
L2 110.00-70.00	88.69	1.326	16	0.5000	71.760	A	0.000	71.760	71.760	100.00	0.000	0.000
						B	0.000	71.760	100.00	0.000	11.920	
						C	0.000	71.760	100.00	0.000	3.553	
L3 70.00-34.08	51.58	1.136	14	0.5000	91.365	A	0.000	91.365	91.365	100.00	0.000	0.000
						B	0.000	91.365	100.00	0.000	10.704	
						C	0.000	91.365	100.00	0.000	7.507	
L4 34.08-0.00	16.40	1	12	0.5000	109.749	A	0.000	109.749	109.749	100.00	0.000	0.000
						B	0.000	109.749	100.00	0.000	7.772	
						C	0.000	109.749	100.00	0.000	5.451	

Tower Pressure - Service

$G_H = 1.690$

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 131.00-110.00	119.83	1.445	9	22.794	A	0.000	22.794	22.794	100.00	0.000	0.000
					B	0.000	22.794	100.00	0.000	3.564	
					C	0.000	22.794	100.00	0.000	0.000	
L2	88.69	1.326	8	68.427	A	0.000	68.427	68.427	100.00	0.000	0.000

RISA Tower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	7 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	Iondecker

Section Elevation	z	K _z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
110.00-70.00					B	0.000	68.427		100.00	0.000	7.920
L3 70.00-34.08	51.58	1.136	7	88.372	C	0.000	68.427		100.00	0.000	1.853
					A	0.000	88.372	88.372	100.00	0.000	0.000
					B	0.000	88.372		100.00	0.000	7.112
L4 34.08-0.00	16.40	1	6	106.909	C	0.000	88.372		100.00	0.000	3.915
					A	0.000	106.909	106.909	100.00	0.000	0.000
					B	0.000	106.909		100.00	0.000	5.164
					C	0.000	106.909		100.00	0.000	2.843

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	c						ft ²	K	plf	
L1	0.12	0.55	A	1	1.03	1	1	1	22.794	1.08	51.54	C
131.00-110.00			B	1	1.03	1	1	1	22.794			
			C	1	1.03	1	1	1	22.794			
			A	1	1.03	1	1	1	68.427			
L2	1.05	2.22	B	1	1.03	1	1	1	68.427	2.94	73.52	C
			C	1	1.03	1	1	1	68.427			
			A	1	1.03	1	1	1	88.372			
L3	1.10	3.92	B	1	1.03	1	1	1	88.372	3.19	88.87	C
			C	1	1.03	1	1	1	88.372			
			A	1	1.03	1	1	1	88.372			
L4 34.08-0.00	0.80	5.39	B	1	1.03	1	1	1	106.909	3.27	95.97	C
			C	1	1.03	1	1	1	106.909			
			A	1	1.03	1	1	1	106.909			
Sum Weight:	3.06	12.09						OTM	608.77 kip-ft	10.49		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K	c						ft ²	K	plf	
L1	0.12	0.55	A	1	1.03	1	1	1	22.794	1.08	51.54	C
131.00-110.00			B	1	1.03	1	1	1	22.794			
			C	1	1.03	1	1	1	22.794			
			A	1	1.03	1	1	1	68.427			
L2	1.05	2.22	B	1	1.03	1	1	1	68.427	2.94	73.52	C
			C	1	1.03	1	1	1	68.427			
			A	1	1.03	1	1	1	88.372			
L3	1.10	3.92	B	1	1.03	1	1	1	88.372	3.19	88.87	C
			C	1	1.03	1	1	1	88.372			
			A	1	1.03	1	1	1	88.372			
L4 34.08-0.00	0.80	5.39	B	1	1.03	1	1	1	106.909	3.27	95.97	C
			C	1	1.03	1	1	1	106.909			
			A	1	1.03	1	1	1	106.909			
Sum Weight:	3.06	12.09						OTM	608.77 kip-ft	10.49		

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	8 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.12	0.55	A	1	1.03	1	1	1	22.794	1.08	51.54	C
			B	1	1.03	1	1	1	22.794			
			C	1	1.03	1	1	1	22.794			
L2 110.00-70.00	1.05	2.22	A	1	1.03	1	1	1	68.427	2.94	73.52	C
			B	1	1.03	1	1	1	68.427			
			C	1	1.03	1	1	1	68.427			
L3 70.00-34.08	1.10	3.92	A	1	1.03	1	1	1	88.372	3.19	88.87	C
			B	1	1.03	1	1	1	88.372			
			C	1	1.03	1	1	1	88.372			
L4 34.08-0.00	0.80	5.39	A	1	1.03	1	1	1	106.909	3.27	95.97	C
			B	1	1.03	1	1	1	106.909			
			C	1	1.03	1	1	1	106.909			
Sum Weight:	3.06	12.09						OTM	608.77 kip-ft	10.49		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.34	0.73	A	1	1.03	1	1	1	24.544	0.92	43.80	C
			B	1	1.03	1	1	1	24.544			
			C	1	1.03	1	1	1	24.544			
L2 110.00-70.00	2.25	2.75	A	1	1.03	1	1	1	71.760	2.46	61.41	C
			B	1	1.03	1	1	1	71.760			
			C	1	1.03	1	1	1	71.760			
L3 70.00-34.08	2.44	4.60	A	1	1.03	1	1	1	91.365	2.64	73.36	C
			B	1	1.03	1	1	1	91.365			
			C	1	1.03	1	1	1	91.365			
L4 34.08-0.00	1.77	6.20	A	1	1.03	1	1	1	109.749	2.62	76.94	C
			B	1	1.03	1	1	1	109.749			
			C	1	1.03	1	1	1	109.749			
Sum Weight:	6.80	14.28						OTM	506.99 kip-ft	8.63		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.34	0.73	A	1	1.03	1	1	1	24.544	0.92	43.80	C
			B	1	1.03	1	1	1	24.544			
			C	1	1.03	1	1	1	24.544			
L2 110.00-70.00	2.25	2.75	A	1	1.03	1	1	1	71.760	2.46	61.41	C
			B	1	1.03	1	1	1	71.760			

