ROBINSON & COLE LLP

KENNETH C. BALDWIN

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

April 7, 2011

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

Re: **Notice of Construction Activity**
EM-VER-002-100107 – 401 Wakelee Avenue, Ansonia, CT
EM-VER-051-100125 – 281 Woodhouse Avenue, Fairfield, CT
EM-VER-101-100107 – 117 Washington Avenue, North Haven, CT
EM-VER-084-100107 – 111 School House Road, Milford, CT
EM-VER-115-100128 – 178 New Haven Road, Prospect, CT
EM-VER-103-100107 – Old Waterbury Road, Southbury, CT

Dear Ms. Roberts:

The purpose of this letter is to notify you that construction activity associated with all of the above-referenced facility modifications has been completed.

If you have any questions or need any additional information regarding any of these facilities, please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

KCB/kmd
Copy to:
Sandy M. Carter

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

March 28, 2011

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

RE: **EM-VER-051-100125** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 281 Woodhouse Road, Fairfield, Connecticut. Modification of Previous Acknowledgment.

Dear Attorney Baldwin:

In addition to the Connecticut Siting Council (Council) acknowledgement dated February 24, 2010 (filing dated January 25, 2010), the Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

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

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated February 17, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Kenneth A. Flatto, First Selectman, Town of Fairfield
Joseph E. Devonshuk, Town Planner, Town of Fairfield
Crown Castle USA, Inc.

ROBINSON & COLE LLP

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ORIGINAL

February 17, 2011

Michael Perrone
Siting Analyst
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Cellco Partnership d/b/a Verizon Wireless**
EM-VER-051-100125 – 281 Woodhouse Road, Fairfield, Connecticut

Dear Mr. Perrone:

On February 24, 2010, the Siting Council acknowledged receipt of Cellco's notice of intent to modify the above-referenced telecommunications facility. This modification involved the removal of Cellco's twelve (12) existing antennas replacing them with six (6) new cellular antennas, three (3) new PCS antennas and three (3) new LTE antennas.

In addition to the antenna modifications, Cellco now intends to install six (6) coax cable diplexers on its antenna mounting platform. Attached to this letter is an updated Structural Analysis Report for the previously approved antenna modifications including the coax diplexers and a copy of the diplexer specifications. This analysis confirms that the tower can support all of Cellco's proposed modifications.

If you have any questions regarding any of these materials, please do not hesitate to contact me or Rachel Mayo.

Sincerely,

Kenneth C. Baldwin

Attachment
Copy to:
Sandy M. Carter
Brian Ragozzine
Mark Gauger

10908862-v1

Date: **February 02, 2011**

Veronica Harris
Crown Castle
1200 McArthur Blvd
Mahwah, NJ 07430

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

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	Fairfield
Crown Castle Designation:	**Crown Castle BU Number:**	806355
	Crown Castle Site Name:	BRG 126 943086
	Crown Castle JDE Job Number:	148992
	Crown Castle Work Order Number:	384151
Engineering Firm Designation:	**Crown Castle Project Number:**	384151
Site Data:	**281 WOODHOUSE ROAD, FAIRFIELD, Fairfield County, CT**	
	Latitude *41° 11' 45.3"*, Longitude *-73° 16' 52.9"*	
	171 Foot - Monopole Tower	

Dear Veronica Harris,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 384151, in accordance with application 115914, 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 analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

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

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

Structural analysis prepared by: Meghan Black, EIT/ RLIM

Respectfully submitted by:

Aaron C. Poot, P.E.
Engineering Supervisor

RISA Tower Report - version 5.4.2.0

STATE OF CONNECTICUT
AARON C. POOT
No. 25050
LICENSED
PROFESSIONAL ENGINEER

2/2/11

TABLE OF CONTENTS

1) INTRODUCTION

This tower was originally designed to be a 156 ft monopole tower designed by ENGINEERED ENDEAVORS, INC. in May of 1998 and an extension was added totaling a tower height of 171 ft. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-E&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 85 mph with no ice, 37.6 mph with 0.75 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
155	158	6	rfs celwave	FD9R6004/2C-3L	12	1-5/8	1

Notes:
1) Proposed Equipment

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
166	167	3	ems wireless	RV90-17-02DP	-	-	2
	166	1	tower mounts	Pipe Mount [PM 601-3]			
155	158	3	andrew	LNX-6514DS-T4M w/ Mount Pipe	12	1-1/4	3
		6	decibel	DB844G65ZAXY w/ Mount Pipe			
		3	rymsa wireless	MG D3-800TV w/ Mount Pipe			
	155	1	tower mounts	Platform Mount [LP 602-1]	-	-	1
146	148	6	powerwave technologies	7770.00 w/ Mount Pipe	12	1-5/8	1
		6	powerwave technologies	LGP2140X	1	1/2	
	146	1	tower mounts	Platform Mount [LP 602-1]			
138	140	3	ems wireless	DR65-18-02DP w/ Mount Pipe	12	1-5/8	1
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		3	rfs celwave	ATMPP1412D-1CWA			
	138	1	tower mounts	Platform Mount [LP 602-1]			
128	128	1	andrew	VHLP800-11	1	1/2	1
		3	kathrein	840 10054 w/ Mount Pipe	3	1/4	
		1	tower mounts	Side Arm Mount [SO 101-3]	3 2	5/16 2" Conduit	

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
118	118	1	tower mounts	Side Arm Mount [SO 301-1]	-	-	2
		2	tower mounts	Side Arm Mount [SO 701-1]			
		1	tower mounts	T-Arm Mount [TA 602-1]			

Notes:
1) Existing Equipment
2) Abandoned Equipment, considered in this analysis
3) Feedlines to be replaced by proposed; not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
160	160	12	Swedcom	ALP 9212	-	-
148	148	12	Swedcom	ALP 11011	-	-
138	138	6	Celwave	APN 199015	-	-
128	128	12	Swedcom	ALP 9212	-	-
118	118	12	Swedcom	ALP 9212	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., Inc.	1099974	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors Incorporated	1098364	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors Incorporated	653293	CCISITES

3.1) Analysis Method

RISATower (version 5.4.2.0), 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.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	171 - 156.5	Pole	TP10.75x10.75x0.365	1	-0.712	333.349	13.8	Pass
L2	156.5 - 156	Pole	TP19.5x10.75x0.365	2	-0.726	625.462	8.2	Pass
L3	156 - 132.67	Pole	TP24.79x19.5x0.188	3	-6.318	735.448	57.6	Pass
L4	132.67 - 87.0867	Pole	TP34.63x23.584x0.375	4	-13.999	2052.540	76.3	Pass
L5	87.0867 - 43	Pole	TP43.75x32.796x0.438	5	-24.067	3029.762	79.8	Pass
L6	43 - 0	Pole	TP52.5x41.531x0.5	6	-36.902	4122.995	74.8	Pass
							Summary	
						Pole (L5)	79.8	Pass
						RATING =	79.8	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	67.2	Pass
1	Base Plate	0	81.5	Pass
1	Base Foundation	0	78.3	Pass
1	Exterior Flange bolts	156	1.7	Pass
1	Exterior Flange plate	156	2.4	Pass

Structure Rating (max from all components) =	81.5%

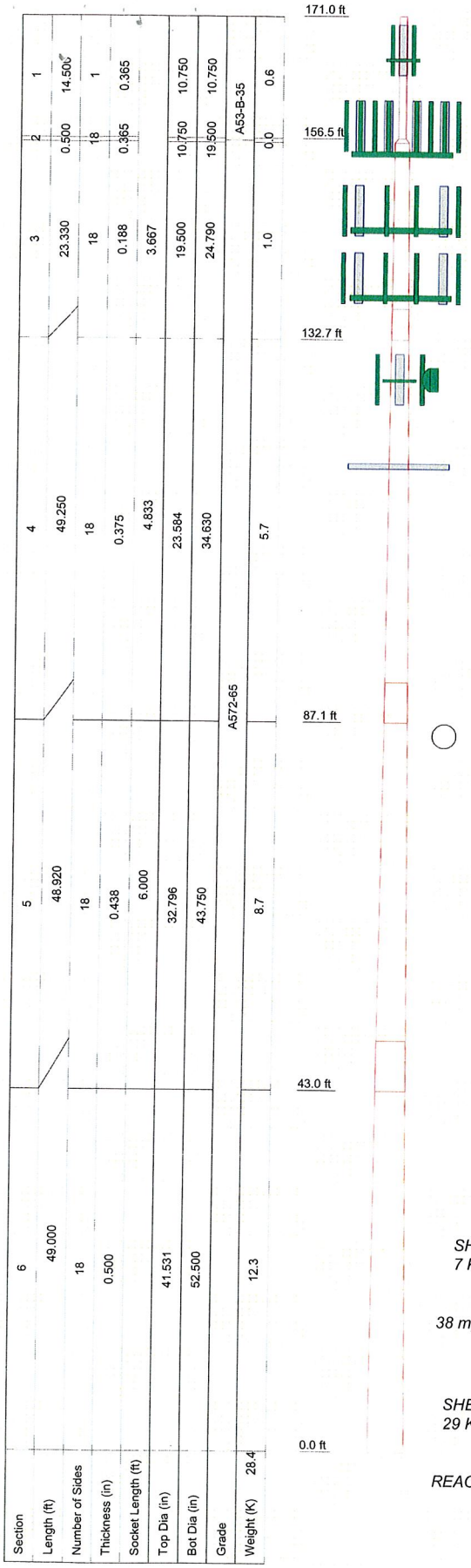
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

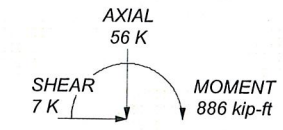
4.1) Recommendations

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

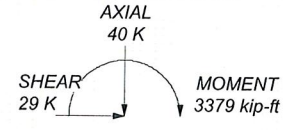
APPENDIX A

RISA TOWER OUTPUT





TORQUE 0 kip-ft
38 mph WIND - 0.750 in ICE



TORQUE 1 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
RV90-17-02DP	166	ATMAA1412D-1A20	138
RV90-17-02DP	166	ATMPP1412D-1CWA	138
RV90-17-02DP	166	APX16DWV-16DWV-S-E-A20 w/Mount Pipe	138
Pipe Mount [PM 601-3]	166	DR65-18-02DP w/ Mount Pipe	138
LNX-6514DS-T4M w/ Mount Pipe	155	ATMAA1412D-1A20	138
(2) DB844G65ZAXY w/ Mount Pipe	155	ATMPP1412D-1CWA	138
MG D3-800TV w/ Mount Pipe	155	DR65-18-02DP w/ Mount Pipe	138
(2) FD9R6004/2C-3L	155	ATMAA1412D-1A20	138
LNX-6514DS-T4M w/ Mount Pipe	155	ATMPP1412D-1CWA	138
(2) DB844G65ZAXY w/ Mount Pipe	155	APX16DWV-16DWV-S-E-A20 w/Mount Pipe	138
MG D3-800TV w/ Mount Pipe	155	6' x 2" Mount Pipe	138
(2) FD9R6004/2C-3L	155	6' x 2" Mount Pipe	138
LNX-6514DS-T4M w/ Mount Pipe	155	6' x 2" Mount Pipe	138
(2) DB844G65ZAXY w/ Mount Pipe	155	Platform Mount [LP 602-1]	138
MG D3-800TV w/ Mount Pipe	155	840 10054 w/ Mount Pipe	128
(2) FD9R6004/2C-3L	155	840 10054 w/ Mount Pipe	128
Platform Mount [LP 602-1]	155	840 10054 w/ Mount Pipe	128
(2) 7770.00 w/ Mount Pipe	146	6' x 2" Mount Pipe	128
(2) LGP2140X	146	Side Arm Mount [SO 101-3]	128
(2) 7770.00 w/ Mount Pipe	146	VHLP800-11	128
(2) LGP2140X	146	Side Arm Mount [SO 301-1]	118
(2) 7770.00 w/ Mount Pipe	146	Side Arm Mount [SO 701-1]	118
(2) LGP2140X	146	Side Arm Mount [SO 701-1]	118
(2) 6' x 2" Mount Pipe	146	(3) 6' x 2" Mount Pipe	118
(2) 6' x 2" Mount Pipe	146	6' x 2" Mount Pipe	118
(2) 6' x 2" Mount Pipe	146	6' x 2" Mount Pipe	118
Platform Mount [LP 602-1]	146	T-Arm Mount [TA 602-1]	118
APX16DWV-16DWV-S-E-A20 w/Mount Pipe	138		
DR65-18-02DP w/ Mount Pipe	138		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield 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 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 79.8%

CROWN CASTLE
We Are Solutions
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2254

Job: BU# 806355			
Project:			
Client: Crown Castle	Drawn by: RLIM		App'd:
Code: TIA/EIA-222-F	Date: 02/01/11		Scale: NTS
Path: R:\SA Models - Letters\Work Area\MBlack\806355\Temp-RLIM806355.er			Dwg No. E-1

RISATower	Job	Page
	BU# 806355	1 of 17
Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2000 FAX: (724) 416-2254	Project	Date 10:43:40 02/01/11
	Client Crown Castle	Designed by RLIM

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 Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
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 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination				

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	171.000-156.500	14.500	0.000	Round	10.750	10.750	0.365		A53-B-35 (35 ksi)
L2	156.500-156.000	0.500	0.000	18	10.750	19.500	0.365	1.460	A572-65 (65 ksi)
L3	156.000-132.670	23.330	3.667	18	19.500	24.790	0.188	0.750	A572-65 (65 ksi)
L4	132.670-87.087	49.250	4.833	18	23.584	34.630	0.375	1.500	A572-65 (65 ksi)
L5	87.087-43.000	48.920	6.000	18	32.796	43.750	0.438	1.750	A572-65 (65 ksi)

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
L6	43.000-0.000	49.000		18	41.531	52.500	0.500	2.000	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	It/Q in^2	w in	w/t
L1	10.750	11.908	160.659	3.676	5.375	29.890	320.880	5.951	0.000	0
	10.750	11.908	160.659	3.676	5.375	29.890	320.880	5.951	0.000	0
L2	10.916	12.031	163.929	3.687	5.461	30.018	328.074	6.017	1.250	3.424
	19.801	22.168	1025.469	6.793	9.906	103.520	2052.288	11.086	2.790	7.643
L3	19.801	11.493	541.578	6.856	9.906	54.672	1083.869	5.748	3.102	16.544
	25.172	14.642	1119.653	8.734	12.593	88.908	2240.779	7.322	4.033	21.51
L4	24.783	27.624	1879.844	8.239	11.980	156.909	3762.161	13.815	3.491	9.309
	35.164	40.772	6044.321	12.161	17.592	343.583	12096.596	20.390	5.435	14.493
L5	34.401	44.934	5944.079	11.487	16.660	356.780	11895.980	22.471	5.002	11.433
	44.425	60.145	14254.835	15.376	22.225	641.387	28528.426	30.078	6.930	15.84
L6	43.536	65.117	13850.526	14.566	21.098	656.485	27719.277	32.565	6.430	12.859
	53.310	82.524	28191.904	18.460	26.670	1057.064	56420.904	41.270	8.360	16.72

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 171.000-156.500				1	1	1		
L2 156.500-156.000				1	1	1		
L3 156.000-132.670				1	1	1		
L4 132.670-87.087				1	1	1		
L5 87.087-43.000				1	1	1		
L6 43.000-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
***										
561(1-5/8")	A	No	Inside Pole	155.000 - 0.000	0.000	0	12	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
LDF4-50A(1/2")	A	No	Inside Pole	146.000 - 0.000	0.000	0	1	4" Ice	0.000	0.001
								No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.000
								2" Ice	0.000	0.000
								4" Ice	0.000	0.000
CR 50 1873PE(1-5/8")	A	No	Inside Pole	146.000 - 0.000	0.000	0	12	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.001
								2" Ice	0.000	0.001
								4" Ice	0.000	0.001
LCF158-50JA-A0(1 5/8")	C	No	Inside Pole	138.000 - 0.000	0.000	0	6	No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.000
								2" Ice	0.000	0.000
								4" Ice	0.000	0.000
LCF158-50JA-A0(1 5/8")	C	No	CaAa (Out Of Face)	138.000 - 0.000	1.000	0	1	No Ice	0.198	0.000
								1/2" Ice	0.298	0.002
								1" Ice	0.398	0.004
								2" Ice	0.598	0.010
								4" Ice	0.998	0.029
LCF158-50JA-A0(1 5/8")	C	No	CaAa (Out Of Face)	138.000 - 0.000	1.000	0	5	No Ice	0.000	0.000
								1/2" Ice	0.000	0.002
								1" Ice	0.000	0.004
								2" Ice	0.000	0.010
								4" Ice	0.000	0.029
7983A(1/2")	C	No	CaAa (Out Of Face)	128.000 - 0.000	1.000	0	1	No Ice	0.000	0.000
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.022
9207(5/16")	C	No	CaAa (Out Of Face)	128.000 - 0.000	1.000	0	3	No Ice	0.000	0.001
								1/2" Ice	0.000	0.001
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.022
9258(1/4")	C	No	CaAa (Out Of Face)	128.000 - 0.000	1.000	0	3	No Ice	0.000	0.000
								1/2" Ice	0.000	0.000
								1" Ice	0.000	0.002
								2" Ice	0.000	0.006
								4" Ice	0.000	0.021
2" Rigid Conduit	C	No	CaAa (Out Of Face)	0.000 - 0.000	1.000	0	1	No Ice	0.000	0.003
								1/2" Ice	0.000	0.004
								1" Ice	0.000	0.006
								2" Ice	0.000	0.013
								4" Ice	0.000	0.032
2" Rigid Conduit	C	No	CaAa (Out Of Face)	0.000 - 0.000	1.000	0	1	No Ice	0.200	0.003
								1/2" Ice	0.300	0.004
								1" Ice	0.400	0.006
								2" Ice	0.600	0.013
								4" Ice	1.000	0.032
* Climbing Ladder (Flat)	C	No	CaAa (Out Of Face)	155.000 - 147.000	48.000	0	1	No Ice	0.584	0.005
								1/2" Ice	1.030	0.007
								1" Ice	1.476	0.010
								2" Ice	2.368	0.020
								4" Ice	4.151	0.049
Climbing Ladder (Flat)	C	No	CaAa (Out Of Face)	146.000 - 138.000	48.000	0	1	No Ice	0.584	0.005
								1/2" Ice	1.030	0.007
								1" Ice	1.476	0.010
								2" Ice	2.368	0.020