RISA Tower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job HRT 100 943239	Page 9 of 19
	Project 2010175.17	Date 13:44:05 01/11/10
	Client Crown Castle USA	Designed by londecker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L3 70.00-34.08	2.44	4.60	C	1	1.03	1	1	1	71.760	2.64	73.36	C
			A	1	1.03	1	1	91.365				
			B	1	1.03	1	1	91.365				
L4 34.08-0.00	1.77	6.20	C	1	1.03	1	1	91.365	109.749	2.62	76.94	C
			A	1	1.03	1	1	109.749				
			B	1	1.03	1	1	109.749				
Sum Weight:	6.80	14.28	C	1	1.03	1	1	109.749	506.99	8.63		
								OTM	kip-ft			

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.34	0.73	A	1	1.03	1	1	1	24.544	0.92	43.80	C
			B	1	1.03	1	1	24.544				
			C	1	1.03	1	1	24.544				
L2 110.00-70.00	2.25	2.75	A	1	1.03	1	1	1	71.760	2.46	61.41	C
			B	1	1.03	1	1	71.760				
			C	1	1.03	1	1	71.760				
L3 70.00-34.08	2.44	4.60	A	1	1.03	1	1	1	91.365	2.64	73.36	C
			B	1	1.03	1	1	91.365				
			C	1	1.03	1	1	91.365				
L4 34.08-0.00	1.77	6.20	A	1	1.03	1	1	1	109.749	2.62	76.94	C
			B	1	1.03	1	1	109.749				
			C	1	1.03	1	1	109.749				
Sum Weight:	6.80	14.28	C	1	1.03	1	1	109.749	506.99	8.63		
								OTM	kip-ft			

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.12	0.55	A	1	1.03	1	1	1	22.794	0.42	20.13	C
			B	1	1.03	1	1	22.794				
			C	1	1.03	1	1	22.794				
L2 110.00-70.00	1.05	2.22	A	1	1.03	1	1	1	68.427	1.15	28.72	C
			B	1	1.03	1	1	68.427				
			C	1	1.03	1	1	68.427				
L3 70.00-34.08	1.10	3.92	A	1	1.03	1	1	1	88.372	1.25	34.72	C
			B	1	1.03	1	1	88.372				
			C	1	1.03	1	1	88.372				
L4 34.08-0.00	0.80	5.39	A	1	1.03	1	1	1	106.909	1.28	37.49	C
			B	1	1.03	1	1	106.909				
			C	1	1.03	1	1	106.909				
Sum Weight:	3.06	12.09	C	1	1.03	1	1	106.909	237.80	4.10		
								OTM	kip-ft			

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	10 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.12	0.55	A	1	1.03	1	1	1	22.794	0.42	20.13	C
			B	1	1.03	1	1	22.794				
			C	1	1.03	1	1	22.794				
L2 110.00-70.00	1.05	2.22	A	1	1.03	1	1	1	68.427	1.15	28.72	C
			B	1	1.03	1	1	68.427				
			C	1	1.03	1	1	68.427				
L3 70.00-34.08	1.10	3.92	A	1	1.03	1	1	1	88.372	1.25	34.72	C
			B	1	1.03	1	1	88.372				
			C	1	1.03	1	1	88.372				
L4 34.08-0.00	0.80	5.39	A	1	1.03	1	1	1	106.909	1.28	37.49	C
			B	1	1.03	1	1	106.909				
			C	1	1.03	1	1	106.909				
Sum Weight:	3.06	12.09						OTM	237.80	4.10		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
L1 131.00-110.00	0.12	0.55	A	1	1.03	1	1	1	22.794	0.42	20.13	C
			B	1	1.03	1	1	22.794				
			C	1	1.03	1	1	22.794				
L2 110.00-70.00	1.05	2.22	A	1	1.03	1	1	1	68.427	1.15	28.72	C
			B	1	1.03	1	1	68.427				
			C	1	1.03	1	1	68.427				
L3 70.00-34.08	1.10	3.92	A	1	1.03	1	1	1	88.372	1.25	34.72	C
			B	1	1.03	1	1	88.372				
			C	1	1.03	1	1	88.372				
L4 34.08-0.00	0.80	5.39	A	1	1.03	1	1	1	106.909	1.28	37.49	C
			B	1	1.03	1	1	106.909				
			C	1	1.03	1	1	106.909				
Sum Weight:	3.06	12.09						OTM	237.80	4.10		

Discrete Appurtenance Pressures - No Ice G_H = 1.690

Description	Aiming Azimuth	Weight	Offset _x	Offset _z	z	K _z	q _z	C _A Ac Front	C _A Ac Side
	°	K	ft	ft	ft		psf	ft ²	ft ²
Pipe Mount [PM 501-1]	30.0000	0.05	0.25	-0.90	128.00	1.473	24	3.47	1.67
Pipe Mount [PM 501-1]	150.0000	0.05	0.65	0.67	128.00	1.473	24	3.47	1.67
Pipe Mount [PM 501-1]	270.0000	0.05	-0.90	0.23	128.00	1.473	24	3.47	1.67
742-213 w/Mount Pipe	30.0000	0.05	0.50	-1.34	128.00	1.473	24	5.42	4.63

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job HRT 100 943239	Page 11 of 19
	Project 2010175.17	Date 13:44:05 01/11/10
	Client Crown Castle USA	Designed by londecker

Description	Aiming	Weight	Offset _x	Offset _y	z	K _z	q _z	C _{AAc} Front	C _{AAc} Side
	Azimuth °	K	ft	ft	ft		psf	ft ²	ft ²
742-213 w/Mount Pipe	150.0000	0.05	0.91	1.10	128.00	1.473	24	5.42	4.63
742-213 w/Mount Pipe	270.0000	0.05	-1.41	0.24	128.00	1.473	24	5.42	4.63
Pipe Mount [PM 501-1]	20.0000	0.05	0.17	-1.04	118.00	1.439	24	3.47	1.67
Pipe Mount [PM 501-1]	120.0000	-0.05	0.92	0.53	118.00	1.439	24	3.47	1.67
Pipe Mount [PM 501-1]	240.0000	0.05	-0.92	0.53	118.00	1.439	24	3.47	1.67
7770.00 w/ Mount Pipe	20.0000	0.06	0.34	-1.51	120.00	1.446	24	6.12	4.25
7770.00 w/ Mount Pipe	120.0000	0.06	1.36	0.78	120.00	1.446	24	6.12	4.25
7770.00 w/ Mount Pipe	240.0000	0.06	-1.36	0.78	120.00	1.446	24	6.12	4.25
LGP21401	20.0000	0.02	0.34	-1.51	120.00	1.446	24	2.58	0.47
LGP21401	120.0000	0.02	1.36	0.78	120.00	1.446	24	2.58	0.47
LGP21401	240.0000	0.02	-1.36	0.78	120.00	1.446	24	2.58	0.47
Platform Mount (LP 101-1)	0.0000	1.50	0.00	0.00	107.00	1.399	23	36.21	36.21
DB844G65ZAXY w/Mount Pipe	30.0000	0.08	2.00	-3.46	109.00	1.407	23	10.76	10.79
DB844G65ZAXY w/Mount Pipe	150.0000	0.08	2.00	3.46	109.00	1.407	23	10.76	10.79
DB844G65ZAXY w/Mount Pipe	270.0000	0.08	-4.00	0.00	109.00	1.407	23	10.76	10.79
BXA-70063/6CFx4 w/ Mount Pipe	30.0000	0.04	2.00	-3.46	109.00	1.407	23	8.00	5.42
BXA-70063/6CFx4 w/ Mount Pipe	150.0000	0.04	2.00	3.46	109.00	1.407	23	8.00	5.42
BXA-70063/6CFx4 w/ Mount Pipe	270.0000	0.04	-4.00	0.00	109.00	1.407	23	8.00	5.42
BXA-185090/8CF w/Mount Pipe	30.0000	0.04	2.00	-3.46	109.00	1.407	23	3.72	3.53
BXA-185090/8CF w/Mount Pipe	150.0000	0.04	2.00	3.46	109.00	1.407	23	3.72	3.53
BXA-185060/8CFx2 w/Mount Pipe	270.0000	0.04	-4.00	0.00	109.00	1.407	23	3.72	3.53
Dual 800/1900 Full Band Platform Mount (LP 101-1)	30.0000	0.06	2.00	-3.46	109.00	1.407	23	3.08	1.61
Platform Mount (LP 101-1)	0.0000	1.50	0.00	0.00	97.00	1.361	22	36.21	36.21
DB980H90E-M w/Mount Pipe	0.0000	0.06	0.00	-4.78	97.00	1.361	22	8.55	7.71
DB980H90E-M w/Mount Pipe	120.0000	0.06	4.14	2.39	97.00	1.361	22	8.55	7.71
DB980H90E-M w/Mount Pipe	240.0000	0.06	-4.14	2.39	97.00	1.361	22	8.55	7.71
T-Arm Mount [TA 601-1]	60.0000	0.24	1.73	-1.89	87.00	1.319	22	6.67	3.02
T-Arm Mount [TA 601-1]	180.0000	0.24	0.77	2.44	87.00	1.319	22	6.67	3.02
T-Arm Mount [TA 601-1]	300.0000	0.24	-2.50	-0.55	87.00	1.319	22	6.67	3.02
APXV18-206516S-C-A2 0 w/ Mount Pipe	60.0000	0.06	3.46	-2.89	87.00	1.319	22	6.25	5.42
APXV18-206516S-C-A2 0 w/ Mount Pipe	180.0000	0.06	0.77	4.44	87.00	1.319	22	6.25	5.42
APXV18-206516S-C-A2 0 w/ Mount Pipe	300.0000	0.06	-4.23	-1.55	87.00	1.319	22	6.25	5.42
ETW190VS12UB	60.0000	0.01	3.46	-2.89	87.00	1.319	22	0.66	0.35
ETW190VS12UB	180.0000	0.01	0.77	4.44	87.00	1.319	22	0.66	0.35
ETW190VS12UB	300.0000	0.01	-4.23	-1.55	87.00	1.319	22	0.66	0.35
ATMAA1412D-1A20	60.0000	0.01	3.46	-2.89	87.00	1.319	22	1.17	0.47
ATMAA1412D-1A20	180.0000	0.01	0.77	4.44	87.00	1.319	22	1.17	0.47
ATMAA1412D-1A20	300.0000	0.01	-4.23	-1.55	87.00	1.319	22	1.17	0.47
Sum Weight:		5.39							

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	12 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Discrete Appurtenance Pressures - With Ice $G_H = 1.690$