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
Climbing Ladder (Flat)	C	No	CaAa (Out Of Face)	138.000 - 130.000	48.000	0	1	4" Ice	4.151	0.049
								No Ice	0.584	0.005
								1/2" Ice	1.030	0.007
								1" Ice	1.476	0.010
								2" Ice	2.368	0.020
								4" Ice	4.151	0.049

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	171.000-156.500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	156.500-156.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L3	156.000-132.670	A	0.000	0.000	0.000	0.000	0.497
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	13.521	0.108
L4	132.670-87.087	A	0.000	0.000	0.000	0.000	1.199
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	10.586	0.138
L5	87.087-43.000	A	0.000	0.000	0.000	0.000	1.160
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	8.729	0.130
L6	43.000-0.000	A	0.000	0.000	0.000	0.000	1.131
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	8.514	0.127

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	171.000-156.500	A	0.909	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L2	156.500-156.000	A	0.904	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L3	156.000-132.670	A	0.895	0.000	0.000	0.000	0.000	0.497
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	31.494	0.314
L4	132.670-87.087	A	0.866	0.000	0.000	0.000	0.000	1.199
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	20.875	1.410
L5	87.087-43.000	A	0.813	0.000	0.000	0.000	0.000	1.160
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	16.361	1.334
L6	43.000-0.000	A	0.750	0.000	0.000	0.000	0.000	1.131
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	15.506	1.202

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	171.000-156.500	0.000	0.000	0.000	0.000
L2	156.500-156.000	0.000	0.000	0.000	0.000
L3	156.000-132.670	-0.580	0.335	-0.979	0.565
L4	132.670-87.087	-0.269	0.155	-0.463	0.268
L5	87.087-43.000	-0.242	0.140	-0.416	0.240
L6	43.000-0.000	-0.245	0.141	-0.416	0.240

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
**									
RV90-17-02DP	A	From Leg	1.000 0.000 1.000	0.000	166.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.356 4.775 5.202 6.084 7.951	1.974 2.312 2.658 3.371 4.888	0.018 0.040 0.067 0.136 0.335
RV90-17-02DP	B	From Leg	1.000 0.000 1.000	0.000	166.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.356 4.775 5.202 6.084 7.951	1.974 2.312 2.658 3.371 4.888	0.018 0.040 0.067 0.136 0.335
RV90-17-02DP	C	From Leg	1.000 0.000 1.000	0.000	166.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.356 4.775 5.202 6.084 7.951	1.974 2.312 2.658 3.371 4.888	0.018 0.040 0.067 0.136 0.335
Pipe Mount [PM 601-3]	C	None		0.000	166.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.390 5.480 6.570 8.750 13.110	4.390 5.480 6.570 8.750 13.110	0.195 0.237 0.280 0.365 0.534
*									
LNX-6514DS-T4M w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.568 9.220 9.838 11.104 13.754	7.004 8.185 9.081 10.904 14.926	0.058 0.124 0.202 0.384 0.889
(2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.904 5.346 5.797 6.731 8.735	4.921 5.596 6.284 7.712 10.833	0.034 0.078 0.131 0.257 0.617
MG D3-800TV w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice	3.570 3.979 4.387	3.418 4.119 4.784	0.037 0.069 0.109

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) FD9R6004/2C-3L	A	From Leg	4.000 0.000 3.000	0.000	155.000	2" Ice 4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.325 7.341 0.367 0.451 0.543 0.755 1.281	6.164 9.175 0.085 0.136 0.196 0.343 0.740	0.210 0.520 0.003 0.005 0.009 0.020 0.063
LNX-6514DS-T4M w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.568 9.220 9.838 11.104 13.754	7.004 8.185 9.081 10.904 14.926	0.058 0.124 0.202 0.384 0.889
(2) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.904 5.346 5.797 6.731 8.735	4.921 5.596 6.284 7.712 10.833	0.034 0.078 0.131 0.257 0.617
MG D3-800TV w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.570 3.979 4.387 5.325 7.341	3.418 4.119 4.784 6.164 9.175	0.037 0.069 0.109 0.210 0.520
(2) FD9R6004/2C-3L	B	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.009 0.020 0.063
LNX-6514DS-T4M w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.568 9.220 9.838 11.104 13.754	7.004 8.185 9.081 10.904 14.926	0.058 0.124 0.202 0.384 0.889
(2) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.904 5.346 5.797 6.731 8.735	4.921 5.596 6.284 7.712 10.833	0.034 0.078 0.131 0.257 0.617
MG D3-800TV w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.570 3.979 4.387 5.325 7.341	3.418 4.119 4.784 6.164 9.175	0.037 0.069 0.109 0.210 0.520
(2) FD9R6004/2C-3L	C	From Leg	4.000 0.000 3.000	0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.367 0.451 0.543 0.755 1.281	0.085 0.136 0.196 0.343 0.740	0.003 0.005 0.009 0.020 0.063
Platform Mount [LP 602-1]	C	None		0.000	155.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	32.030 38.710 45.390 58.750 85.470	32.030 38.710 45.390 58.750 85.470	1.343 1.800 2.257 3.170 4.998
*									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.119 6.626 7.128 8.164	4.254 5.014 5.711 7.155	0.055 0.101 0.155 0.287

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP2140X	A	From Leg	4.000 0.000 2.000	0.000	146.000	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.360 1.260 1.416 1.581 1.936 2.750	10.412 0.378 0.493 0.617 0.890 1.541	0.665 0.019 0.026 0.035 0.060 0.140
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.101 0.155 0.287 0.665
(2) LGP2140X	B	From Leg	4.000 0.000 2.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.260 1.416 1.581 1.936 2.750	0.378 0.493 0.617 0.890 1.541	0.019 0.026 0.035 0.060 0.140
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.119 6.626 7.128 8.164 10.360	4.254 5.014 5.711 7.155 10.412	0.055 0.101 0.155 0.287 0.665
(2) LGP2140X	C	From Leg	4.000 0.000 2.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.260 1.416 1.581 1.936 2.750	0.378 0.493 0.617 0.890 1.541	0.019 0.026 0.035 0.060 0.140
(2) 6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(2) 6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
(2) 6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
Platform Mount [LP 602-1]	C	None		0.000	146.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	32.030 38.710 45.390 58.750 85.470	32.030 38.710 45.390 58.750 85.470	1.343 1.800 2.257 3.170 4.998
* APX16DWV-16DWV-S-E-A 20 w/Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.269 7.733 8.205 9.177 11.231	3.286 3.918 4.567 5.916 8.881	0.058 0.103 0.156 0.285 0.653
DR65-18-02DP w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.400 11.190 11.988 13.551 16.715	6.732 8.862 11.021 14.256 19.689	0.072 0.138 0.222 0.424 1.018

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ATMAA1412D-1A20	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.314 1.469 1.806 2.584	0.467 0.575 0.691 0.951 1.573	0.013 0.021 0.030 0.056 0.137
ATMPP1412D-1CWA	A	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.317 1.476 1.820 2.610	0.416 0.530 0.652 0.923 1.569	0.013 0.020 0.028 0.052 0.131
APX16DWV-16DWV-S-E-A 20 w/Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.269 7.733 8.205 9.177 11.231	3.286 3.918 4.567 5.916 8.881	0.058 0.103 0.156 0.285 0.653
DR65-18-02DP w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.400 11.190 11.988 13.551 16.715	6.732 8.862 11.021 14.256 19.689	0.072 0.138 0.222 0.424 1.018
ATMAA1412D-1A20	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.314 1.469 1.806 2.584	0.467 0.575 0.691 0.951 1.573	0.013 0.021 0.030 0.056 0.137
ATMPP1412D-1CWA	B	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.317 1.476 1.820 2.610	0.416 0.530 0.652 0.923 1.569	0.013 0.020 0.028 0.052 0.131
DR65-18-02DP w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.400 11.190 11.988 13.551 16.715	6.732 8.862 11.021 14.256 19.689	0.072 0.138 0.222 0.424 1.018
ATMAA1412D-1A20	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.314 1.469 1.806 2.584	0.467 0.575 0.691 0.951 1.573	0.013 0.021 0.030 0.056 0.137
ATMPP1412D-1CWA	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.167 1.317 1.476 1.820 2.610	0.416 0.530 0.652 0.923 1.569	0.013 0.020 0.028 0.052 0.131
APX16DWV-16DWV-S-E-A 20 w/Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.269 7.733 8.205 9.177 11.231	3.286 3.918 4.567 5.916 8.881	0.058 0.103 0.156 0.285 0.653
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
6' x 2" Mount Pipe	B	From Leg	4.000 0.000	0.000	138.000	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	138.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Platform Mount [LP 602-1]	C	None		0.000	138.000	No Ice	32.030	32.030	1.343
						1/2" Ice	38.710	38.710	1.800
						1" Ice	45.390	45.390	2.257
						2" Ice	58.750	58.750	3.170
						4" Ice	85.470	85.470	4.998
*									
840 10054 w/ Mount Pipe	A	From Leg	2.000	0.000	128.000	No Ice	5.413	2.385	0.051
			0.000			1/2" Ice	5.833	2.917	0.086
			0.000			1" Ice	6.263	3.466	0.128
						2" Ice	7.156	4.614	0.230
						4" Ice	9.093	7.316	0.533
840 10054 w/ Mount Pipe	B	From Leg	2.000	0.000	128.000	No Ice	5.413	2.385	0.051
			0.000			1/2" Ice	5.833	2.917	0.086
			0.000			1" Ice	6.263	3.466	0.128
						2" Ice	7.156	4.614	0.230
						4" Ice	9.093	7.316	0.533
840 10054 w/ Mount Pipe	C	From Leg	2.000	0.000	128.000	No Ice	5.413	2.385	0.051
			0.000			1/2" Ice	5.833	2.917	0.086
			0.000			1" Ice	6.263	3.466	0.128
						2" Ice	7.156	4.614	0.230
						4" Ice	9.093	7.316	0.533
6' x 2" Mount Pipe	B	From Leg	2.000	0.000	128.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Side Arm Mount [SO 101-3]	C	None		0.000	128.000	No Ice	7.500	7.500	0.252
						1/2" Ice	8.900	8.900	0.333
						1" Ice	10.300	10.300	0.414
						2" Ice	13.100	13.100	0.576
						4" Ice	18.700	18.700	0.900
*									
T-Arm Mount [TA 602-1]	A	From Leg	3.000	0.000	118.000	No Ice	7.280	3.020	0.258
			0.000			1/2" Ice	9.520	4.200	0.330
			0.000			1" Ice	11.760	5.380	0.402
						2" Ice	16.240	7.740	0.546
						4" Ice	25.200	12.460	0.834
Side Arm Mount [SO 301-1]	B	From Leg	3.000	0.000	118.000	No Ice	1.000	0.900	0.023
			0.000			1/2" Ice	1.390	1.420	0.033
			0.000			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
						4" Ice	4.120	5.060	0.100
Side Arm Mount [SO 701-1]	B	From Leg	3.000	0.000	118.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
Side Arm Mount [SO 701-1]	C	From Leg	3.000	0.000	118.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
(3) 6' x 2" Mount Pipe	A	From Leg	3.000	0.000	118.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	B	From Leg	3.000	0.000	118.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe	C	From Leg	3.000	0.000	118.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP800-11	B	Paraboloid w/Shroud (HP)	From Leg	2.000	-61.000		128.000	2.917	No Ice	6.680	0.020
				0.000					1/2" Ice	7.070	0.030
				0.000					1" Ice	7.460	0.030
									2" Ice	8.230	0.070
									4" Ice	9.780	0.230

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

Comb. No.	Description
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	171 - 156.5	Pole	Max Tension	5	0.000	0.000	-0.000
			Max. Compression	14	-1.235	0.002	-0.000
			Max. Mx	11	-0.712	10.448	-0.003
			Max. My	2	-0.712	-0.004	10.449
			Max. Vy	11	-1.155	10.448	-0.003
			Max. Vx	2	-1.155	-0.004	10.449
			Max. Torque	8			0.000
L2	156.5 - 156	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-1.273	0.002	-0.000
			Max. Mx	11	-0.739	11.031	-0.003
			Max. My	2	-0.739	-0.004	11.032
			Max. Vy	11	-1.178	11.031	-0.003
			Max. Vx	8	1.178	0.003	-11.032
			Max. Torque	8			0.000
L3	156 - 132.67	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-14.112	0.241	-0.126
			Max. Mx	11	-6.325	203.510	-0.083
			Max. My	8	-6.322	0.099	-203.492
			Max. Vy	11	-15.727	203.510	-0.083
			Max. Vx	8	15.729	0.099	-203.492
			Max. Torque	13			0.093
L4	132.67 - 87.0867	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-25.004	1.366	0.478
			Max. Mx	11	-14.018	1050.473	-3.999
			Max. My	2	-14.008	-4.612	1052.591
			Max. Vy	11	-21.442	1050.473	-3.999

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	8	21.562	7.390	-1051.790
			Max. Torque	10			1.211
L5	87.0867 - 43	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-37.496	3.111	-0.530
			Max. Mx	11	-24.077	2047.897	-9.682
			Max. My	8	-24.071	16.140	-2054.320
			Max. Vy	11	-24.952	2047.897	-9.682
			Max. Vx	8	25.072	16.140	-2054.320
			Max. Torque	8			1.086
L6	43 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-56.122	5.394	-1.848
			Max. Mx	11	-39.774	3358.837	-16.081
			Max. My	8	-39.774	26.017	-3371.020
			Max. Vy	11	-28.499	3358.837	-16.081
			Max. Vx	8	28.617	26.017	-3371.020
			Max. Torque	8			1.006

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	22	56.122	3.530	-6.120
	Max. H_x	11	39.793	28.473	-0.126
	Max. H_z	2	39.793	-0.122	28.570
	Max. M_x	2	3369.560	-0.122	28.570
	Max. M_z	5	3348.194	-28.397	0.101
	Max. Torsion	8	0.929	0.194	-28.590
	Min. Vert	1	39.793	0.000	0.000
	Min. H_x	5	39.793	-28.397	0.101
	Min. H_z	8	39.793	0.194	-28.590
	Min. M_x	8	-3371.020	0.194	-28.590
	Min. M_z	11	-3358.837	28.473	-0.126
	Min. Torsion	2	-0.859	-0.122	28.570

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	39.793	0.000	0.000	-0.559	0.349	0.000
Dead+Wind 0 deg - No Ice	39.793	0.122	-28.570	-3369.560	-15.800	0.859
Dead+Wind 30 deg - No Ice	39.793	14.282	-24.742	-2918.203	-1684.936	0.721
Dead+Wind 60 deg - No Ice	39.793	24.618	-14.328	-1690.775	-2902.862	0.503
Dead+Wind 90 deg - No Ice	39.793	28.397	-0.101	-14.044	-3348.194	0.282
Dead+Wind 120 deg - No Ice	39.793	24.605	14.181	1670.157	-2901.138	-0.035
Dead+Wind 150 deg - No Ice	39.793	14.177	24.699	2911.319	-1671.056	-0.479
Dead+Wind 180 deg - No Ice	39.793	-0.194	28.590	3371.020	26.017	-0.929
Dead+Wind 210 deg - No Ice	39.793	-14.341	24.798	2924.282	1693.423	-0.859
Dead+Wind 240 deg - No Ice	39.793	-24.683	14.367	1694.753	2912.205	-0.706
Dead+Wind 270 deg - No Ice	39.793	-28.473	0.126	16.081	3358.837	-0.555
Dead+Wind 300 deg - No Ice	39.793	-24.653	-14.128	-1664.253	2908.218	-0.271
Dead+Wind 330 deg - No Ice	39.793	-14.124	-24.732	-2916.840	1664.705	0.645

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Ice+Temp	56.122	-0.000	0.000	1.848	5.394	-0.000
Dead+Wind 0 deg+Ice+Temp	56.122	0.027	-7.053	-878.092	1.876	0.166
Dead+Wind 30 deg+Ice+Temp	56.122	3.517	-6.108	-760.254	-433.561	0.137
Dead+Wind 60 deg+Ice+Temp	56.122	6.065	-3.536	-439.456	-751.412	0.096
Dead+Wind 90 deg+Ice+Temp	56.122	6.997	-0.023	-1.196	-867.606	0.058
Dead+Wind 120 deg+Ice+Temp	56.122	6.061	3.503	438.740	-750.911	0.001
Dead+Wind 150 deg+Ice+Temp	56.122	3.493	6.098	762.650	-430.295	-0.087
Dead+Wind 180 deg+Ice+Temp	56.122	-0.043	7.057	882.452	11.337	-0.180
Dead+Wind 210 deg+Ice+Temp	56.122	-3.530	6.120	765.637	446.393	-0.167
Dead+Wind 240 deg+Ice+Temp	56.122	-6.079	3.545	444.374	764.435	-0.141
Dead+Wind 270 deg+Ice+Temp	56.122	-7.013	0.028	5.683	880.917	-0.119
Dead+Wind 300 deg+Ice+Temp	56.122	-6.072	-3.492	-433.400	763.433	-0.069
Dead+Wind 330 deg+Ice+Temp	56.122	-3.481	-6.105	-759.834	439.850	0.123
Dead+Wind 0 deg - Service	39.793	0.042	-9.908	-1171.807	-5.243	0.302
Dead+Wind 30 deg - Service	39.793	4.953	-8.580	-1014.898	-585.531	0.253
Dead+Wind 60 deg - Service	39.793	8.537	-4.969	-588.175	-1008.950	0.176
Dead+Wind 90 deg - Service	39.793	9.848	-0.035	-5.260	-1163.763	0.098
Dead+Wind 120 deg - Service	39.793	8.533	4.918	580.237	-1008.342	-0.013
Dead+Wind 150 deg - Service	39.793	4.917	8.565	1011.712	-580.715	-0.168
Dead+Wind 180 deg - Service	39.793	-0.067	9.915	1171.526	9.246	-0.324
Dead+Wind 210 deg - Service	39.793	-4.973	8.600	1016.223	588.940	-0.301
Dead+Wind 240 deg - Service	39.793	-8.560	4.982	588.770	1012.660	-0.248
Dead+Wind 270 deg - Service	39.793	-9.874	0.044	5.178	1167.925	-0.195
Dead+Wind 300 deg - Service	39.793	-8.549	-4.899	-578.982	1011.265	-0.095
Dead+Wind 330 deg - Service	39.793	-4.898	-8.577	-1014.418	578.981	0.227