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A A _c Front ft ²	C _A A _c Side ft ²	t _z in
Pipe Mount [PM 501-1]	30.0000	0.06	0.25	-0.90	128.00	1.473	18	4.45	2.10	0.5000
Pipe Mount [PM 501-1]	150.0000	0.06	0.65	0.67	128.00	1.473	18	4.45	2.10	0.5000
Pipe Mount [PM 501-1]	270.0000	0.06	-0.90	0.23	128.00	1.473	18	4.45	2.10	0.5000
742-213 w/Mount Pipe	30.0000	0.09	0.50	-1.34	128.00	1.473	18	5.95	6.02	0.5000
742-213 w/Mount Pipe	150.0000	0.09	0.91	1.10	128.00	1.473	18	5.95	6.02	0.5000
742-213 w/Mount Pipe	270.0000	0.09	-1.41	0.24	128.00	1.473	18	5.95	6.02	0.5000
Pipe Mount [PM 501-1]	20.0000	0.06	0.17	-1.04	118.00	1.439	18	4.45	2.10	0.5000
Pipe Mount [PM 501-1]	120.0000	0.06	0.92	0.53	118.00	1.439	18	4.45	2.10	0.5000
Pipe Mount [PM 501-1]	240.0000	0.06	-0.92	0.53	118.00	1.439	18	4.45	2.10	0.5000
7770.00 w/ Mount Pipe	20.0000	0.10	0.34	-1.51	120.00	1.446	18	6.63	5.01	0.5000
7770.00 w/ Mount Pipe	120.0000	0.10	1.36	0.78	120.00	1.446	18	6.63	5.01	0.5000
7770.00 w/ Mount Pipe	240.0000	0.10	-1.36	0.78	120.00	1.446	18	6.63	5.01	0.5000
LGP21401	20.0000	0.04	0.34	-1.51	120.00	1.446	18	2.89	0.63	0.5000
LGP21401	120.0000	0.04	1.36	0.78	120.00	1.446	18	2.89	0.63	0.5000
LGP21401	240.0000	0.04	-1.36	0.78	120.00	1.446	18	2.89	0.63	0.5000
Platform Mount (LP 101-1)	0.0000	2.30	0.00	0.00	107.00	1.399	17	42.82	42.82	0.5000
DB844G65ZAXY w/Mount Pipe	30.0000	0.18	2.00	-3.46	109.00	1.407	17	12.14	12.98	0.5000
DB844G65ZAXY w/Mount Pipe	150.0000	0.18	2.00	3.46	109.00	1.407	17	12.14	12.98	0.5000
DB844G65ZAXY w/Mount Pipe	270.0000	0.18	-4.00	0.00	109.00	1.407	17	12.14	12.98	0.5000
BXA-70063/6CFx4 w/Mount Pipe	30.0000	0.10	2.00	-3.46	109.00	1.407	17	8.65	6.59	0.5000
BXA-70063/6CFx4 w/Mount Pipe	150.0000	0.10	2.00	3.46	109.00	1.407	17	8.65	6.59	0.5000
BXA-70063/6CFx4 w/Mount Pipe	270.0000	0.10	-4.00	0.00	109.00	1.407	17	8.65	6.59	0.5000
BXA-185090/8CF w/Mount Pipe	30.0000	0.07	2.00	-3.46	109.00	1.407	17	4.34	4.57	0.5000
BXA-185090/8CF w/Mount Pipe	150.0000	0.07	2.00	3.46	109.00	1.407	17	4.34	4.57	0.5000
BXA-185060/8CFx2 w/Mount Pipe	270.0000	0.07	-4.00	0.00	109.00	1.407	17	4.34	4.57	0.5000
Dual 800/1900 Full Band Platform Mount (LP 101-1)	30.0000	0.08	2.00	-3.46	109.00	1.407	17	3.41	1.87	0.5000
	0.0000	2.30	0.00	0.00	97.00	1.361	17	42.82	42.82	0.5000
DB980H90E-M w/Mount Pipe	0.0000	0.14	0.00	-4.78	97.00	1.361	17	9.72	9.89	0.5000
DB980H90E-M w/Mount Pipe	120.0000	0.14	4.14	2.39	97.00	1.361	17	9.72	9.89	0.5000
DB980H90E-M w/Mount Pipe	240.0000	0.14	-4.14	2.39	97.00	1.361	17	9.72	9.89	0.5000
T-Arm Mount [TA 601-1]	60.0000	0.31	1.73	-1.89	87.00	1.319	16	8.82	4.20	0.5000
T-Arm Mount [TA 601-1]	180.0000	0.31	0.77	2.44	87.00	1.319	16	8.82	4.20	0.5000
T-Arm Mount [TA 601-1]	300.0000	0.31	-2.50	-0.55	87.00	1.319	16	8.82	4.20	0.5000
APXV18-206516S-C-A2 0 w/ Mount Pipe	60.0000	0.11	3.46	-2.89	87.00	1.319	16	7.06	6.83	0.5000
APXV18-206516S-C-A2 0 w/ Mount Pipe	180.0000	0.11	0.77	4.44	87.00	1.319	16	7.06	6.83	0.5000
APXV18-206516S-C-A2 0 w/ Mount Pipe	300.0000	0.11	-4.23	-1.55	87.00	1.319	16	7.06	6.83	0.5000

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	13 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A Ac Front ft ²	C _A Ac Side ft ²	t _z in
0 w/ Mount Pipe										
ETW190VS12UB	60.0000	0.02	3.46	-2.89	87.00	1.319	16	0.78	0.44	0.5000
ETW190VS12UB	180.0000	0.02	0.77	4.44	87.00	1.319	16	0.78	0.44	0.5000
ETW190VS12UB	300.0000	0.02	-4.23	-1.55	87.00	1.319	16	0.78	0.44	0.5000
ATMAA1412D-1A20	60.0000	0.02	3.46	-2.89	87.00	1.319	16	1.31	0.57	0.5000
ATMAA1412D-1A20	180.0000	0.02	0.77	4.44	87.00	1.319	16	1.31	0.57	0.5000
ATMAA1412D-1A20	300.0000	0.02	-4.23	-1.55	87.00	1.319	16	1.31	0.57	0.5000
Sum		8.57								
Weight:										

Discrete Appurtenance Pressures - Service $G_H = 1.690$

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A Ac Front ft ²	C _A Ac Side ft ²
Pipe Mount [PM 501-1]	30.0000	0.05	0.25	-0.90	128.00	1.473	9	3.47	1.67
Pipe Mount [PM 501-1]	150.0000	0.05	0.65	0.67	128.00	1.473	9	3.47	1.67
Pipe Mount [PM 501-1]	270.0000	0.05	-0.90	0.23	128.00	1.473	9	3.47	1.67
742-213 w/Mount Pipe	30.0000	0.05	0.50	-1.34	128.00	1.473	9	5.42	4.63
742-213 w/Mount Pipe	150.0000	0.05	0.91	1.10	128.00	1.473	9	5.42	4.63
742-213 w/Mount Pipe	270.0000	0.05	-1.41	0.24	128.00	1.473	9	5.42	4.63
Pipe Mount [PM 501-1]	20.0000	0.05	0.17	-1.04	118.00	1.439	9	3.47	1.67
Pipe Mount [PM 501-1]	120.0000	0.05	0.92	0.53	118.00	1.439	9	3.47	1.67
Pipe Mount [PM 501-1]	240.0000	0.05	-0.92	0.53	118.00	1.439	9	3.47	1.67
7770.00 w/ Mount Pipe	20.0000	0.06	0.34	-1.51	120.00	1.446	9	6.12	4.25
7770.00 w/ Mount Pipe	120.0000	0.06	1.36	0.78	120.00	1.446	9	6.12	4.25
7770.00 w/ Mount Pipe	240.0000	0.06	-1.36	0.78	120.00	1.446	9	6.12	4.25
LGP21401	20.0000	0.02	0.34	-1.51	120.00	1.446	9	2.58	0.47
LGP21401	120.0000	0.02	1.36	0.78	120.00	1.446	9	2.58	0.47
LGP21401	240.0000	0.02	-1.36	0.78	120.00	1.446	9	2.58	0.47
Platform Mount (LP 101-1)	0.0000	1.50	0.00	0.00	107.00	1.399	9	36.21	36.21
DB844G65ZAXY w/Mount Pipe	30.0000	0.08	2.00	-3.46	109.00	1.407	9	10.76	10.79
DB844G65ZAXY w/Mount Pipe	150.0000	0.08	2.00	3.46	109.00	1.407	9	10.76	10.79
DB844G65ZAXY w/Mount Pipe	270.0000	0.08	-4.00	0.00	109.00	1.407	9	10.76	10.79
BXA-70063/6CFx4 w/ Mount Pipe	30.0000	0.04	2.00	-3.46	109.00	1.407	9	8.00	5.42
BXA-70063/6CFx4 w/ Mount Pipe	150.0000	0.04	2.00	3.46	109.00	1.407	9	8.00	5.42
BXA-70063/6CFx4 w/ Mount Pipe	270.0000	0.04	-4.00	0.00	109.00	1.407	9	8.00	5.42
BXA-185090/8CF w/Mount Pipe	30.0000	0.04	2.00	-3.46	109.00	1.407	9	3.72	3.53
BXA-185090/8CF w/Mount Pipe	150.0000	0.04	2.00	3.46	109.00	1.407	9	3.72	3.53
BXA-185060/8CFx2 w/Mount Pipe	270.0000	0.04	-4.00	0.00	109.00	1.407	9	3.72	3.53
Dual 800/1900 Full Band Platform Mount (LP 101-1)	30.0000	0.06	2.00	-3.46	109.00	1.407	9	3.08	1.61
Platform Mount (LP 101-1)	0.0000	1.50	0.00	0.00	97.00	1.361	9	36.21	36.21
DB980H90E-M w/Mount Pipe	0.0000	0.06	0.00	-4.78	97.00	1.361	9	8.55	7.71
DB980H90E-M w/Mount Pipe	120.0000	0.06	4.14	2.39	97.00	1.361	9	8.55	7.71
DB980H90E-M	240.0000	0.06	-4.14	2.39	97.00	1.361	9	8.55	7.71

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	14 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _y ft	z ft	K _x	q _x psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
w/Mount Pipe									
T-Arm Mount [TA 601-1]	60.0000	0.24	1.73	-1.89	87.00	1.319	8	6.67	3.02
T-Arm Mount [TA 601-1]	180.0000	0.24	0.77	2.44	87.00	1.319	8	6.67	3.02
T-Arm Mount [TA 601-1]	300.0000	0.24	-2.50	-0.55	87.00	1.319	8	6.67	3.02
APXV18-206516S-C-A2 0 w/ Mount Pipe	60.0000	0.06	3.46	-2.89	87.00	1.319	8	6.25	5.42
APXV18-206516S-C-A2 0 w/ Mount Pipe	180.0000	0.06	0.77	4.44	87.00	1.319	8	6.25	5.42
APXV18-206516S-C-A2 0 w/ Mount Pipe	300.0000	0.06	-4.23	-1.55	87.00	1.319	8	6.25	5.42
ETW190VS12UB	60.0000	0.01	3.46	-2.89	87.00	1.319	8	0.66	0.35
ETW190VS12UB	180.0000	0.01	0.77	4.44	87.00	1.319	8	0.66	0.35
ETW190VS12UB	300.0000	0.01	-4.23	-1.55	87.00	1.319	8	0.66	0.35
ATMAA1412D-1A20	60.0000	0.01	3.46	-2.89	87.00	1.319	8	1.17	0.47
ATMAA1412D-1A20	180.0000	0.01	0.77	4.44	87.00	1.319	8	1.17	0.47
ATMAA1412D-1A20	300.0000	0.01	-4.23	-1.55	87.00	1.319	8	1.17	0.47
Sum Weight:		5.39							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _y kip-ft	Sum of Torques kip-ft
Leg Weight	12.09					
Bracing Weight	0.00					
Total Member Self-Weight	12.09					
Total Weight	20.55			-0.20	-0.16	
Wind 0 deg - No Ice		0.10	-20.08	-0.20	-0.16	
Wind 90 deg - No Ice		20.10	-0.10	-1624.18	-11.72	0.16
Wind 180 deg - No Ice		-0.10	20.08	-11.76	-1627.46	-0.22
Member Ice	2.19			1623.78	11.41	-0.16
Total Weight Ice	29.65					
Wind 0 deg - Ice		0.08	-17.21	-0.26	-0.22	
Wind 90 deg - Ice		17.23	-0.08	-1413.52	-9.49	0.14
Wind 180 deg - Ice		-0.08	17.21	-9.54	-1416.23	-0.19
Total Weight	20.55			1412.99	9.06	-0.14
Wind 0 deg - Service		0.04	-7.84	-0.20	-0.16	
Wind 90 deg - Service		7.85	-0.04	-634.57	-4.67	0.06
Wind 180 deg - Service		-0.04	7.84	-4.72	-635.82	-0.09
				634.17	4.36	-0.06