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-39.793	0.000	0.000	39.793	0.000	0.000%
2	0.122	-39.793	-28.570	-0.122	39.793	28.570	0.000%
3	14.282	-39.793	-24.742	-14.282	39.793	24.742	0.000%
4	24.618	-39.793	-14.328	-24.618	39.793	14.328	0.000%
5	28.397	-39.793	-0.101	-28.397	39.793	0.101	0.000%
6	24.605	-39.793	14.181	-24.605	39.793	-14.181	0.000%
7	14.177	-39.793	24.699	-14.177	39.793	-24.699	0.000%
8	-0.194	-39.793	28.590	0.194	39.793	-28.590	0.000%
9	-14.341	-39.793	24.798	14.341	39.793	-24.798	0.000%
10	-24.683	-39.793	14.367	24.683	39.793	-14.367	0.000%
11	-28.473	-39.793	0.126	28.473	39.793	-0.126	0.000%
12	-24.653	-39.793	-14.128	24.653	39.793	14.128	0.000%
13	-14.124	-39.793	-24.732	14.124	39.793	24.732	0.000%
14	0.000	-56.122	0.000	0.000	56.122	-0.000	0.000%
15	0.027	-56.122	-7.053	-0.027	56.122	7.053	0.000%
16	3.517	-56.122	-6.108	-3.517	56.122	6.108	0.000%
17	6.065	-56.122	-3.536	-6.065	56.122	3.536	0.000%
18	6.997	-56.122	-0.023	-6.997	56.122	0.023	0.000%
19	6.061	-56.122	3.503	-6.061	56.122	-3.503	0.000%
20	3.493	-56.122	6.098	-3.493	56.122	-6.098	0.000%
21	-0.043	-56.122	7.057	0.043	56.122	-7.057	0.000%
22	-3.530	-56.122	6.120	3.530	56.122	-6.120	0.000%
23	-6.079	-56.122	3.545	6.079	56.122	-3.545	0.000%
24	-7.013	-56.122	0.028	7.013	56.122	-0.028	0.000%
25	-6.072	-56.122	-3.492	6.072	56.122	3.492	0.000%
26	-3.481	-56.122	-6.105	3.481	56.122	6.105	0.000%
27	0.042	-39.793	-9.908	-0.042	39.793	9.908	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
28	4.953	-39.793	-8.580	-4.953	39.793	8.580	0.000%
29	8.537	-39.793	-4.969	-8.537	39.793	4.969	0.000%
30	9.848	-39.793	-0.035	-9.848	39.793	0.035	0.000%
31	8.533	-39.793	4.918	-8.533	39.793	-4.918	0.000%
32	4.917	-39.793	8.565	-4.917	39.793	-8.565	0.000%
33	-0.067	-39.793	9.915	0.067	39.793	-9.915	0.000%
34	-4.973	-39.793	8.600	4.973	39.793	-8.600	0.000%
35	-8.560	-39.793	4.982	8.560	39.793	-4.982	0.000%
36	-9.874	-39.793	0.044	9.874	39.793	-0.044	0.000%
37	-8.549	-39.793	-4.899	8.549	39.793	4.899	0.000%
38	-4.898	-39.793	-8.577	4.898	39.793	8.577	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	5	0.00000001	0.00005753
3	Yes	6	0.00000001	0.00006124
4	Yes	6	0.00000001	0.00005973
5	Yes	4	0.00000001	0.00023400
6	Yes	6	0.00000001	0.00005996
7	Yes	6	0.00000001	0.00006058
8	Yes	4	0.00000001	0.00031448
9	Yes	6	0.00000001	0.00005955
10	Yes	6	0.00000001	0.00006136
11	Yes	5	0.00000001	0.00004465
12	Yes	6	0.00000001	0.00005963
13	Yes	6	0.00000001	0.00005928
14	Yes	4	0.00000001	0.00001734
15	Yes	5	0.00000001	0.00021960
16	Yes	5	0.00000001	0.00039228
17	Yes	5	0.00000001	0.00038783
18	Yes	5	0.00000001	0.00021700
19	Yes	5	0.00000001	0.00038717
20	Yes	5	0.00000001	0.00038873
21	Yes	5	0.00000001	0.00021989
22	Yes	5	0.00000001	0.00039617
23	Yes	5	0.00000001	0.00039967
24	Yes	5	0.00000001	0.00022009
25	Yes	5	0.00000001	0.00039028
26	Yes	5	0.00000001	0.00039160
27	Yes	4	0.00000001	0.00022099
28	Yes	5	0.00000001	0.00014377
29	Yes	5	0.00000001	0.00013726
30	Yes	4	0.00000001	0.00007043
31	Yes	5	0.00000001	0.00013721
32	Yes	5	0.00000001	0.00014010
33	Yes	4	0.00000001	0.00015213
34	Yes	5	0.00000001	0.00013674
35	Yes	5	0.00000001	0.00014371
36	Yes	4	0.00000001	0.00016039
37	Yes	5	0.00000001	0.00013657
38	Yes	5	0.00000001	0.00013547

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	171 - 156.5	43.470	34	2.271	0.002
L2	156.5 - 156	36.601	34	2.237	0.002
L3	156 - 132.67	36.367	34	2.237	0.002
L4	136.337 - 87.0867	27.500	34	2.015	0.002
L5	91.92 - 43	11.806	34	1.289	0.001
L6	49 - 0	3.185	34	0.607	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
166.000	RV90-17-02DP	34	41.090	2.256	0.002	32805
155.000	LNX-6514DS-T4M w/ Mount Pipe	34	35.900	2.235	0.002	10303
146.000	(2) 7770.00 w/ Mount Pipe	34	31.756	2.161	0.002	5666
138.000	APX16DWV-16DWV-S-E-A20 w/Mount Pipe	34	28.214	2.042	0.002	4033
128.000	VHLP800-11	34	24.054	1.880	0.002	3693
118.000	T-Arm Mount [TA 602-1]	34	20.219	1.717	0.002	3604

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	171 - 156.5	124.573	9	6.508	0.006
L2	156.5 - 156	104.950	9	6.415	0.006
L3	156 - 132.67	104.281	9	6.414	0.006
L4	136.337 - 87.0867	78.919	9	5.785	0.006
L5	91.92 - 43	33.925	9	3.704	0.002
L6	49 - 0	9.159	9	1.746	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
166.000	RV90-17-02DP	9	117.775	6.468	0.006	12165
155.000	LNX-6514DS-T4M w/ Mount Pipe	9	102.944	6.408	0.006	3762
146.000	(2) 7770.00 w/ Mount Pipe	9	91.096	6.198	0.006	2036
138.000	APX16DWV-16DWV-S-E-A20 w/Mount Pipe	9	80.963	5.862	0.006	1441
128.000	VHLP800-11	9	69.051	5.399	0.006	1314

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.000	T-Arm Mount [TA 602-1]	9	58.062	4.933	0.005	1278

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 $\frac{P}{P_a}$
L1	171 - 156.5 (1)	TP10.75x10.75x0.365	14.500	0.000	0.0	21.0000	11.908	-0.712	250.074	0.003
L2	156.5 - 156 (2)	TP19.5x10.75x0.365	0.500	0.000	0.0	39.0000	12.031	-0.726	469.214	0.002
L3	156 - 132.67 (3)	TP24.79x19.5x0.188	23.330	0.000	0.0	39.0000	14.147	-6.318	551.724	0.011
L4	132.67 - 87.0867 (4)	TP34.63x23.584x0.375	49.250	0.000	0.0	39.0000	39.482	-13.999	1539.790	0.009
L5	87.0867 - 43 (5)	TP43.75x32.796x0.438	48.920	0.000	0.0	39.0000	58.279	-24.067	2272.890	0.011
L6	43 - 0 (6)	TP52.5x41.531x0.5	49.000	0.000	0.0	39.0000	79.308	-36.902	3093.020	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 $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	171 - 156.5 (1)	TP10.75x10.75x0.365	10.451	4.1956	23.1000	0.182	0.000	0.0000	23.1000	0.000
L2	156.5 - 156 (2)	TP19.5x10.75x0.365	10.449	4.1772	39.0000	0.107	0.000	0.0000	39.0000	0.000
L3	156 - 132.67 (3)	TP24.79x19.5x0.188	203.540	29.4350	39.0000	0.755	0.000	0.0000	39.0000	0.000
L4	132.67 - 87.0867 (4)	TP34.63x23.584x0.375	1054.583	39.2932	39.0000	1.008	0.000	0.0000	39.0000	0.000
L5	87.0867 - 43 (5)	TP43.75x32.796x0.438	2059.658	41.0548	39.0000	1.053	0.000	0.0000	39.0000	0.000
L6	43 - 0 (6)	TP52.5x41.531x0.5	3122.792	38.3987	39.0000	0.985	0.000	0.0000	39.0000	0.000

Pole Shear Design Data

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 $\frac{f_{vt}}{F_{vt}}$
L1	171 - 156.5 (1)	TP10.75x10.75x0.365	1.155	0.0970	14.0000	0.014	0.000	0.0000	14.0000	0.000
L2	156.5 - 156 (2)	TP19.5x10.75x0.365	1.178	0.0979	26.0000	0.008	0.000	0.0000	26.0000	0.000
L3	156 - 132.67 (3)	TP24.79x19.5x0.188	15.730	1.1119	26.0000	0.086	0.045	0.0031	26.0000	0.000
L4	132.67 - 87.0867 (4)	TP34.63x23.584x0.375	21.620	0.5476	26.0000	0.042	0.960	0.0174	26.0000	0.001
L5	87.0867 - 43 (5)	TP43.75x32.796x0.438	25.129	0.4312	26.0000	0.033	0.912	0.0089	26.0000	0.000

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 $\frac{f_{vt}}{F_{vt}}$
L6	43 - 0 (6)	TP52.5x41.531x0.5	28.186	0.3554	26.0000	0.027	0.869	0.0052	26.0000	0.000

Pole Interaction Design Data

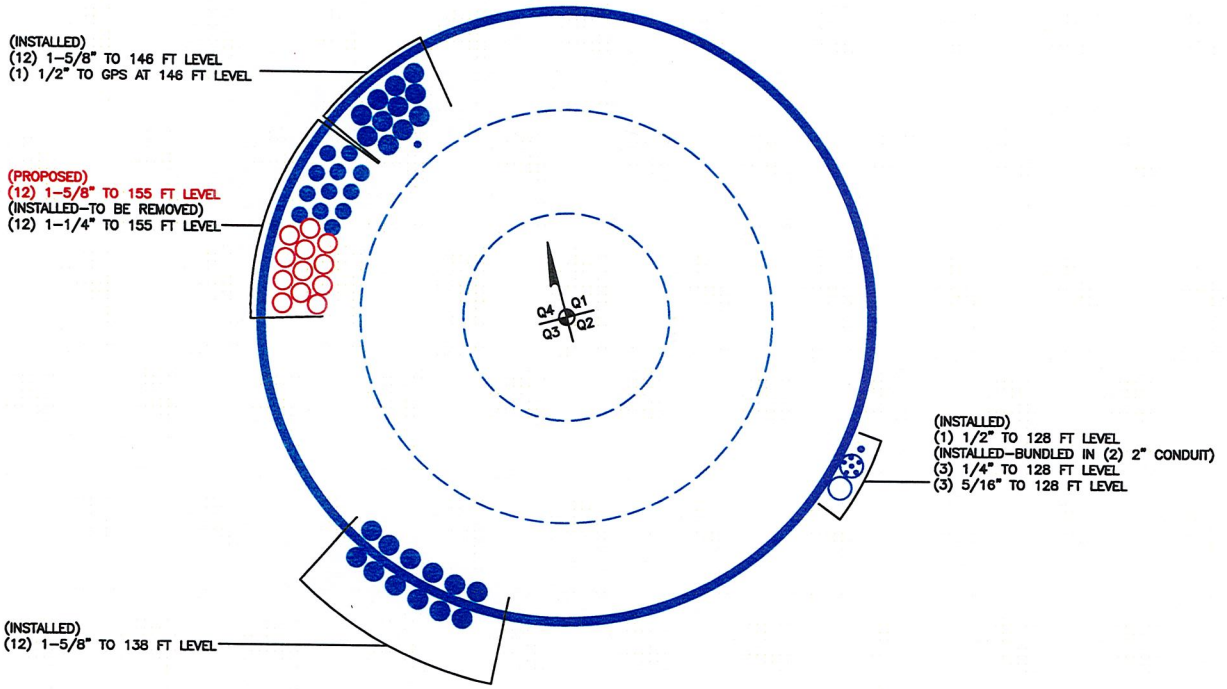
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	171 - 156.5 (1)	0.003	0.182	0.000	0.014	0.000	0.185 ✓	1.333	H1-3+VT ✓
L2	156.5 - 156 (2)	0.002	0.107	0.000	0.008	0.000	0.109 ✓	1.333	H1-3+VT ✓
L3	156 - 132.67 (3)	0.011	0.755	0.000	0.086	0.000	0.768 ✓	1.333	H1-3+VT ✓
L4	132.67 - 87.0867 (4)	0.009	1.008	0.000	0.042	0.001	1.017 ✓	1.333	H1-3+VT ✓
L5	87.0867 - 43 (5)	0.011	1.053	0.000	0.033	0.000	1.064 ✓	1.333	H1-3+VT ✓
L6	43 - 0 (6)	0.012	0.985	0.000	0.027	0.000	0.997 ✓	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	171 - 156.5	Pole	TP10.75x10.75x0.365	1	-0.712	333.349	13.8	Pass
L2	156.5 - 156	Pole	TP19.5x10.75x0.365	2	-0.726	625.462	8.2	Pass
L3	156 - 132.67	Pole	TP24.79x19.5x0.188	3	-6.318	735.448	57.6	Pass
L4	132.67 - 87.0867	Pole	TP34.63x23.584x0.375	4	-13.999	2052.540	76.3	Pass
L5	87.0867 - 43	Pole	TP43.75x32.796x0.438	5	-24.067	3029.762	79.8	Pass
L6	43 - 0	Pole	TP52.5x41.531x0.5	6	-36.902	4122.995	74.8	Pass
							Summary	
						Pole (L5)	79.8	Pass
						RATING =	**79.8**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806355 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *806355*
Site Name: *BRG 126 943086*
App #: *115914, Rev 1*

Connection Type:	*Butt*
Pole Manufacturer:	Other

Reactions		
Moment:	10.449	ft-kips
Axial:	0.726	kips
Shear:	1.178	kips
Elevation:	156	feet

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty: 44.00
N/A:	55	<-- Disregard	
Circle (in.):	25.75		

Plate Data		
Diam:	28.5	in
Thick, t:	1.5	in
Grade (Fy):	60	ksi
Strength, Fu:	75	ksi
Single-Rod B-eff:	2.58	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:	0.25	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.25	in
Fillet V. Weld:	0.25	in
Width:	3	in
Height:	8	in
Thick:	0.5	in
Notch:	0.375	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	19.5	in
Thick:	0.365	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	

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

Flange Bolt Results

Rigid
Service, ASD
Fty*ASIF

Bolt Tension Capacity, **B**:	46.07 kips	
Max Bolt directly applied T:	0.78 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	2.177 in	
Min PL "treq" for actual **T w/ Pry**:	0.225 in	
Min PL "t1" for actual **T w/o Pry**:	0.283 in	
T allowable with Prying:	31.95 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	0.78 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	1.7% **Pass**	

Exterior Flange Plate Results Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Comp. Y.L. Length: 16.82

Compression Side Plate Stress:	1.4 ksi	
Allowable Plate Stress:	60.0 ksi	
Compression Plate Stress Ratio:	2.4% **Pass**	
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	2.3% **Pass**	

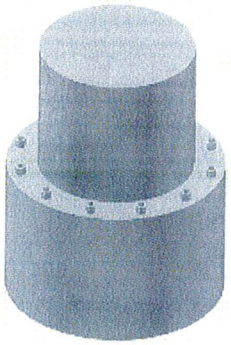
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

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

Site Data

BU#: *806355*
Site Name: *BRG 126 943086*
App #: *115914, Rev 1*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	61	in

Plate Data		
Diam:	67	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.33	in

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

Pole Data		
Diam:	52.5	in
Thick:	0.5	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	

Reactions		
Moment:	3379	ft-kips
Axial:	40	kips
Shear:	29	kips

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

Anchor Rod Results

Maximum Rod Tension:	130.9 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	67.2% **Pass**	Fty*ASIF

Base Plate Results

	Flexural Check	
Base Plate Stress:	48.9 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	81.5% **Pass**	0.75*Fy*ASIF
		Y.L. Length: 31.06

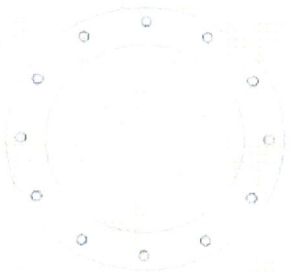
n/a

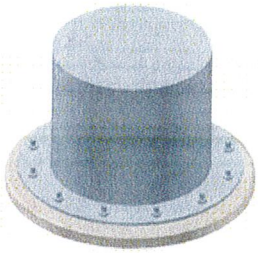
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Monopole Pier and Pad Foundation

BU # : 806355
Site Name: BRG 126 943086
App. Number: 115914, Rev 1

CROWN CASTLE

Design Reactions		
Shear, **S**:	29	kips
Moment, **M**:	3379	ft-kips
Tower Height, **H**:	171	ft
Tower Weight, **Wt**:	40	kips
Base Diameter, **BD**:	4.375	ft