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 90 deg - No Ice
4	Dead+Wind 180 deg - No Ice
5	Dead+Ice+Temp

RISA Tower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	15 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Comb. No.	Description
6	Dead+Wind 0 deg+Ice+Temp
7	Dead+Wind 90 deg+Ice+Temp
8	Dead+Wind 180 deg+Ice+Temp
9	Dead+Wind 0 deg - Service
10	Dead+Wind 90 deg - Service
11	Dead+Wind 180 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	131 - 110	Pole	Max Tension	4	0.00	-0.00	0.00
			Max. Compression	5	-2.13	-0.06	-0.01
			Max. Mx	3	-1.01	-39.69	0.71
			Max. My	4	-1.02	0.68	-39.15
			Max. Vy	3	3.29	-39.69	0.71
			Max. Vx	2	-3.23	-0.75	39.14
			Max. Torque	4			0.04
L2	110 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	5	-14.08	-0.22	0.27
			Max. Mx	3	-7.96	-420.33	4.62
			Max. My	2	-7.96	-4.57	418.88
			Max. Vy	3	13.92	-420.33	4.62
			Max. Vx	2	-13.89	-4.57	418.88
			Max. Torque	3			0.20
L3	70 - 34.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	5	-20.68	-0.22	0.27
			Max. Mx	3	-13.08	-958.27	8.26
			Max. My	2	-13.08	-8.21	955.89
			Max. Vy	3	16.83	-958.27	8.26
			Max. Vx	2	-16.80	-8.21	955.89
			Max. Torque	3			0.20
L4	34.08 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	5	-29.65	-0.22	0.27
			Max. Mx	3	-20.53	-1677.87	12.20
			Max. My	2	-20.53	-12.15	1674.48
			Max. Vy	3	20.12	-1677.87	12.20
			Max. Vx	2	-20.09	-12.15	1674.48
			Max. Torque	3			0.20

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	7	29.65	-17.23	0.08
	Max. H _x	4	20.55	0.10	-20.08
	Max. H _z	2	20.55	-0.10	20.08
	Max. M _x	2	1674.48	-0.10	20.08
	Max. M _z	3	1677.87	-20.10	0.10
	Max. Torsion	3	0.20	-20.10	0.10
	Min. Vert	1	20.55	0.00	0.00
	Min. H _x	3	20.55	-20.10	0.10
	Min. H _z	4	20.55	0.10	-20.08

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	16 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. M _x	4	-1674.05	0.10	-20.08
	Min. M _z	4	-11.82	0.10	-20.08
	Min. Torsion	2	-0.14	-0.10	20.08

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	20.55	0.00	0.00	-0.20	-0.16	0.00
Dead+Wind 0 deg - No Ice	20.55	0.10	-20.08	-1674.48	-12.15	0.14
Dead+Wind 90 deg - No Ice	20.55	20.10	-0.10	-12.20	-1677.87	-0.20
Dead+Wind 180 deg - No Ice	20.55	-0.10	20.08	1674.05	11.82	-0.15
Dead+Ice+Temp	29.65	0.00	0.00	-0.27	-0.22	0.00
Dead+Wind 0 deg+Ice+Temp	29.65	0.08	-17.21	-1485.16	-10.07	0.13
Dead+Wind 90 deg+Ice+Temp	29.65	17.23	-0.08	-10.12	-1488.03	-0.17
Dead+Wind 180 deg+Ice+Temp	29.65	-0.08	17.21	1484.58	9.60	-0.13
Dead+Wind 0 deg - Service	20.55	0.04	-7.84	-655.18	-4.86	0.06
Dead+Wind 90 deg - Service	20.55	7.85	-0.04	-4.91	-656.49	-0.08
Dead+Wind 180 deg - Service	20.55	-0.04	7.84	654.75	4.53	-0.06

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	-20.55	0.00	0.00	20.55	0.00	0.000%
2	0.10	-20.55	-20.08	-0.10	20.55	20.08	0.000%
3	20.10	-20.55	-0.10	-20.10	20.55	0.10	0.000%
4	-0.10	-20.55	20.08	0.10	20.55	-20.08	0.000%
5	0.00	-29.65	0.00	0.00	29.65	0.00	0.000%
6	0.08	-29.65	-17.21	-0.08	29.65	17.21	0.000%
7	17.23	-29.65	-0.08	-17.23	29.65	0.08	0.000%
8	-0.08	-29.65	17.21	0.08	29.65	-17.21	0.000%
9	0.04	-20.55	-7.84	-0.04	20.55	7.84	0.000%
10	7.85	-20.55	-0.04	-7.85	20.55	0.04	0.000%
11	-0.04	-20.55	7.84	0.04	20.55	-7.84	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	0.00050278
3	Yes	4	0.00000001	0.00055137
4	Yes	4	0.00000001	0.00022556
5	Yes	4	0.00000001	0.00000001
6	Yes	5	0.00000001	0.00026621
7	Yes	5	0.00000001	0.00026733
8	Yes	5	0.00000001	0.00026212

RISATower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job	HRT 100 943239	Page	17 of 19
	Project	2010175.17	Date	13:44:05 01/11/10
	Client	Crown Castle USA	Designed by	londecker

9	Yes	4	0.00000001	0.00009352
10	Yes	4	0.00000001	0.00010389
11	Yes	4	0.00000001	0.00006072

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 110	39.660	10	2.6763	0.0012
L2	110 - 70	28.089	10	2.5245	0.0011
L3	74 - 34.08	11.987	10	1.6264	0.0003
L4	39 - 0	3.158	10	0.7570	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
128.00	Pipe Mount [PM 501-1]	10	37.971	2.6642	0.0016	14158
118.00	Pipe Mount [PM 501-1]	10	32.397	2.6084	0.0016	5444
107.00	Platform Mount (LP 101-1)	10	26.528	2.4792	0.0015	3195
97.00	Platform Mount (LP 101-1)	10	21.578	2.2767	0.0012	2710
87.00	T-Arm Mount [TA 601-1]	10	17.072	2.0145	0.0009	2355

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 110	101.067	3	6.8224	0.0023
L2	110 - 70	71.626	3	6.4368	0.0020
L3	74 - 34.08	30.602	3	4.1517	0.0007
L4	39 - 0	8.068	3	1.9338	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
128.00	Pipe Mount [PM 501-1]	3	96.769	6.7927	0.0048	5709
118.00	Pipe Mount [PM 501-1]	3	82.589	6.6531	0.0046	2194
107.00	Platform Mount (LP 101-1)	3	67.651	6.3189	0.0042	1284
97.00	Platform Mount (LP 101-1)	3	55.046	5.7921	0.0033	1084
87.00	T-Arm Mount [TA 601-1]	3	43.565	5.1187	0.0023	938

RISA Tower GPD Associates 520 S. Main St. Suite 2531 Akron, OH 44311 Phone: (614) 859-1618 FAX: (330) 572-2101	Job HRT 100 943239	Page 18 of 19
	Project 2010175.17	Date 13:44:05 01/11/10
	Client Crown Castle USA	Designed by londecker

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	131 - 110 (1)	TP15.525x10.525x0.1875	21.00	131.00	286.3	1.822	9.2600	-1.83	16.87	0.109
L2	110 - 70 (2)	TP25.531x15.525x0.25	40.00	131.00	180.8	4.566	19.5457	-7.96	89.24	0.089
L3	70 - 34.08 (3)	TP34.015x24.0304x0.3125	39.92	131.00	135.2	8.166	32.6749	-13.08	266.83	0.049
L4	34.08 - 0 (4)	TP41.9x32.1594x0.3438	39.00	131.00	117.0	10.905	41.5348	-17.52	452.95	0.039

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	131 - 110 (1)	TP15.525x10.525x0.1875	36.06	12.517	39.000	0.321	0.00	0.000	39.000	0.000
L2	110 - 70 (2)	TP25.531x15.525x0.25	420.36	43.580	39.000	1.117	0.00	0.000	39.000	0.000
L3	70 - 34.08 (3)	TP34.015x24.0304x0.3125	958.31	44.409	39.000	1.139	0.00	0.000	39.000	0.000
L4	34.08 - 0 (4)	TP41.9x32.1594x0.3438	1364.83	43.036	39.000	1.104	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	131 - 110 (1)	TP15.525x10.525x0.1875	2.97	0.321	26.000	0.025	0.00	0.000	26.000	0.000
L2	110 - 70 (2)	TP25.531x15.525x0.25	13.92	0.712	26.000	0.056	0.20	0.010	26.000	0.000
L3	70 - 34.08 (3)	TP34.015x24.0304x0.3125	16.83	0.515	26.000	0.040	0.20	0.004	26.000	0.000
L4	34.08 - 0 (4)	TP41.9x32.1594x0.3438	18.87	0.454	26.000	0.035	0.20	0.003	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	131 - 110 (1)	0.109	0.321	0.000	0.025	0.000	0.430	1.333	H1-3+VT ✓
L2	110 - 70 (2)	0.089	1.117	0.000	0.056	0.000	1.207	1.333	H1-3+VT ✓
L3	70 - 34.08 (3)	0.049	1.139	0.000	0.040	0.000	1.188	1.333	H1-3+VT ✓

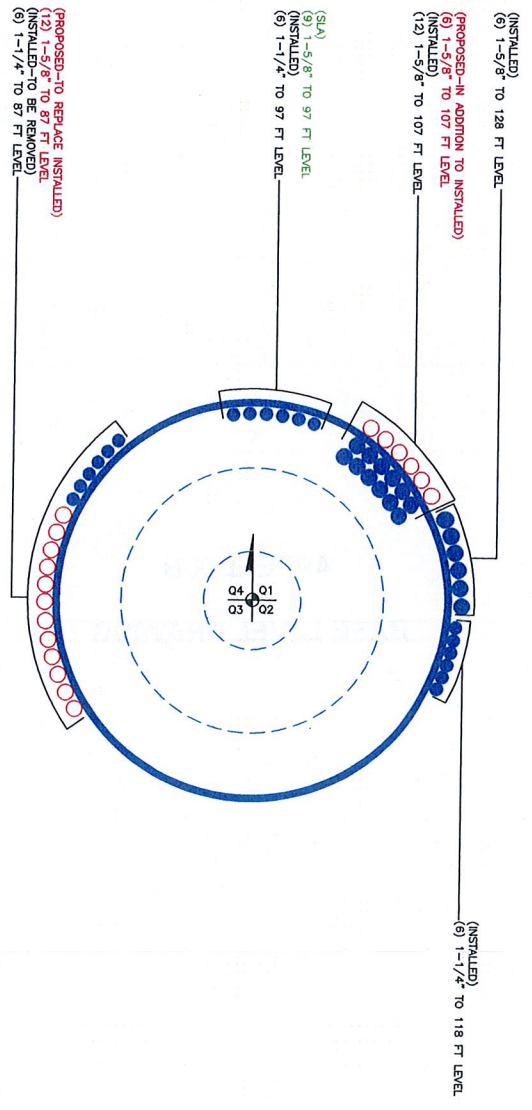
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	Project 2010175.17	Date 13:44:05 01/11/10
	Client Crown Castle USA	Designed by londecker