Foundation Dimensions		
Depth, **D**:	9	ft
Pad Width, **W**:	22	ft
Neglected Depth, **N**:	4	ft
Thickness, **T**:	3.00	ft
Pier Diameter, **Pd**:	7.00	ft
Ext. Above Grade, **E**:	1.00	ft
Clear Cover, **Cc**:	3.0	in

Soil Properties		
Soil Unit Weight, **γ**:	0.125	kcf
Bearing Capacity, **Bc**:	12.0	ksf
Angle of Friction, **Φ**:	36	deg
Cohesion, **Co**:	0.000	ksf
Passive Pressure, **Pp**:	0.000	kcf
Base Friction, **μ**:	0.60	

Material Properties		
Rebar Yield Strength, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Concrete Unit Weight, **δc**:	0.150	kcf
Seismic Zone, **z**:	1	

Rebar Properties		
Pier Rebar Size, **Sp**:	8	
Pier Rebar Quanity, **mp**:	46	36
Pad Rebar Size, **Spad**:	8	
Pad Rebar Quanity, **mpad**:	36	24
Pier Tie Size, **St**:	4	3
Tie Quanity, **mt**:	7	4

Design Checks

	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7	5.875	OK
Overturning (ft-kips)	5990.38	3669.00	OK
Shear Capacity (kips)	238.56	29.00	OK
Bearing (ksf)	12.00	3.77	OK
Pad Shear - 1-way (kips)	1085.29	742.49	OK
Pad Shear - 2-way (kips)	3009.19	1141.71	OK
Pier Rebar Area (in^2)	36.34	27.71	OK
Pad Rebar Area (in^2)	28.44	18.43	OK
Pier Moment Capacity (k-ft)	4574.97	3582.00	OK
Pier Bar Spacing (in)	4.33	18 > s > 2	OK
Pad Bar Spacing (in)	6.34	18 > s > 2	OK
Pier Development Length (in)	81	28.21	OK
Pad Development Length (in)	33	28.21	OK
Hook Development Length (in)	129.00	13.28	OK
Rebar Hook Length (in)	90.00	16.00	OK

Modification Checks

		Capacity/ Availability	Demand/ Limits	Check
	Sleeve Rebar Area (in2):	15.8	0.00	Not Used
61.2%	*Sleeve Moment Capacity (k-ft):*	4574.97	3582.00	Not Run
12.2%	*Sleeve Rebar Spacing (in):*	N/a	18 > s > 2	Not Used
31.4%	*Sleeve Tie Spacing (in):*	N/A	9 > s > 4.5	Not Used
68.4%	*Minimum Extra Thickness (in):*	0	0	Not Used
37.9%	*Pad Rebar Area-short (in2):*	0.44	0.00	Not Used
	Pad Rebar Area-long (in2):	0.44	0.00	Not Used
	Pad Rebar Spacing-short (in):	85.5	18 > s > 2	Not Used
78.3%	*Pad Rebar Spacing-long (in):*	85.5	18 > s > 2	Not Used
	End Cap Width (ft):	0	0	Not Used
	End Cap Rebar Area (in2):	3.16	0	Not Used
	Rebar Spacing (in):	-3.00	18 > s > 2	Not Used
	Tie Spacing (in):	17.93	258 > s > 4.5	Not Used
	Dowel Area (in2):	2.2	0.00	Not Used
	Dowel Embedment (in):	9	6	Not Used
	Cone Shear Strength (kips):	25.15	23.76	Not Used
	Dowel Edge Dist (in):	12.00	4.78	Not Used
	Dowel Spacing (in):	60.00	18.00	Not Used
	Dowel Edge Dist (vert) (in):	18.00	4.78	Not Used
	Dowel Devel. Length (in):	-3.00	13.32	Not Used

Modifications

Pier Sleeve, ds:	0	in
Revised Pier Diameter, dx:	7	ft
PS Rebar Size, Ss:	8	
Rebar Quanity, ms:	20	0
Tie Size, Sst:	3	
Tie Quanity, mst:	9	12
Pad Thickness, Te:	0	in
Revised Pier Thickness, Tx:	3.00	ft
Rebar Size, Se:	3	
Rebar Quanity (long), me:	4	8
Rebar Quanity (short), mex:	4	0
Dowel Size, Sed:	3	
Dowel Quanity, med:	0	0

End Cap Width, Wec:	0	ft
Revised Width, Wx:	22	ft
EC Rebar Size, Sec:	8	per side, top & bottom
Rebar Quanity, mec:	4	0
EC Tie Size, Sect:	4	per side
Tie Quanity, mect:	15	0
EC Dowel Size, Secd:	6	per side
Dowel Quanity, mecd:	5	0
Rows of Dowels, Nd:	1	
Dowel Depth, decd:	9	in
Edge Distance, eecd:	12	in

Product Data Sheet **FD9R6004/2C-3L**

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.

Features/Benefits

- **LTE ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **Very compact & small size design – Easy installation and reduced tower load**
- **In-line long-neck connectors for easy connection & waterproofing**
- **Exceptional reliability & environmental protection (IP 67)**
- **Equipped with 1 * Breathable Vent – Prevent any humidity inside the product**
- **Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)**
- **Grounding already provided through the mounting bracket**
- **Kit available for easy dual mount**

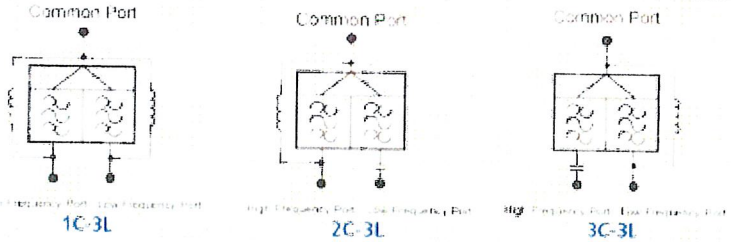
Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Frequency Band, MHz	698-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Frequency Range Low Frequency Path, MHz	698-960
Frequency Range High Frequency Path, MHz	1710-2200
Return Loss All Ports Min/Typ, dB	19/23
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss 698-960 MHz Path, Typ, dB	0.07
Insertion Loss 1710-2200MHz path, Typ, dB	0.13
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 60/70@1710-2200MHz
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Application	LTE 700MHz, GSM900/3G/UMTS, GSM900/GSM1800, Cellular 800/PCS
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

Notes

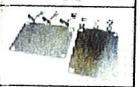
ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Selection Guide Diplexer 698-960 / 1710-2200MHz					
	Model Number	Full DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single	FD9R6004/1C-3L				X
	FD9R6004/2C-3L				X
	FD9R6004/3C-3L				X
Dual	KIT-FD9R6004/1C-DL				X
	KIT-FD9R6004/2C-DL				X
	KIT-FD9R6004/3C-DL				X



1C-3L 2C-3L 3C-3L

The FD9R6004 Series is upgradeable to a Dual Diplexer kit by means of 2 diplexers and mounting hardware kits SEM2-1A and SEM2-3

Mounting Hardware and Ground Cable Ordering Information		
Model Number	**Description**	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FT9DW/xC-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 2m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	

ROBINSON & COLE LLP

KENNETH C. BALDWIN

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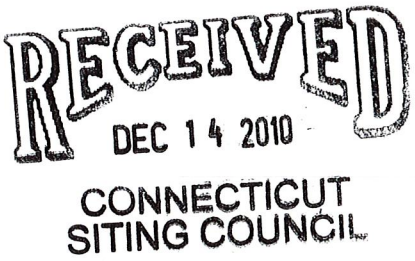
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

ORIGINAL

December 13, 2010



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

Re: **Notice of Completion of Construction Activity**
EM-VER-051-100125 – 281 Woodhouse Road, Fairfield, Connecticut
EM-VER-057-100601 – 411 West Putnam Avenue, Greenwich, Connecticut
EM-VER-062-100202 – 265 Benham Street, Hamden, Connecticut
EM-VER-062-100127 – 890 Evergreen Avenue, Hamden, Connecticut
EM-VER-101-100107 – 117 Washington Avenue, North Haven, Connecticut
EM-VER-101-100119 – 15 Dwight Street, North Haven, Connecticut

Dear Ms. Roberts:

The purpose of this letter is to notify you that construction activity associated with the above-referenced facility modifications has been completed.

If you have any questions or need any additional information regarding any of these facilities, please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

KCB/kmd
Copy to:
Sandy M. Carter

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

February 24, 2010

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

RE: **EM-VER-051-100125** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 281 Woodhouse Road, Fairfield, 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 January 25, 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 Kenneth A. Flatto, First Selectman, Town of Fairfield
Joseph E. Devonshuk, Town Planner, Town of Fairfield
Crown Castle USA, Inc.

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ROBINSON & COLE

EM-VER-051-100125

KENNETH C. BALDWIN

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

ORIGINAL

January 25, 2010

RECEIVED
JAN 25 2010
CONNECTICUT
SITING COUNCIL

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**
281 Woodhouse Road, Fairfield, Connecticut

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains wireless telecommunications antennas at the 158-foot level on the existing 171-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 Docket No. 86. Cellco now intends to modify its installation by replacing its antennas with six (6) model DB844G65ZAXY cellular antennas; three (3) model MG D3-800T0 PCS antennas; and three (3) model LNX-6514DS-T4M LTE (700 MHz) antennas, all at the same 158-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 Kenneth A. Flatto, First Selectman for the Town of Fairfield. A copy of this letter is also being sent to Ranjan and Moitrayee Ghosh, the owners of the property on which the tower is located.

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

1. The proposed modifications will not result in any increase in the overall height of the existing tower. Cellco's antennas will be located at the same 158-foot level on the existing 171-foot tower.

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:
Kenneth A. Flatto, Fairfield First Selectman
Ranjan and Moitrayee Ghosh
Sandy M. Carter

Product Specifications

ANDREW®
A CommScope Company

DB844G65ZAXY

Directed Dipole™ Antenna, 806–960 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Excellent azimuth roll-off, reducing sector-to-sector interference and soft hand-offs
- Air dielectric feed system with no screws, rivets, solder, or welding in dipole feed point
- Low profile for ease of zoning approval
- Excellent upper sidelobe suppression

CHARACTERISTICS

General Specifications

Antenna Type	Directed Dipole™
Brand	Directed Dipole™
Operating Frequency Band	806 – 960 MHz

Electrical Specifications

Frequency Band, MHz	**806–896**	**870–960**
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	13.5	13.8
Gain, dBi	15.6	15.9
Beamwidth, Vertical, degrees	15.0	15.0
Beam Tilt, degrees	0	0
Upper Sidelobe Suppression (USLS), typical, dB	15	15
Null Fill, dB	20	20
Front-to-Back Ratio at 180°, dB	40	40
VSWR | Return Loss, db	1.33:1 | 17.0	1.33:1 | 17.0
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	Vertical	Vertical
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

DB844G65ZAXY

ANDREW®
A CommScope Company

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Back
Connector Quantity	1
Wind Loading, maximum	235.8 N @ 100 mph 53.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	203.2 mm | 8.0 in
Length	1219.2 mm | 48.0 in
Width	254.0 mm | 10.0 in
Net Weight	5.4 kg | 12.0 lb

Regulatory Compliance/Certifications

Agency
RoHS 2002/95/EC
China RoHS SJ/T 11364-2006

Classification
Compliant by Exemption
Above Maximum Concentration Value (MCV)

INCLUDED PRODUCTS

DB5083
Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

DB380
Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

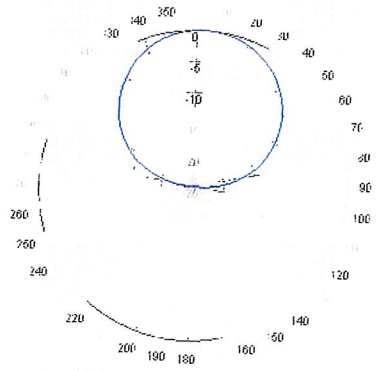
DB382NS
Side Offset Bracket for 4.5 in (114.3 mm) OD round members

Product Specifications

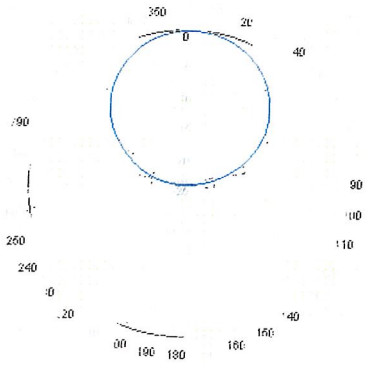
DB844G65ZAXY

ANDREW®
A CommScope Company

Horizontal Pattern

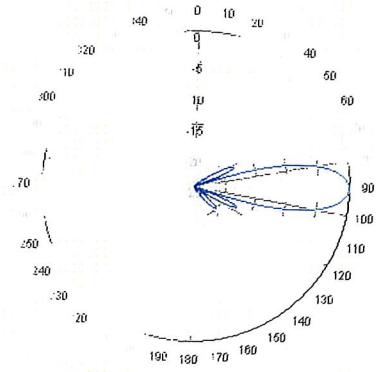


Freq: 860 MHz, Tilt: 0°



Freq: 935 MHz, Tilt: 0°

Vertical Pattern



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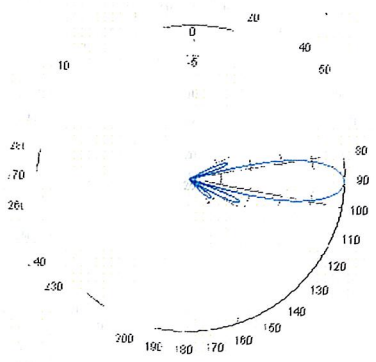


Freq: 935 MHz, Tilt: 0°

RYMSA WIRELESS

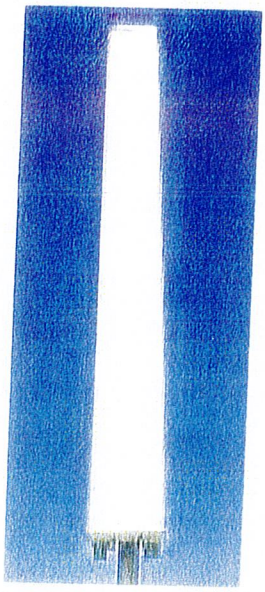
1710-2170 MHz

Model # MG D3-800TX

XPol GSM1800+PCS & UMTS Panel Antenna

Beamwidth: H 65º/V 6.5º
Gain: 16.15 dBd/18.25 dBi
Length: 52.7 in

Electrical Specifications			
Antenna model	MG D3-800TX		
Frequency range (MHz)	1710-1880	1850-1990	1920-2170
Impedance	50 ohms		
VSWR	1.4		
Polarization	±45º		
Isolation between ports (dB)	30		
Average gain (dBd/dBi)	15.7/17.8	15.9/18	16.15/18.25
Horizontal beamwidth (deg)	65º±5º		
Vertical beamwidth (deg)	6.5º±0.5º	6.3º±0.5º	6.3º±0.5º
Electrical tilt (deg)	Fixed 0º-14º		
Upper sidelobe suppression (dB)	18		
Front-to-back ratio (db) @180º±30º	30		
Polarization isolation (dB) @3 dB beamwidth	20		
Maximum power per input (w)	250		
Intermodulation products (dBc)	-150		
Connectors	2 X 7/16 female		
Connector position	Antenna bottom		



Mechanical & Environmental Specifications	
Dimensions in (mm)	52.7 x 6.3 x 3.5 (1380 x 160 x 90)
Survival wind speed mph (kph)	124 (200)
Front windload lbs (N) @100 mph/160 kph	74 (335)
Lateral windload lbs (N) @100 mph/160 kph	42 (188)
Antenna weight lbs (kg)	15 (7)
Clamps weight lbs (kg)	7.7 (3.5)
Mast mounting in (cm)	2.0 to 5.3 (50 to 135)
Radome color	Gray
Grounding	All metallic parts DC grounded
Temperature range F (ºC)	-67º to 140º (-55 to +60º)
Humidity	100%

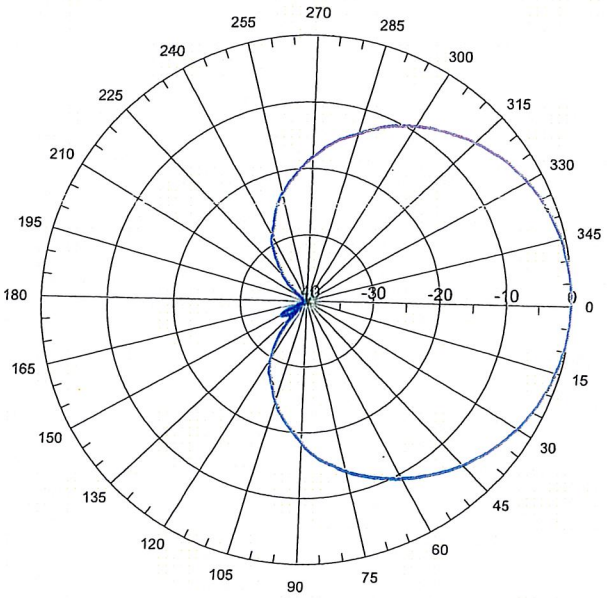
Shipping Specifications	
Dimensions in (mm)	64 x 8.8 x 6.9 (1630 x 225 x 175)
Weight lbs (kg)	27 (12.5)
Material	Cardboard and foam