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
L4	34.08 - 0 (4)	0.039	1.104	0.000	0.035	0.000	1.142 ✓	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	131 - 110	Pole	TP15.525x10.525x0.1875	1	-1.83	22.49	32.2	Pass
L2	110 - 70	Pole	TP25.531x15.525x0.25	2	-7.96	118.96	90.6	Pass
L3	70 - 34.08	Pole	TP34.015x24.0304x0.3125	3	-13.08	355.69	89.1	Pass
L4	34.08 - 0	Pole	TP41.9x32.1594x0.3438	4	-17.52	603.78	85.7	Pass
Summary								
Pole (L2)							90.6	Pass
RATING =							90.6	Pass

APPENDIX B
BASE LEVEL DRAWING



(INSTALLED)
(6) 1-5/8" TO 128 FT LEVEL

(PROPOSED - IN ADDITION TO INSTALLED)
(6) 1-1/4" TO 107 FT LEVEL
(INSTALLED)

(12) 1-5/8" TO 107 FT LEVEL

(9) 1-5/8" TO 97 FT LEVEL
(INSTALLED)

(SIA)
(9) 1-5/8" TO 97 FT LEVEL
(INSTALLED)

(6) 1-1/4" TO 97 FT LEVEL

(PROPOSED - TO REPLACE INSTALLED)
(6) 1-1/4" TO 97 FT LEVEL
(INSTALLED TO BE REMOVED)

(6) 1-1/4" TO 87 FT LEVEL

(INSTALLED)
(6) 1-1/4" TO 118 FT LEVEL



SCALE :

BUSINESS UNIT: 806376 TOWER ID: C.BASELEVEL

BASE LEVEL DRAWING

LEGEND: FEEDLINES

- SOLID BLUE CIRCLE DENOTES EXISTING FEEDLINE
- OPEN RED CIRCLE DENOTES PROPOSED FEEDLINE
- OPEN BLUE CIRCLE DENOTES NOT INSTALLED
- X DENOTES LOCATION NOT GIVEN

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

SCALE: 1" = 1'-0" 1

APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#:	806376
Site Name:	HRT 100 943239
App #:	93193
Pole Manufacturer:	Other

Reactions		
Moment:	1678	ft-kips
Axial:	21	kips
Shear:	20	kips

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

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

Anchor Rod Results

Maximum Rod Tension: 132.8 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 68.1% **Pass**

Rigid
Service ASD
Fty*ASIF

Plate Data

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

Base Plate Results

Base Plate Stress: 29.3 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 48.9% **Pass**

Flexural Check

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

Stiffener Data (Welding at both sides)

Config:	0	*
Weld Type:	Both	
Groove Depth:	0.25	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	5	in
Height:	18	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

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

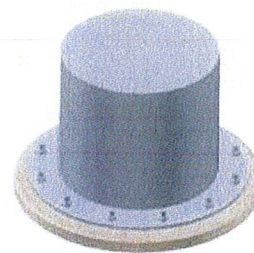
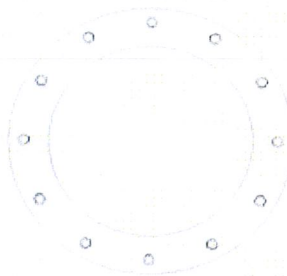
Pole Punching Shear Check: n/a

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
-------	-------



* 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

PAD DESIGN - Monopole
BU# 806376

TOWER REACTIONS

total overturning moment = 1678 Kip-ft
 total shear = 21 Kip
 axial = 20 Kip
 ground water table = Below ft

PAD DIMENSIONS

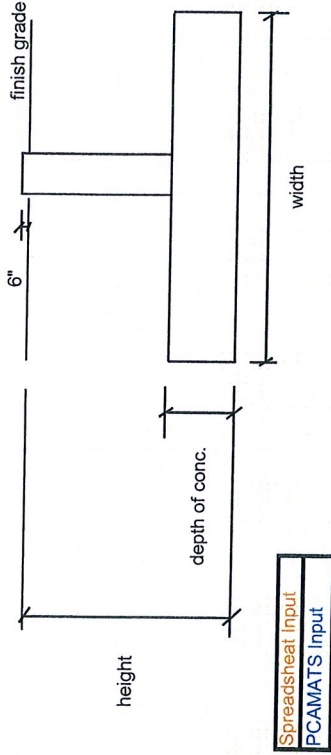
width = 22 ft
 height = 9 ft
 depth of conc = 3 ft
 γ_{soil} = 0.115 kcf
 γ_{conc} = 0.150 kcf

M_r = 7476.59 k-ft
 M_{ot} = 1877.5 k-ft
 P = 574.76 k
 W_{wedge} = 26.29 k
 Allowable Bearing = 5 ksf

LOAD PERPENDICULAR TO PAD

$Q_{MAX} = P/A+M/S = 2.23926747$
 $Q_{MIN} = P/A-M/S = 0.12337716$
 $Q_{MAX} = P/A+M/S = 2.68007795$
 $Q_{MIN} = P/A-M/S = -0.31743332$

M_x = 1327.593
 M_y = 1327.593
 e_x = 2.322
 e_y = 2.322
 e_x/W = 0.106 ok ($e/W < 1/6$)
 e_y/W = 0.106 ok ($e/W < 1/6$)



F.S. OVERTURNING = 3.98220579 ok > 1.5
 F.S. OVERTURNING / F.S. ALLOWABLE = 37.7%

width/6 = 3.67
 M/P = 3.28
 IF $M/P > width/6$
 $Q_{max} = 2.245$ ksf
 $Q_{min} = 0.000$ ksf
 $Q_{MAX}/Q_{ALL} = 44.9\%$ OK

Verify max pressure in PCAMATS for this load case

IF $e/W > 1/6$
 $Q_{ALL} = 1694.4$ kips
 $Q_{MAX} = 908.25$ kips
 $Q_{MAX}/Q_{ALL} = 53.6\%$ OK
 $B_1 = 26.03$ ft
 $L_1 = 26.03$ ft

Foundation Capacity: 53.6% OK