1710-2170 MHz

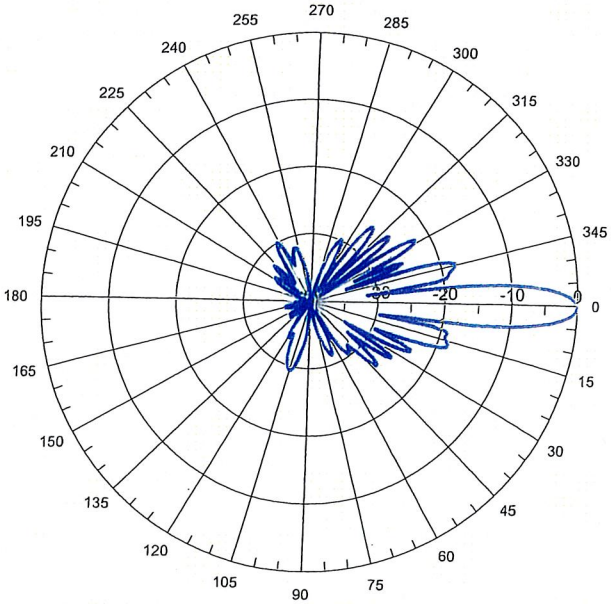
Model # MG D3-800TX

XPol GSM1800+PCS & UMTS Panel Antenna

H plane



E plane



Product Specifications

ANDREW®
A CommScope Company

LNX-6514DS-T4M

DualPol® Antenna, 698–896 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Broadband, providing future-ready single antenna for application in 700 MHz and existing 850 MHz cellular operation
- Air dielectric design provides superior PIM performance with repeatable antenna-to-antenna gain and pattern consistency
- Single piece radome provides long term mechanical stability
- Proven core design technology, with over 1,000,000 similar antennas deployed
- Exceptional USLS pattern shaping for optimizing coverage and interference mitigation for LTE applications
- Specifically designed to have physical dimensions similar to most existing cellular antennas

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol®
Operating Frequency Band	698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Beamwidth, Horizontal, degrees	66	64
Gain, dBd	13.8	14.5
Gain, dBi	15.9	16.6
Beamwidth, Vertical, degrees	12.0	11.0
Beam Tilt, degrees	4	4
Upper Sidelobe Suppression (USLS), typical, dB	18	18
Front-to-Back Ratio at 180°, dB	33	33
Isolation, dB	30	30
VSWR | Return Loss, db	1.35:1 | 16.5	1.35:1 | 16.5
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	±45°	±45°
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

LNX-6514DS-T4M

ANDREW®
A CommScope Company

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1847.0 mm | 72.7 in
Width	301.0 mm | 11.9 in
Net Weight	17.0 kg | 37.5 lb

Regulatory Compliance/Certifications

Agency
RoHS 2002/95/EC
China RoHS SJ/T 11364-2006

Classification
Compliant by Exemption
Above Maximum Concentration Value (MCV)

INCLUDED PRODUCTS

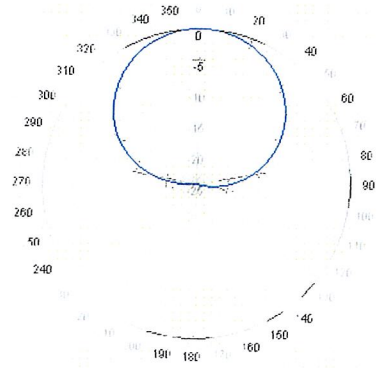
MTG-L-STD
Downtilt Mounting Kit for panel Antennas

Product Specifications

LNX-6514DS-T4M

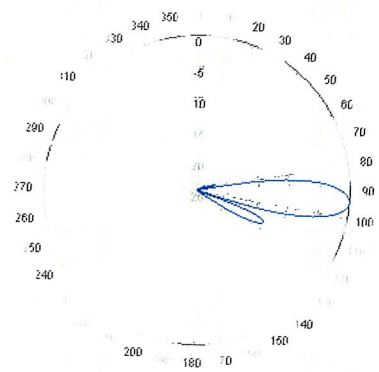
ANDREW®
A CommScope Company

Horizontal Pattern



Freq: 750, Tilt 0

Vertical Pattern



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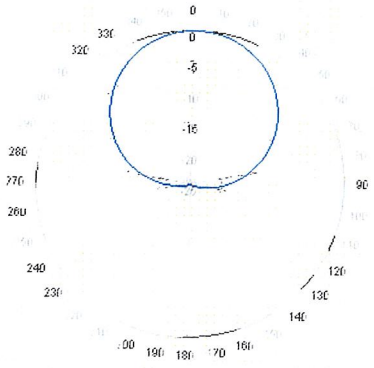
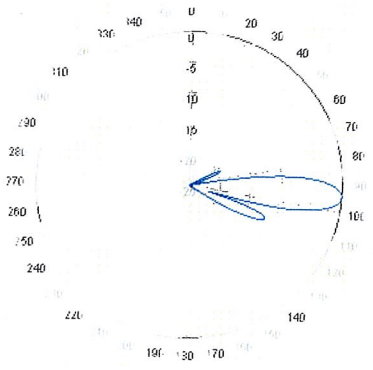


Freq: 850, Tilt 0



Freq: 850, Tilt 0

	General	Power	Density					
Site Name: Fairfield								
Tower Height: Verizon @ 158'								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*SNET/Cingular	11	40	144	0.0076	850	0.5667	1.35%	
*Cingular GSM	4	296	152	0.0184	880	0.5867	3.14%	
*Cingular GSM	1	427	152	0.0066	1930	1.0000	0.66%	
*Clearwire	2	153	128	0.0067	2496	1.0000	0.67%	
*Clearwire	1	211	132	0.0044	23 GHz	1.0000	0.44%	
*PageNet			120	0.0116	940.0875	0.6267	1.85%	
*T-Mobile GSM	8	150	140	0.0220	1945	1.0000	2.20%	
*T-Mobile UMTS	2	703	140	0.0258	2100	1.0000	2.58%	
*XM Radio	2	4197	128	0.1842	2337.49	1.0000	18.42%	
*Metricom			100	0.0002	920	0.6133	0.03%	
Verizon	**3**	**387**	**158**	**0.0167**	**1970**	**1.0000**	**1.67%**	
Verizon	**9**	**296**	**158**	**0.0384**	**869**	**0.5793**	**6.62%**	
Verizon	**1**	**649**	**158**	**0.0093**	**757**	**0.4973**	**1.88%**	
								41.5%
* Source: Siting Council								

Date: **December 10, 2009**

Mr. Mike Peterson
Crown Castle USA Inc.
12725 Morris Road Extension, Suite 400
Alpharetta, GA 30004
(678) 366-1252

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ctuttle@btengineering.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	Fairfield
Crown Castle Designation:	**Crown Castle BU Number:**	806355
	Crown Castle Site Name:	BRG 126 943086
	Crown Castle JDE Job Number:	127972
	Crown Castle Work Order Number:	307324
Engineering Firm Designation:	**B&T Engineering, Inc. Project Number:**	80964
Site Data:	**281 Woodhouse Road, Fairfield, CT, Fairfield County** **Latitude *41° 11' 45.3"*, Longitude *-73° 16' 52.9"*** **171 Foot - Monopole**	

Dear Mr. Peterson,

B&T Engineering, Inc. 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 354400, in accordance with application 91522, 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:

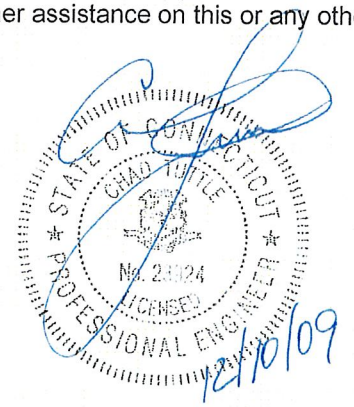
LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2003 IBC; 2003 IRC (State Building Code, 2005 CT supplement) based upon a wind speed of 85 mph fastest mile.

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

We at *B&T Engineering, Inc.* 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:



Kristin Ward, E.I.
Project Engineer

Chad E. Tuttle, P.E.
President

RISA Tower Report - version 5.3.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 171 ft Monopole tower designed by Engineered Endeavors Incorporated in May of 1998. The tower was originally designed for a wind speed of 85 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 85 mph with no ice, 73.6 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
155	158	3	Andrew	LNX-6514DS-T4M	--	--	
		6	Decibel	DB844G65ZAXY			
		3	Rymsa Wireless	MG D3-800TV			

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
166	167	3	--	Mounting Pipe	6	1 5/8	5
		3	EMS Wireless	RV90-17-02DP			
155	158	**6**	**Antel**	**WPA-80090/4CF**	--	--	**4**
		6	**Decibel**	**DB948F85T2E-M**			
	155	--	--	--	12	1 5/8	3
		1	--	Platform w/ Rails	12	1 1/4	1
146	148	6	Powerwave	7770.00	12	1 5/8	1
		6	Powerwave	LGP2140X TMA	1	1/2	
	146	1	--	Platform w/ Rails			
138	140	3	EMS Wireless	DR65-18-02DP	3	1 5/8	2
		3	RFS/Celwave	APX16DWV-16DWV-S-E-A20			
		3	RFS/Celwave	ATMAA1412D-1A20			
		3	RFS/Celwave	ATMPP1412D-1CWA			
	138	1	--	Platform w/ Rails	9	1 5/8	1
	132	3	Dragonwave	A-ANT-23G-2-C			
128	128	3	--	Mounting Pipe	6	5/16	2
		3	Argus Technologies	LLPX310R	3	1/2	
		3	Samsung Telecommunications	FDD_R6_RRH			
118	118	2	--	Side Arm	--	--	1
		1	--	T-Arm			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) SLA Feedlines Used With Proposed Antennas
4) Equipment To Be Removed
5) Abandoned Equipment; Used In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
160	160	1	--	AMPS Platform	--	--
		12	Allgon	ALP 9212		
148	148	1	--	AMPS Platform	--	--
		12	Allgon	ALP 11011		
138	138	1	--	AMPS Platform	--	--
		6	Celwave	APN 199015		
128	128	1	--	AMPS Platform	--	--
		12	Allgon	ALP 9212		
118	118	1	--	AMPS Platform	--	--
		12	Allgon	ALP 9212		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	Verizon Wireless Co-Locate Revision #1	91522	Crown OTG
Tower Manufacturing Drawing	Engineered Endeavors, Inc., Job No. 3761	653293	Crown OTG
Foundation Drawing	Engineered Endeavors, Inc., Job No. 3761	1098364	Crown OTG
Geotechnical Report	Clarence Welti Association, Inc., Dated 05/15/98	1099974	Crown OTG
Antenna Configuration	Crown CAD Package	Date: 12/07/09	Crown OTG

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. This structural analysis **does not** include a grouted base plate.
2. Tower and structures were built in accordance with the manufacturer's specifications.
3. The tower and structures have been maintained in accordance with manufacturer's specifications.
4. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
5. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and B&T Engineering, Inc. should be allowed to review any new information to determine its 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	171 - 156.5	Pole	TP10.75x10.75x0.365	1	-0.847	333.179	20.6	Pass
L2	156.5 - 156	Pole	TP19.5x10.75x0.365	2	-0.848	625.462	12.1	Pass
L3	156 - 132.67	Pole	TP24.79x19.5x0.188	3	-6.838	735.448	55.6	Pass
L4	132.67 - 87.0867	Pole	TP34.63x23.584x0.375	4	-15.060	2052.540	71.8	Pass
L5	87.0867 - 43	Pole	TP43.75x32.796x0.438	5	-25.951	3029.762	76.0	Pass
L6	43 - 0	Pole	TP52.5x41.531x0.5	6	-42.408	4290.180	72.4	Pass
							Summary	
						Pole (L5)	76.0	Pass
						RATING =	**76.0**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	156	4.0	Pass
1	Anchor Rods	Base	64.9	Pass
1	Base Plate	Base	79.0	Pass
1	Base Foundation	Base	58.1	Pass

Structure Rating (max from all components) =	79.0%

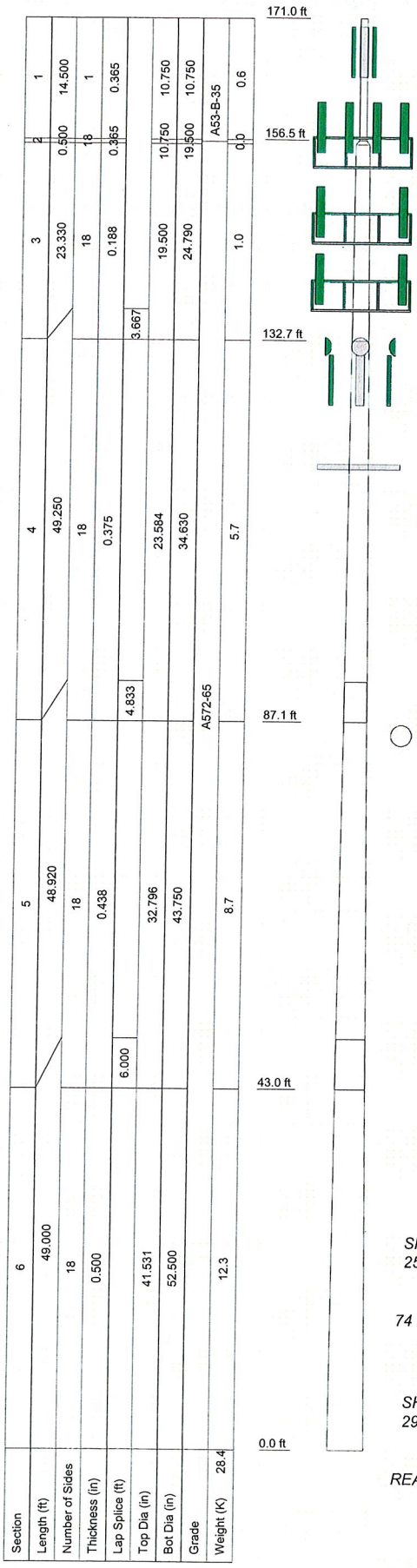
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) The percent capacities shown above (excluding foundations) include the 1/3 increase in allowable stresses as allowed by TIA/EIA-222-F.

4.1) Recommendations

N/A

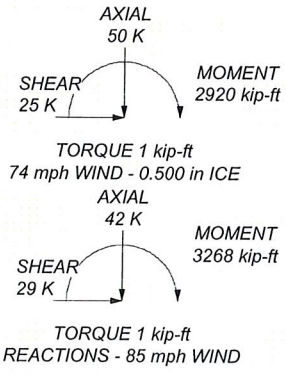
APPENDIX A

RISA TOWER OUTPUT



Section	1	2	3	4	5	6
Length (ft)	14.500	0.500	23.330	49.250	48.920	49.000
Number of Sides	1	18	18	18	18	18
Thickness (in)	0.365	0.365	0.188	0.375	0.438	0.500
Lap Splice (ft)			3.667	4.833	6.000	
Top Dia (in)	10.750	10.750	19.500	23.584	32.796	41.531
Bot Dia (in)	10.750	19.500	24.790	34.630	43.750	52.500
Grade	A53-B-35			A572-65		
Weight (K)	0.6	0.0	1.0	5.7	8.7	12.3

Total Weight (K) 28.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
RV90-17-02DP w/Mount Pipe (Abandoned)	167	Platform Mount [LP 302-1] (E)	146
RV90-17-02DP w/Mount Pipe (Abandoned)	167	DR65-18-02DP w/ Mount Pipe (R)	140
RV90-17-02DP w/Mount Pipe (Abandoned)	167	DR65-18-02DP w/ Mount Pipe (R)	140
(2) DB844G65ZAXY w/Mount Pipe (P)	158	DR65-18-02DP w/ Mount Pipe (R)	140
(2) DB844G65ZAXY w/Mount Pipe (P)	158	APX16DWV-16DWV-S-E-A20 (R)	140
(2) DB844G65ZAXY w/Mount Pipe (P)	158	APX16DWV-16DWV-S-E-A20 (R)	140
LNX-6514DS-T4M w/ Mount Pipe (P)	158	APX16DWV-16DWV-S-E-A20 (R)	140
LNX-6514DS-T4M w/ Mount Pipe (P)	158	ATMAA1412D-1A20 (R)	140
LNX-6514DS-T4M w/ Mount Pipe (P)	158	ATMAA1412D-1A20 (R)	140
LNX-6514DS-T4M w/ Mount Pipe (P)	158	ATMAA1412D-1A20 (R)	140
MG D3-800TV w/Mount Pipe (P)	158	ATMPP1412D-1CWA (R)	140
MG D3-800TV w/Mount Pipe (P)	158	ATMPP1412D-1CWA (R)	140
MG D3-800TV w/Mount Pipe (P)	158	ATMPP1412D-1CWA (R)	140
Platform Mount [LP 602-1] (E)	155	Platform Mount [LP 302-1] (E)	138
(2) 7770.00 (E)	148	A-ANT-23G-2-C (R)	132
(2) 7770.00 (E)	148	A-ANT-23G-2-C (R)	132
(2) 7770.00 (E)	148	A-ANT-23G-2-C (R)	132
(2) LGP2140X TMA (E)	148	FDD_R6_RRH (R)	128
(2) LGP2140X TMA (E)	148	FDD_R6_RRH (R)	128
(2) LGP2140X TMA (E)	148	FDD_R6_RRH (R)	128
		Pipe Mount [PM 501-3] (R)	128
		LLPX310R (R)	128
		LLPX310R (R)	128
		LLPX310R (R)	128
		Side Arm Mount [SO 301-1] (E)	118
		T-Arm Mount [TA 601-1] (E)	118
		Side Arm Mount [SO 701-1] (E)	118

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 76%

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

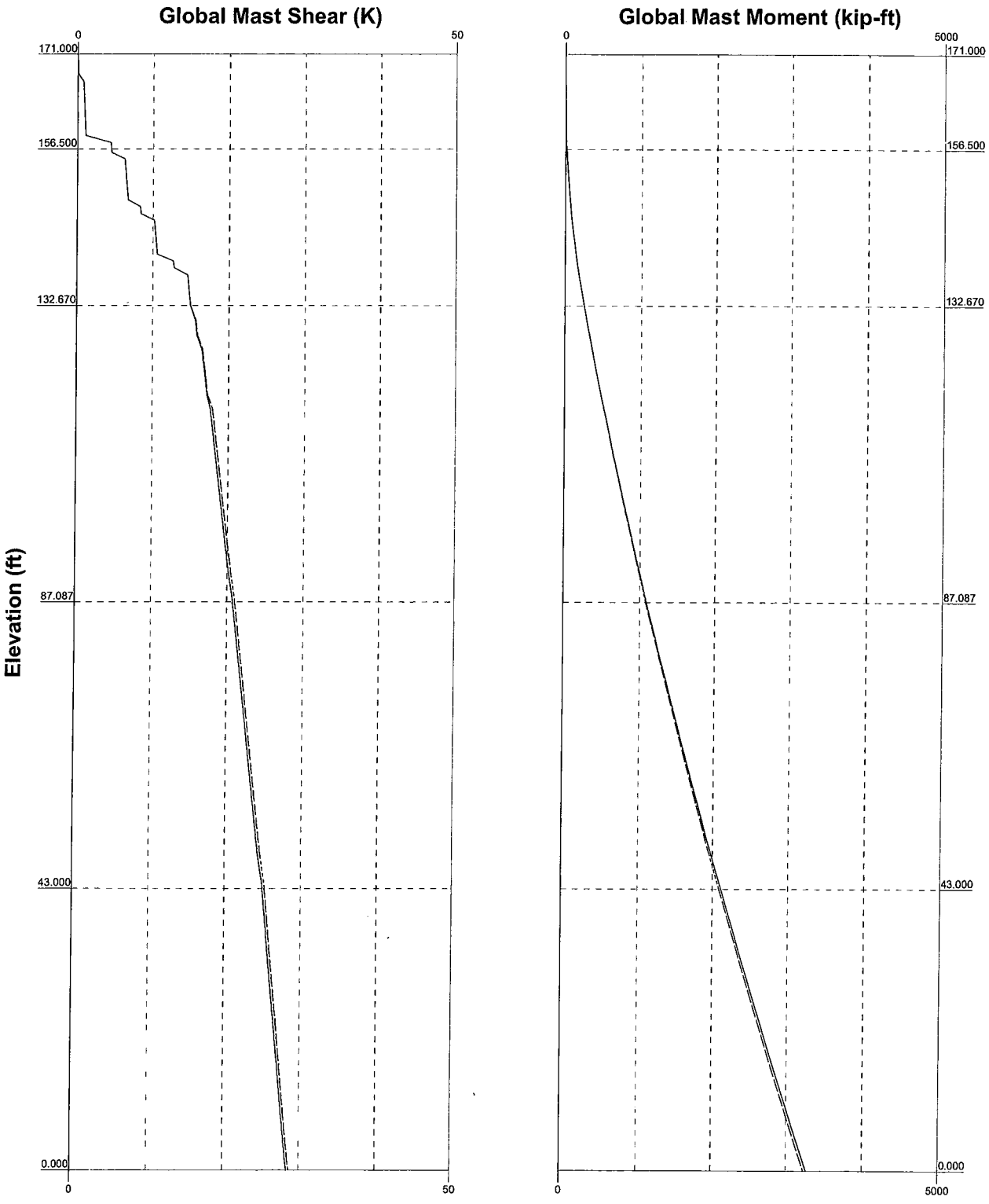
Job:	80964 - BRG 126 943086, CT (BU# 806355)		
Project:	171' EEI Monopole / App ID: 91522; Rev: 1		
Client: Crown Castle USA, Inc.		Drawn by: K. Ward	App'd:
Code: TIA/EIA-222-F		Date: 12/10/09	Scale: NTS
Path: S:\B&T Engineering\Projects\Crown Castle\80964_806355_BRG 126943086\Engineering\RISA\80964_Rev1_BRG 126 943086CT.eo			Dwg No. E-1

TIA/EIA-222-F - 85 mph/74 mph 0.500 in Ice

Vx ---------- Vz

Maximum Values

Mx ---------- Mz



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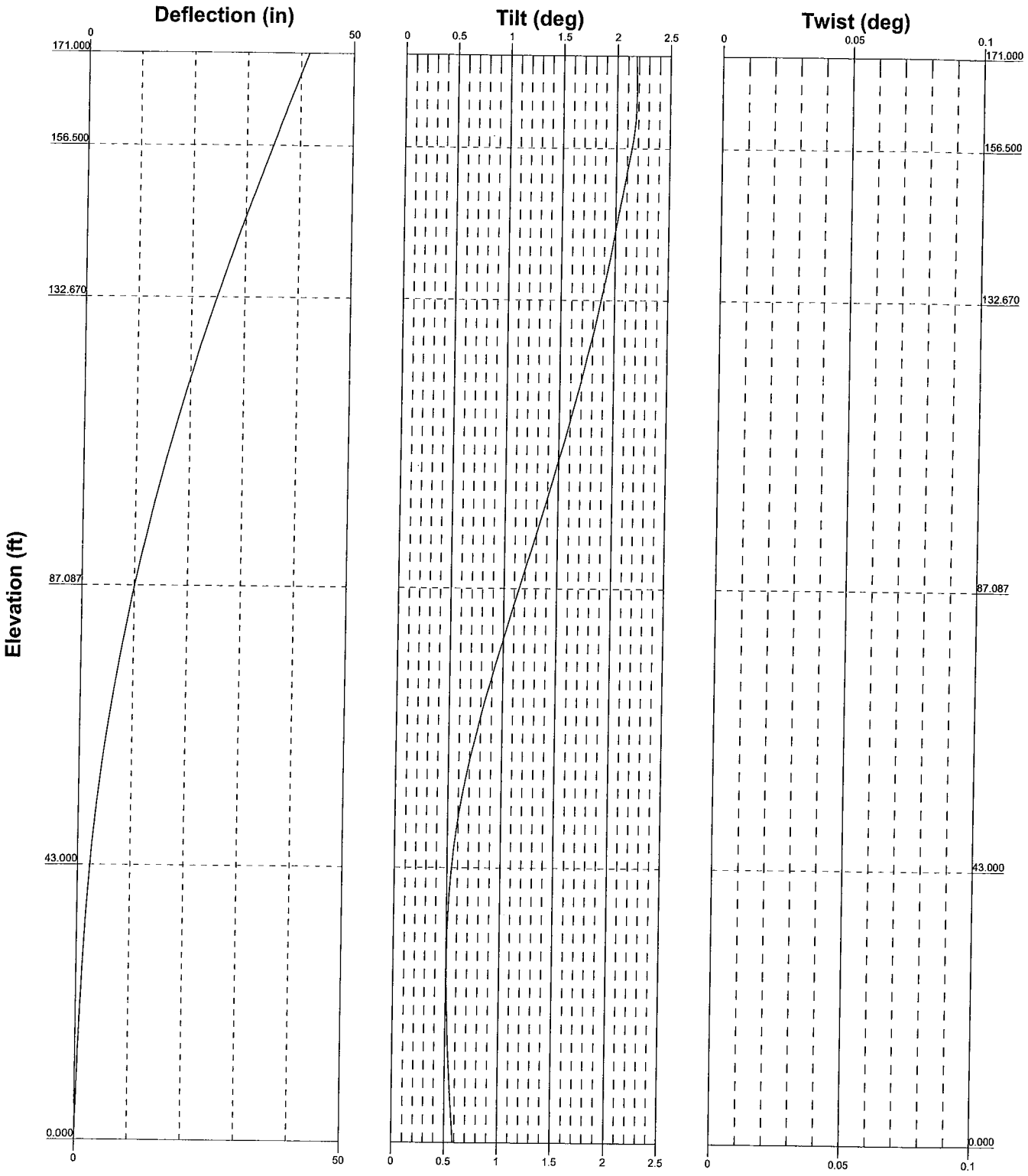
Client: Crown Castle USA, Inc.	Drawn by: K. Ward	App'd:	
Code: TIA/EIA-222-F	Date: 12/10/09	Scale: NTS	
Path:		Dwg No. E-4	

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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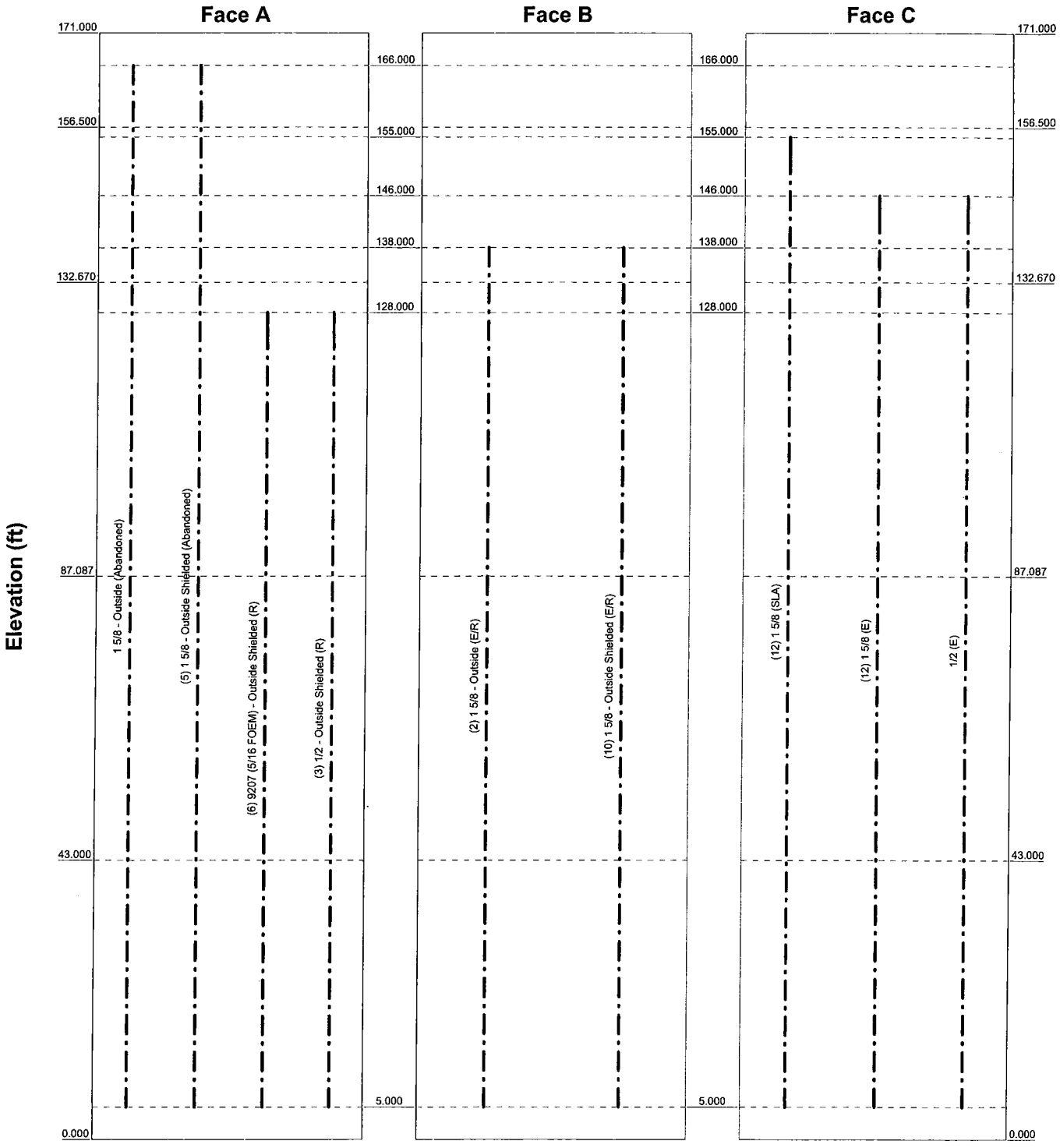
Job: 80964 - BRG 126 943086, CT (BU# 806355)			
Project: 171' EEI Monopole / App ID: 91522; Rev: 1			
Client: Crown Castle USA, Inc.	Drawn by: K. Ward		App'd:
Code: TIA/EIA-222-F	Date: 12/10/09		Scale: NTS
Path:			Dwg No. E-5

Feedline Distribution Chart
0' - 171'

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



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Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***80964 - BRG 126 943086, CT (BU# 806355)***			
Project: ***171' EEI Monopole / App ID: 91522; Rev: 1***			
Client: Crown Castle USA, Inc.	Drawn by: K. Ward	App'd:	
Code: TIA/EIA-222-F	Date: 12/10/09	Scale: NTS	
Path:		Dwg No. E-7	

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 Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.500 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	171.000-156.500	14.500	0.000	Round	10.750	10.750	0.365		A53-B-35 (35 ksi)
L2	156.500-156.000	0.500	0.000	18	10.750	19.500	0.365	1.460	A572-65 (65 ksi)
L3	156.000-132.670	23.330	3.667	18	19.500	24.790	0.188	0.750	A572-65 (65 ksi)
L4	132.670-87.087	49.250	4.833	18	23.584	34.630	0.375	1.500	A572-65 (65 ksi)
L5	87.087-43.000	48.920	6.000	18	32.796	43.750	0.438	1.750	A572-65 (65 ksi)
L6	43.000-0.000	49.000		18	41.531	52.500	0.500	2.000	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	It/Q in^2	w in	w/t
L1	10.750	11.902	160.659	3.676	5.375	29.890	320.880	5.951	0.000	0
	10.750	11.902	160.659	3.676	5.375	29.890	320.880	5.951	0.000	0
L2	10.916	12.031	163.929	3.687	5.461	30.018	328.074	6.017	1.250	3.424
	19.801	22.168	1025.469	6.793	9.906	103.520	2052.288	11.086	2.790	7.643
L3	19.801	11.493	541.578	6.856	9.906	54.672	1083.869	5.748	3.102	16.544
	25.172	14.642	1119.653	8.734	12.593	88.908	2240.779	7.322	4.033	21.51
L4	24.783	27.624	1879.844	8.239	11.980	156.909	3762.161	13.815	3.491	9.309
	35.164	40.772	6044.321	12.161	17.592	343.583	12096.596	20.390	5.435	14.493
L5	34.401	44.934	5944.079	11.487	16.660	356.780	11895.980	22.471	5.002	11.433
	44.425	60.145	14254.835	15.376	22.225	641.387	28528.426	30.078	6.930	15.84
L6	43.536	65.117	13850.526	14.566	21.098	656.485	27719.277	32.565	6.430	12.859
	53.310	82.524	28191.904	18.460	26.670	1057.064	56420.904	41.270	8.360	16.72

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 171.000-156.500				1	1	1		
L2 156.500-156.000				1	1	1		
L3 156.000-132.670				1	1	1		
L4 132.670-87.087				1	1	1		
L5 87.087-43.000				1	1	1		
L6 43.000-0.000				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 in	Weight klf
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1 5/8 - Outside (Abandoned)	A	No	CaAa (Out Of Face)	166.000 - 5.000	1	No Ice	0.198	0.001
						1/2" Ice	0.298	0.003
1 5/8 - Outside Shielded (Abandoned)	A	No	Inside Pole	166.000 - 5.000	5	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
**								
1 5/8 (SLA)	C	No	Inside Pole	155.000 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
**								
1 5/8 (E)	C	No	Inside Pole	146.000 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1/2 (E) **	C	No	Inside Pole	146.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
1 5/8 - Outside (E/R)	B	No	CaAa (Out Of Face)	138.000 - 5.000	2	No Ice	0.198	0.001
						1/2" Ice	0.298	0.003
1 5/8 - Outside Shielded (E/R) **	B	No	Inside Pole	138.000 - 5.000	10	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
9207 (5/16 FOEM) - Outside Shielded (R)	A	No	Inside Pole	128.000 - 5.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1/2 - Outside Shielded (R) ***	A	No	Inside Pole	128.000 - 5.000	3	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	171.000-156.500	A	0.000	0.000	0.000	1.881	0.059
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	156.500-156.000	A	0.000	0.000	0.000	0.099	0.003
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L3	156.000-132.670	A	0.000	0.000	0.000	4.619	0.146
		B	0.000	0.000	0.000	2.111	0.067
		C	0.000	0.000	0.000	0.000	0.448
L4	132.670-87.087	A	0.000	0.000	0.000	9.025	0.561
		B	0.000	0.000	0.000	18.051	0.569
		C	0.000	0.000	0.000	0.000	1.149
L5	87.087-43.000	A	0.000	0.000	0.000	8.729	0.573
		B	0.000	0.000	0.000	17.458	0.550
		C	0.000	0.000	0.000	0.000	1.111
L6	43.000-0.000	A	0.000	0.000	0.000	7.524	0.494
		B	0.000	0.000	0.000	15.048	0.474
		C	0.000	0.000	0.000	0.000	0.958

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	171.000-156.500	A	0.500	0.000	0.000	0.000	2.831	0.074
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L2	156.500-156.000	A	0.500	0.000	0.000	0.000	0.149	0.004
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L3	156.000-132.670	A	0.500	0.000	0.000	0.000	6.952	0.181
		B		0.000	0.000	0.000	3.177	0.083
		C		0.000	0.000	0.000	0.000	0.448
L4	132.670-87.087	A	0.500	0.000	0.000	0.000	13.584	0.629
		B		0.000	0.000	0.000	27.168	0.707
		C		0.000	0.000	0.000	0.000	1.149
L5	87.087-43.000	A	0.500	0.000	0.000	0.000	13.138	0.639

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		B		0.000	0.000	0.000	26.276	0.683
		C		0.000	0.000	0.000	0.000	1.111
L6	43.000-0.000	A	0.500	0.000	0.000	0.000	11.324	0.551
		B		0.000	0.000	0.000	22.648	0.589
		C		0.000	0.000	0.000	0.000	0.958

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	171.000-156.500	0.000	-0.170	0.000	-0.223
L2	156.500-156.000	0.000	-0.257	0.000	-0.343
L3	156.000-132.670	0.111	-0.193	0.151	-0.262
L4	132.670-87.087	0.414	0.000	0.554	0.000
L5	87.087-43.000	0.435	0.000	0.595	0.000
L6	43.000-0.000	0.397	0.000	0.554	0.000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight K
RV90-17-02DP w/Mount Pipe	C	From Leg	1.000 0.000	0.000	167.000	No Ice 1/2" Ice	4.910 5.572	3.636 4.703	0.044 0.082
(Abandoned)			0.000						
RV90-17-02DP w/Mount Pipe	B	From Leg	1.000 0.000	0.000	167.000	No Ice 1/2" Ice	4.910 5.572	3.636 4.703	0.044 0.082
(Abandoned)			0.000						
RV90-17-02DP w/Mount Pipe	A	From Leg	1.000 0.000	0.000	167.000	No Ice 1/2" Ice	4.910 5.572	3.636 4.703	0.044 0.082
(Abandoned)			0.000						
***									
(2) DB844G65ZAXY w/Mount Pipe	C	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	5.379 6.071	5.396 6.491	0.042 0.090
(P)			0.000						
(2) DB844G65ZAXY w/Mount Pipe	B	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	5.379 6.071	5.396 6.491	0.042 0.090
(P)			0.000						
(2) DB844G65ZAXY w/Mount Pipe	A	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	5.379 6.071	5.396 6.491	0.042 0.090
(P)			0.000						
LNX-6514DS-T4M w/ Mount Pipe	C	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	8.330 8.878	6.767 7.720	0.055 0.118
(P)			0.000						
LNX-6514DS-T4M w/ Mount Pipe	B	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	8.330 8.878	6.767 7.720	0.055 0.118
(P)			0.000						
LNX-6514DS-T4M w/ Mount Pipe	A	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	8.330 8.878	6.767 7.720	0.055 0.118
(P)			0.000						
MG D3-800TV w/Mount Pipe	C	From Face	0.000 0.000	0.000	158.000	No Ice 1/2" Ice	3.715 4.187	3.562 4.386	0.040 0.072

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(P)			0.000						
MG D3-800TV w/Mount Pipe	B	From Face	0.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice	3.715 4.187	3.562 4.386	0.040 0.072
(P)			0.000						
MG D3-800TV w/Mount Pipe	A	From Face	0.000 0.000 0.000	0.000	158.000	No Ice 1/2" Ice	3.715 4.187	3.562 4.386	0.040 0.072
(P)			0.000						
Platform Mount [LP 602-1]	C	None		0.000	155.000	No Ice 1/2" Ice	32.030 38.710	32.030 38.710	1.343 1.800
(E)									
***									
(2) 7770.00	C	From Face	0.000	0.000	148.000	No Ice	5.882	2.928	0.035
(E)			0.000 0.000			1/2" Ice	6.314	3.273	0.068
(2) 7770.00	B	From Face	0.000	0.000	148.000	No Ice	5.882	2.928	0.035
(E)			0.000 0.000			1/2" Ice	6.314	3.273	0.068
(2) 7770.00	A	From Face	0.000	0.000	148.000	No Ice	5.882	2.928	0.035
(E)			0.000 0.000			1/2" Ice	6.314	3.273	0.068
(2) LGP2140X TMA	C	From Face	0.000	0.000	148.000	No Ice	1.225	0.367	0.018
(E)			0.000 0.000			1/2" Ice	1.378	0.480	0.024
(2) LGP2140X TMA	B	From Face	0.000	0.000	148.000	No Ice	1.225	0.367	0.018
(E)			0.000 0.000			1/2" Ice	1.378	0.480	0.024
(2) LGP2140X TMA	A	From Face	0.000	0.000	148.000	No Ice	1.225	0.367	0.018
(E)			0.000 0.000			1/2" Ice	1.378	0.480	0.024
Platform Mount [LP 302-1]	C	None		0.000	146.000	No Ice	33.030	33.030	1.709
(E)						1/2" Ice	44.600	44.600	2.193
***									
DR65-18-02DP w/ Mount Pipe	C	From Face	0.000	0.000	140.000	No Ice	10.163	5.703	0.056
(R)			0.000 0.000			1/2" Ice	10.849	7.271	0.113
DR65-18-02DP w/ Mount Pipe	B	From Face	0.000	0.000	140.000	No Ice	10.163	5.703	0.056
(R)			0.000 0.000			1/2" Ice	10.849	7.271	0.113
DR65-18-02DP w/ Mount Pipe	A	From Face	0.000	0.000	140.000	No Ice	10.163	5.703	0.056
(R)			0.000 0.000			1/2" Ice	10.849	7.271	0.113
APX16DWV-16DWV-S-E-A20	C	From Face	0.000	0.000	140.000	No Ice	7.228	2.150	0.041
(R)			0.000 0.000			1/2" Ice	7.681	2.490	0.074
APX16DWV-16DWV-S-E-A20	B	From Face	0.000	0.000	140.000	No Ice	7.228	2.150	0.041
(R)			0.000 0.000			1/2" Ice	7.681	2.490	0.074
APX16DWV-16DWV-S-E-A20	A	From Face	0.000	0.000	140.000	No Ice	7.228	2.150	0.041
(R)			0.000 0.000			1/2" Ice	7.681	2.490	0.074
ATMAA1412D-1A20	C	From Face	0.000	0.000	140.000	No Ice	1.167	0.467	0.013
(R)			0.000 0.000			1/2" Ice	1.314	0.575	0.021
ATMAA1412D-1A20	B	From Face	0.000	0.000	140.000	No Ice	1.167	0.467	0.013
(R)			0.000 0.000			1/2" Ice	1.314	0.575	0.021
ATMAA1412D-1A20	A	From Face	0.000	0.000	140.000	No Ice	1.167	0.467	0.013
(R)			0.000			1/2" Ice	1.314	0.575	0.021

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000						
ATMPP1412D-1CWA	C	From Face	0.000	0.000	140.000	No Ice	1.167	0.416	0.013
(R)			0.000			1/2" Ice	1.317	0.530	0.020
			0.000						
ATMPP1412D-1CWA	B	From Face	0.000	0.000	140.000	No Ice	1.167	0.416	0.013
(R)			0.000			1/2" Ice	1.317	0.530	0.020
			0.000						
ATMPP1412D-1CWA	A	From Face	0.000	0.000	140.000	No Ice	1.167	0.416	0.013
(R)			0.000			1/2" Ice	1.317	0.530	0.020
			0.000						
Platform Mount [LP 302-1]	C	None		0.000	138.000	No Ice	33.030	33.030	1.709
(E)						1/2" Ice	44.600	44.600	2.193
**									
LLPX310R	C	From Leg	3.000	0.000	128.000	No Ice	0.016	0.006	0.029
(R)			0.000			1/2" Ice	0.037	0.024	0.029
			0.000						
LLPX310R	B	From Leg	3.000	0.000	128.000	No Ice	0.016	0.006	0.029
(R)			0.000			1/2" Ice	0.037	0.024	0.029
			0.000						
LLPX310R	A	From Leg	3.000	0.000	128.000	No Ice	0.016	0.006	0.029
(R)			0.000			1/2" Ice	0.037	0.024	0.029
			0.000						
FDD_R6_RRH	C	From Leg	3.000	0.000	128.000	No Ice	1.789	0.778	0.033
(R)			0.000			1/2" Ice	1.971	0.918	0.045
			0.000						
FDD_R6_RRH	B	From Leg	3.000	0.000	128.000	No Ice	1.789	0.778	0.033
(R)			0.000			1/2" Ice	1.971	0.918	0.045
			0.000						
FDD_R6_RRH	A	From Leg	3.000	0.000	128.000	No Ice	1.789	0.778	0.033
(R)			0.000			1/2" Ice	1.971	0.918	0.045
			0.000						
Pipe Mount [PM 501-3]	C	None		0.000	128.000	No Ice	5.780	5.780	0.156
(R)						1/2" Ice	7.370	7.370	0.177
**									
Side Arm Mount [SO 301-1]	C	From Leg	1.500	0.000	118.000	No Ice	1.000	0.900	0.023
(E)			0.000			1/2" Ice	1.390	1.420	0.033
			0.000						
T-Arm Mount [TA 601-1]	A	From Leg	1.500	0.000	118.000	No Ice	6.670	3.020	0.242
(E)			0.000			1/2" Ice	8.820	4.200	0.309
			0.000						
Side Arm Mount [SO 701-1]	B	From Leg	1.500	0.000	118.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000						
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
A-ANT-23G-2-C (R)	C	Paraboloid w/o Radome	From Leg	3.000 0.000 0.000	0.000		132.000	2.175	No Ice 1/2" Ice	3.715 4.006	0.012 0.021
A-ANT-23G-2-C (R)	B	Paraboloid w/o Radome	From Leg	3.000 0.000 0.000	0.000		132.000	2.175	No Ice 1/2" Ice	3.715 4.006	0.012 0.021
A-ANT-23G-2-C (R) **	A	Paraboloid w/o Radome	From Leg	3.000 0.000 0.000	0.000		132.000	2.175	No Ice 1/2" Ice	3.715 4.006	0.012 0.021

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
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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	171 - 156.5	Pole	Max Tension	15	0.000	0.000	-0.000
			Max. Compression	14	-2.117	-0.000	0.011
			Max. Mx	5	-0.849	-15.582	0.008
			Max. My	2	-0.845	-0.001	15.591
			Max. Vy	5	4.444	-15.582	0.008
			Max. Vx	2	-4.445	-0.001	15.591
			Max. Torque	24			-0.008
L2	156.5 - 156	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-2.155	-0.000	0.012
			Max. Mx	5	-0.879	-17.811	0.013
			Max. My	2	-0.875	-0.002	17.821
			Max. Vy	5	4.472	-17.811	0.013
			Max. Vx	2	-4.473	-0.002	17.821
			Max. Torque	24			-0.008
L3	156 - 132.67	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-11.304	-0.020	0.046
			Max. Mx	5	-6.844	-196.310	0.073
			Max. My	2	-6.832	-0.018	196.388
			Max. Vy	5	14.645	-196.310	0.073
			Max. Vx	2	-14.651	-0.018	196.388
			Max. Torque	19			0.036
L4	132.67 - 87.0867	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-20.566	-0.352	0.724
			Max. Mx	5	-15.092	-982.474	6.636
			Max. My	2	-15.060	-0.700	991.985
			Max. Vy	5	20.161	-982.474	6.636
			Max. Vx	2	-20.451	-0.700	991.985
			Max. Torque	20			0.327
L5	87.0867 - 43	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.141	-0.650	0.724
			Max. Mx	5	-25.968	-1939.178	13.364
			Max. My	2	-25.951	-1.624	1961.049
			Max. Vy	5	24.330	-1939.178	13.364
			Max. Vx	2	-24.619	-1.624	1961.049
			Max. Torque	20			0.484
L6	43 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-49.528	-1.023	0.724
			Max. Mx	5	-42.408	-3232.585	20.887
			Max. My	2	-42.408	-2.671	3268.329
			Max. Vy	5	28.390	-3232.585	20.887
			Max. Vx	2	-28.672	-2.671	3268.329
			Max. Torque	20			0.645

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	49.528	0.000	0.000
	Max. H_x	11	42.426	28.363	0.115
	Max. H_z	2	42.426	-0.018	28.644
	Max. M_x	2	3268.329	-0.018	28.644
	Max. M_z	5	3232.585	-28.363	0.150
	Max. Torsion	20	0.645	-12.283	-21.659
	Min. Vert	2	42.426	-0.018	28.644
	Min. H_x	5	42.426	-28.363	0.150
	Min. H_z	8	42.426	0.018	-28.588
	Min. M_x	8	-3259.567	0.018	-28.588
	Min. M_z	11	-3231.611	28.363	0.115
	Min. Torsion	26	-0.643	12.469	21.552

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	42.427	0.000	0.000	-0.547	-0.470	0.000
Dead+Wind 0 deg - No Ice	42.426	0.018	-28.644	-3268.329	-2.671	0.539
Dead+Wind 30 deg - No Ice	42.427	14.313	-24.664	-2810.987	-1634.272	0.348
Dead+Wind 60 deg - No Ice	42.427	24.613	-14.311	-1632.734	-2806.235	0.083
Dead+Wind 90 deg - No Ice	42.426	28.363	-0.150	-20.887	-3232.585	-0.205
Dead+Wind 120 deg - No Ice	42.427	24.643	14.307	1631.602	-2810.649	-0.458
Dead+Wind 150 deg - No Ice	42.427	14.052	24.778	2825.780	-1599.102	-0.588
Dead+Wind 180 deg - No Ice	42.426	-0.018	28.588	3259.567	1.697	-0.540
Dead+Wind 210 deg - No Ice	42.427	-14.083	24.796	2827.955	1601.907	-0.347
Dead+Wind 240 deg - No Ice	42.427	-24.661	14.338	1635.380	2811.850	-0.082
Dead+Wind 270 deg - No Ice	42.426	-28.363	-0.115	-16.518	3231.611	0.205
Dead+Wind 300 deg - No Ice	42.427	-24.595	-14.280	-1628.955	2803.084	0.457
Dead+Wind 330 deg - No Ice	42.427	-14.282	-24.646	-2808.810	1629.520	0.586
Dead+Ice	49.528	0.000	0.000	-0.724	-1.023	0.000
Dead+Wind 0 deg+Ice	49.527	0.017	-25.036	-2920.349	-3.172	0.606
Dead+Wind 30 deg+Ice	49.528	12.498	-21.569	-2513.543	-1459.265	0.407
Dead+Wind 60 deg+Ice	49.528	21.501	-12.512	-1459.525	-2506.770	0.113
Dead+Wind 90 deg+Ice	49.527	24.779	-0.124	-17.692	-2887.743	-0.211
Dead+Wind 120 deg+Ice	49.528	21.523	12.505	1457.435	-2510.062	-0.494
Dead+Wind 150 deg+Ice	49.528	12.283	21.659	2524.696	-1429.977	-0.645
Dead+Wind 180 deg+Ice	49.527	-0.017	24.991	2912.571	1.033	-0.606
Dead+Wind 210 deg+Ice	49.528	-12.313	21.676	2526.791	1431.476	-0.406
Dead+Wind 240 deg+Ice	49.528	-21.540	12.534	1461.072	2510.018	-0.113
Dead+Wind 270 deg+Ice	49.527	-24.779	-0.090	-13.488	2885.604	0.211
Dead+Wind 300 deg+Ice	49.528	-21.484	-12.482	-1455.887	2502.534	0.493
Dead+Wind 330 deg+Ice	49.528	-12.469	-21.552	-2511.446	1453.488	0.643
Dead+Wind 0 deg - Service	42.427	0.006	-9.933	-1136.551	-1.246	0.188
Dead+Wind 30 deg - Service	42.427	4.963	-8.553	-977.536	-568.413	0.121
Dead+Wind 60 deg - Service	42.427	8.535	-4.963	-567.939	-975.827	0.028
Dead+Wind 90 deg - Service	42.427	9.836	-0.052	-7.618	-1124.079	-0.073
Dead+Wind 120 deg - Service	42.427	8.546	4.961	566.784	-977.360	-0.160
Dead+Wind 150 deg - Service	42.427	4.873	8.593	981.893	-556.228	-0.204
Dead+Wind 180 deg - Service	42.427	-0.006	9.914	1132.743	0.267	-0.188
Dead+Wind 210 deg - Service	42.427	-4.884	8.599	982.649	556.558	-0.121
Dead+Wind 240 deg - Service	42.427	-8.552	4.972	568.094	977.136	-0.028
Dead+Wind 270 deg - Service	42.427	-9.836	-0.040	-6.105	1123.100	0.073
Dead+Wind 300 deg - Service	42.427	-8.529	-4.952	-566.629	974.092	0.160
Dead+Wind 330 deg - Service	42.427	-4.953	-8.547	-976.780	566.124	0.204

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-42.427	0.000	0.000	42.427	0.000	0.000%
2	0.018	-42.427	-28.646	-0.018	42.426	28.644	0.004%
3	14.313	-42.427	-24.664	-14.313	42.427	24.664	0.000%
4	24.613	-42.427	-14.311	-24.613	42.427	14.311	0.000%
5	28.365	-42.427	-0.150	-28.363	42.426	0.150	0.004%
6	24.643	-42.427	14.307	-24.643	42.427	-14.307	0.000%
7	14.052	-42.427	24.778	-14.052	42.427	-24.778	0.000%
8	-0.018	-42.427	28.590	0.018	42.426	-28.588	0.004%
9	-14.083	-42.427	24.796	14.083	42.427	-24.796	0.000%
10	-24.661	-42.427	14.338	24.661	42.427	-14.338	0.000%
11	-28.365	-42.427	-0.115	28.363	42.426	0.115	0.004%
12	-24.595	-42.427	-14.280	24.595	42.427	14.280	0.000%
13	-14.282	-42.427	-24.646	14.282	42.427	24.646	0.000%
14	0.000	-49.528	0.000	0.000	49.528	0.000	0.000%
15	0.017	-49.528	-25.039	-0.017	49.527	25.036	0.005%
16	12.498	-49.528	-21.569	-12.498	49.528	21.569	0.000%
17	21.501	-49.528	-12.512	-21.501	49.528	12.512	0.000%
18	24.781	-49.528	-0.124	-24.779	49.527	0.124	0.005%
19	21.523	-49.528	12.505	-21.523	49.528	-12.505	0.000%
20	12.283	-49.528	21.659	-12.283	49.528	-21.659	0.000%
21	-0.017	-49.528	24.994	0.017	49.527	-24.991	0.005%
22	-12.313	-49.528	21.676	12.313	49.528	-21.676	0.000%
23	-21.540	-49.528	12.535	21.540	49.528	-12.534	0.000%
24	-24.781	-49.528	-0.090	24.779	49.527	0.090	0.005%
25	-21.484	-49.528	-12.482	21.484	49.528	12.482	0.000%
26	-12.469	-49.528	-21.552	12.469	49.528	21.552	0.000%
27	0.006	-42.427	-9.934	-0.006	42.427	9.933	0.002%
28	4.963	-42.427	-8.553	-4.963	42.427	8.553	0.001%
29	8.535	-42.427	-4.963	-8.535	42.427	4.963	0.001%
30	9.837	-42.427	-0.052	-9.836	42.427	0.052	0.002%
31	8.546	-42.427	4.962	-8.546	42.427	-4.961	0.001%
32	4.873	-42.427	8.593	-4.873	42.427	-8.593	0.001%
33	-0.006	-42.427	9.915	0.006	42.427	-9.914	0.002%
34	-4.884	-42.427	8.599	4.884	42.427	-8.599	0.001%
35	-8.552	-42.427	4.972	8.552	42.427	-4.972	0.001%
36	-9.837	-42.427	-0.040	9.836	42.427	0.040	0.002%
37	-8.529	-42.427	-4.952	8.529	42.427	4.952	0.001%
38	-4.953	-42.427	-8.547	4.953	42.427	8.547	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	8	0.00006958	0.00009265
3	Yes	13	0.00000001	0.00008193
4	Yes	13	0.00000001	0.00008175
5	Yes	8	0.00006966	0.00014066
6	Yes	13	0.00000001	0.00008144
7	Yes	13	0.00000001	0.00008090
8	Yes	8	0.00006961	0.00008639
9	Yes	13	0.00000001	0.00008061
10	Yes	13	0.00000001	0.00008184
11	Yes	8	0.00006966	0.00012806
12	Yes	13	0.00000001	0.00008174
13	Yes	13	0.00000001	0.00008125
14	Yes	4	0.00000001	0.00000001
15	Yes	8	0.00010364	0.00011030
16	Yes	13	0.00000001	0.00008879
17	Yes	13	0.00000001	0.00008855
18	Yes	8	0.00010373	0.00014832
19	Yes	13	0.00000001	0.00008800
20	Yes	13	0.00000001	0.00008769
21	Yes	8	0.00010367	0.00010284
22	Yes	13	0.00000001	0.00008719
23	Yes	13	0.00000001	0.00008847
24	Yes	8	0.00010374	0.00013601
25	Yes	13	0.00000001	0.00008851
26	Yes	13	0.00000001	0.00008780
27	Yes	8	0.00007410	0.00003860
28	Yes	9	0.00000001	0.00014133
29	Yes	9	0.00000001	0.00014085
30	Yes	8	0.00007411	0.00003900
31	Yes	9	0.00000001	0.00013880
32	Yes	9	0.00000001	0.00013970
33	Yes	8	0.00007410	0.00003832
34	Yes	9	0.00000001	0.00013775
35	Yes	9	0.00000001	0.00014009
36	Yes	8	0.00007411	0.00003875
37	Yes	9	0.00000001	0.00014129
38	Yes	9	0.00000001	0.00013860

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	171 - 156.5	41.525	27	2.178	0.001
L2	156.5 - 156	34.939	27	2.141	0.001
L3	156 - 132.67	34.715	27	2.140	0.001
L4	136.337 - 87.0867	26.254	27	1.918	0.001
L5	91.92 - 43	11.314	27	1.229	0.000
L6	49 - 0	3.067	27	0.583	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
167.000	RV90-17-02DP w/Mount Pipe	27	39.698	2.166	0.001	29135
158.000	(2) DB844G65ZAXY w/Mount Pipe	27	35.613	2.143	0.001	11392
155.000	Platform Mount [LP 602-1]	27	34.268	2.137	0.001	9439
148.000	(2) 7770.00	27	31.177	2.084	0.001	6241
146.000	Platform Mount [LP 302-1]	27	30.310	2.061	0.001	5664
140.000	DR65-18-02DP w/ Mount Pipe	27	27.762	1.975	0.001	4437
138.000	Platform Mount [LP 302-1]	27	26.934	1.944	0.001	4168
132.000	A-ANT-23G-2-C	27	24.520	1.851	0.001	3883
128.000	LLPX310R	27	22.973	1.790	0.001	3854
118.000	Side Arm Mount [SO 301-1]	27	19.323	1.639	0.001	3784

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	171 - 156.5	118.964	2	6.233	0.002
L2	156.5 - 156	100.144	2	6.130	0.002
L3	156 - 132.67	99.504	2	6.128	0.002
L4	136.337 - 87.0867	75.300	2	5.498	0.002
L5	91.92 - 43	32.491	2	3.529	0.001
L6	49 - 0	8.816	2	1.676	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
167.000	RV90-17-02DP w/Mount Pipe	2	113.743	6.200	0.002	10740
158.000	(2) DB844G65ZAXY w/Mount Pipe	2	102.071	6.137	0.002	4183
155.000	Platform Mount [LP 602-1]	2	98.225	6.120	0.002	3434
148.000	(2) 7770.00	2	89.387	5.972	0.002	2243
146.000	Platform Mount [LP 302-1]	2	86.906	5.904	0.002	2032
140.000	DR65-18-02DP w/ Mount Pipe	2	79.618	5.661	0.002	1585
138.000	Platform Mount [LP 302-1]	2	77.247	5.573	0.002	1487
132.000	A-ANT-23G-2-C	2	70.338	5.305	0.002	1382
128.000	LLPX310R	2	65.907	5.128	0.002	1370
118.000	Side Arm Mount [SO 301-1]	2	55.454	4.689	0.002	1341

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 $\frac{P}{P_a}$
L1	171 - 156.5 (1)	TP10.75x10.75x0.365	14.500	0.000	0.0	21.0000	11.902	-0.847	249.947	0.003
L2	156.5 - 156 (2)	TP19.5x10.75x0.365	0.500	0.000	0.0	39.0000	12.031	-0.848	469.214	0.002
L3	156 - 132.67 (3)	TP24.79x19.5x0.188	23.330	0.000	0.0	39.0000	14.147	-6.838	551.724	0.012
L4	132.67 - 87.0867 (4)	TP34.63x23.584x0.375	49.250	0.000	0.0	39.0000	39.482	-15.060	1539.790	0.010
L5	87.0867 - 43 (5)	TP43.75x32.796x0.438	48.920	0.000	0.0	39.0000	58.279	-25.951	2272.890	0.011
L6	43 - 0 (6)	TP52.5x41.531x0.5	49.000	0.000	0.0	39.0000	82.524	-42.408	3218.440	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	171 - 156.5 (1)	TP10.75x10.75x0.365	15.595	-6.2609	23.1000	0.271	0.000	0.0000	23.1000	0.000
L2	156.5 - 156 (2)	TP19.5x10.75x0.365	15.592	-6.2330	39.0000	0.160	0.000	0.0000	39.0000	0.000
L3	156 - 132.67 (3)	TP24.79x19.5x0.188	196.388	-28.4007	39.0000	0.728	0.000	0.0000	39.0000	0.000
L4	132.67 - 87.0867 (4)	TP34.63x23.584x0.375	991.983	-36.9608	39.0000	0.948	0.000	0.0000	39.0000	0.000
L5	87.0867 - 43 (5)	TP43.75x32.796x0.438	1961.050	-39.0893	39.0000	1.002	0.000	0.0000	39.0000	0.000
L6	43 - 0 (6)	TP52.5x41.531x0.5	3268.333	-37.1027	39.0000	0.951	0.000	0.0000	39.0000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	171 - 156.5 (1)	TP10.75x10.75x0.365	0.003	0.271	0.000	0.274 ✔	1.333	H1-3 ✔
L2	156.5 - 156 (2)	TP19.5x10.75x0.365	0.002	0.160	0.000	0.162 ✔	1.333	H1-3 ✔
L3	156 - 132.67 (3)	TP24.79x19.5x0.188	0.012	0.728	0.000	0.741 ✔	1.333	H1-3 ✔
L4	132.67 - 87.0867 (4)	TP34.63x23.584x0.375	0.010	0.948	0.000	0.957 ✔	1.333	H1-3 ✔
L5	87.0867 - 43 (5)	TP43.75x32.796x0.438	0.011	1.002	0.000	1.014 ✔	1.333	H1-3 ✔
L6	43 - 0 (6)	TP52.5x41.531x0.5	0.013	0.951	0.000	0.965 ✔	1.333	H1-3 ✔

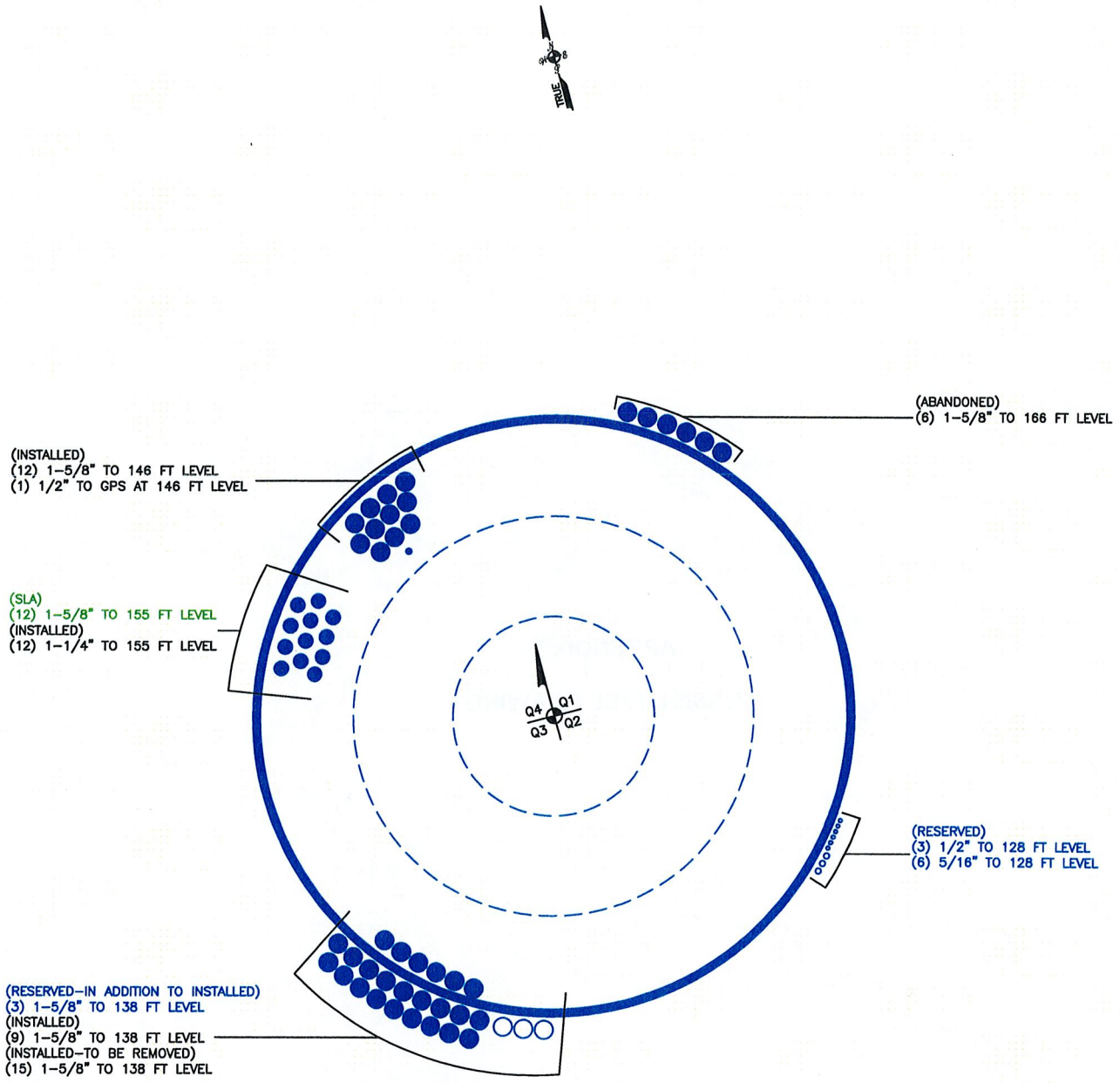
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	171 - 156.5	Pole	TP10.75x10.75x0.365	1	-0.847	333.179	20.6	Pass
L2	156.5 - 156	Pole	TP19.5x10.75x0.365	2	-0.848	625.462	12.1	Pass
L3	156 - 132.67	Pole	TP24.79x19.5x0.188	3	-6.838	735.448	55.6	Pass
L4	132.67 - 87.0867	Pole	TP34.63x23.584x0.375	4	-15.060	2052.540	71.8	Pass
L5	87.0867 - 43	Pole	TP43.75x32.796x0.438	5	-25.951	3029.762	76.0	Pass
L6	43 - 0	Pole	TP52.5x41.531x0.5	6	-42.408	4290.180	72.4	Pass
							Summary	
						Pole (L5)	76.0	Pass
						RATING =	**76.0**	**Pass**

Program Version 5.3.1.0 - 10/3/2008 File: 80964_Rev1_BRG 126 943086CT.eri

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806355 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: *806355*
Site Name: *BRG 126943086, CT*
App #: *91522; Rev: 1*

Pole Manufacturer:	*Other*

Reactions		
Moment:	3268	ft-kips
Axial:	42	kips
Shear:	29	kips

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

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	61	in

Plate Data		
Diam:	67	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.33	in

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

Pole Data		
Diam:	52.5	in
Thick:	0.5	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	

Anchor Rod Results

Maximum Rod Tension:	126.5 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	64.9% **Pass**	Fty*ASIF

Base Plate Results

	Flexural Check	Rigid
Base Plate Stress:	47.4 ksi	Service ASD
Allowable Plate Stress:	60.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	79.0% **Pass**	Y.L. Length: 31.06

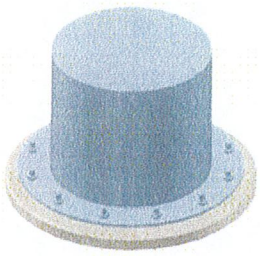
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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

Slab Size

Program: P&P- Mono.xls Date: 12/9/2009
File Name: 80964
Location: BRG 126 943086, CT

INPUT **Bold Values Only are Input**

22.00	**Length, L (ft.)**	**Conc. Unit Weight**	**0.15** kcf
22.00	**Width, B (ft.)**	**Soil Unit Weight**	**0.135** kcf
3.00	**Thickness, T (ft)**		
1.00	**Height of Pier Above Grade, (ft.)**		
9.00	**Depth to Base, D (ft.)**		
1.00	**Round Pedestal =0, Else Square Pedestal**		
7.00	**Pedestal Diameter or Width, (ft.)**		
36.00	**Phi Angle, (deg.)**	0.6283 Phi in Radians	
0.00	**Cohesion, c (ksf)**		
4000	**Conc. f'c, (psi)**		
1.30	**USD Load Factor**		
12.00	**Net Allow Bearing Stress, include Code Increase when approp., (ksf)**		
1.50	**Allow O.T. Factor of Safety**		
3268	**Tower O.T. Moment, (ft.-kips)**	O.T. Moment @ fdn Bas	3558.00 ft.-kips
42	**Leg Download, kips**		
0	**Leg Uplift, kips**		
29	**Leg Shear, kips**		

Check of Punching Shear

31.50	d, top of conc. To middle of bottom rebar mat, (in.)
462.00	Bo, The circumference at d/2 from face of pier, (in.)
54.6	Factored Leg Download, (kips)
3129.4	Phi*Vn, Conc. 2-way Shear Resistance, (kips)

Check of One Way Shear Shear

364.0	Factored Shear at Face of Pier
894.1	Phi*Vn, Conc. 1-way Shear Resistance, (kips)

Mat Thickness is acceptable

66.48 Concrete Volume (c.y.)

Slab Size

Program: P&P- Mono.xls
File Name: 80964
Location: BRG 126 943086, CT

Check Net Vert. Soil Pressure Eccentricity = 5.36 > 3.67 ft. (L/6)

Vert. Loads in kips

42.00	Tower	RESULTANT IS OUTSIDE MIDDLE THIRD OF THE PAD
352.35	Soil	L-PRIME= 16.92
269.25	Conc	
663.60	Sum of the Verticals, (kips)	

0.00	Net q-min. (ksf)			
2.35	Net q-max, (ksf))	Status:	OK	**19.6%**
2.58	O.T. Factor of Safety	Status:	OK	**58.1%**
2.31	q-Bottom Design, (ksf)	The Net q-max minus the opposing effect of conc DW		
1.26	q-TopDesign, (ksf)	Deadweight TO BE USED FOR CONCRETE SLAB DESIGN of top mat reinforcing steel		

Conservatively assume maximum moment at the pier centerline with maximum mat edge distance

Pier Design, Max Moment =	41652	in.-kips
Pad Bottom Design, Moment Arm:	7.50	ft.
Pad Bottom Design, Max Moment:	4281	in.-kips
Pad Top Design, Moment Arm:	7.50	ft.
Pad Top Design, Max Moment:	2339	in.-kips

Use the above moments in the Pier, Pad Bottom & Top design sheets
in this Workbook to determine reinforcing steel requirements.

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *806355*
Site Name: *BRG 126 943086, CT*
App #: *91522; Rev: 1*

Connection Type:	*Butt*
Pole Manufacturer:	Other

Reactions		
Moment:	17.821	ft-kips
Axial:	0.879	kips
Shear:	4.473	kips
Elevation:	156	feet

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty: 44.00
N/A:	55	<-- Disregard	
Circle (in.):	25.75		

Plate Data		
Diam:	28.5	in
Thick, t:	1.5	in
Grade (Fy):	60	ksi
Strength, Fu:	75	ksi
Single-Rod B-eff:	2.58	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:	0.25	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.25	in
Fillet V. Weld:	0.25	in
Width:	3	in
Height:	8	in
Thick:	0.5	in
Notch:	0.375	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	19.5	in
Thick:	0.1875	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	

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

Flange Bolt Results

Bolt Tension Capacity, **B**:	46.07 kips	Rigid / Service, ASD / Fty*ASIF
Max Bolt directly applied T:	1.35 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	2.177 in	
Min PL "treq" for actual **T w/ Pry**:	0.296 in	
Min PL "t1" for actual **T w/o Pry**:	0.372 in	
T allowable with Prying:	31.95 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	1.35 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	2.9% **Pass**	

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	2.4 ksi	Rigid / Service ASD / 0.75*Fy*ASIF / Comp. Y.L. Length: 16.82
Allowable Plate Stress:	60.0 ksi	
Compression Plate Stress Ratio:	4.0% **Pass**	
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	3.9% **Pass**	

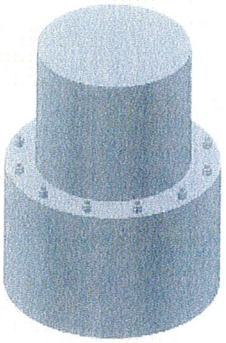
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



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

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