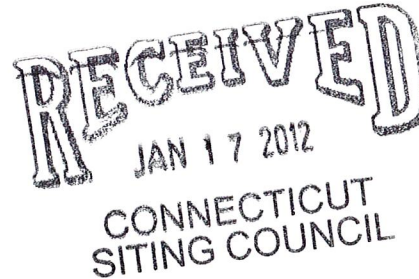


280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

January 13, 2012



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

Re: **Notice of Exempt Modification – Antenna Swap
64 Hungerford Lane, Harwinton, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 168-foot level on the existing 180-foot tower at the above-referenced address. The tower is owned by Crown Castle. The Council approved Cellco’s shared use of the existing tower in 2003. Cellco now intends to modify its installation by replacing six (6) of its existing antennas with three (3) model BXA-171085/12BF PCS antennas and three (3) model BXA-70063/6CF LTE antennas, all at the same 168-foot level. Cellco also intends to install six (6) coax cable diplexers on its existing antenna platform. Attached behind Tab 1 are the specifications for the proposed replacement antennas and cable diplexers.

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 Michael R. Criss, First Selectman of the Town of Harwinton. A copy of this letter is also being sent to Buckley Broadcasting Corp., the owner of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the overall height of the existing tower. Cellco’s replacement antennas and diplexers will be located at the 168-foot level on the existing 180-foot tower.



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ROBINSON & COLE_{LLP}

Linda Roberts
January 13, 2012
Page 2

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

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

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower and foundation can support Cellco's proposed modifications. (See Tab 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Michael R. Criss, Harwinton First Selectman
Buckley Broadcasting Corp
Sandy M. Carter



BXA-171085-12BF-EDIN-X

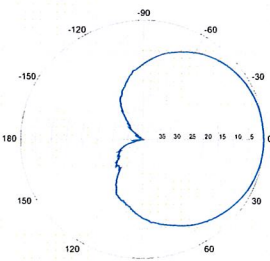
Replace "X" with desired electrical downtilt

X-Pol | FET Panel | 85° | 18.0 dBi

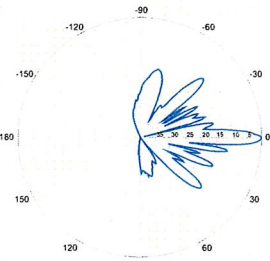
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	15.1 dBd / 17.2 dBi	15.5 dBd / 17.6 dBi	15.9 dBd / 18.0 dBi
Electrical downtilt (X)		0, 2, 4	
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1820 x 154 x 105 mm		71.7 x 6.1 x 4.1 in
Depth with z-brackets	133 mm		5.2 in
Weight without mounting brackets	6.8 kg		15 lbs
Survival wind speed	> 201 km/hr		> 125 mph
Wind area	Front: 0.28 m ² Side: 0.19 m ²	Front: 3.1 ft ² Side: 2.1 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-12BF-EDIN-X-FP		



BXA-171085-12BF-EDIN-X

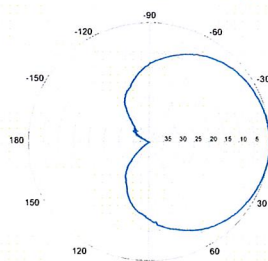


Horizontal | 1710-1880 MHz
BXA-171085-12BF-EDIN-0

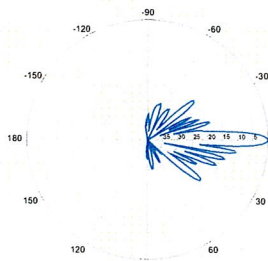


0° | Vertical | 1710-1880 MHz

BXA-171085-12BF-EDIN-X

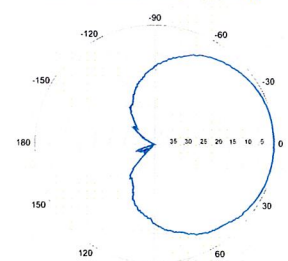


Horizontal | 1850-1990 MHz
BXA-171085-12BF-EDIN-0

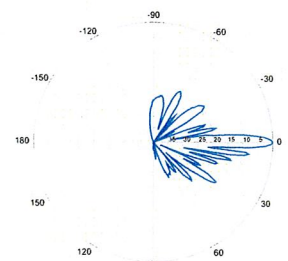


0° | Vertical | 1850-1990 MHz

BXA-171085-12BF-EDIN-X



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



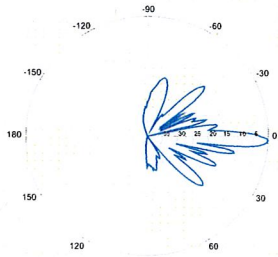
0° | Vertical | 1920-2170 MHz

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

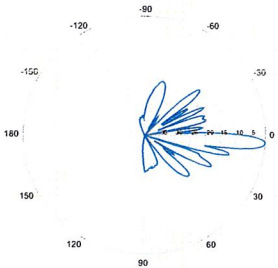
BXA-171085-12BF-EDIN-X

X-Pol | FET Panel | 85° | 18.0 dBi

BXA-171085-12BF-EDIN-2

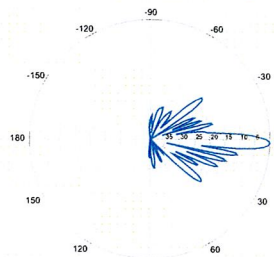


2° | Vertical | 1710-1880 MHz
BXA-171085-12BF-EDIN-4

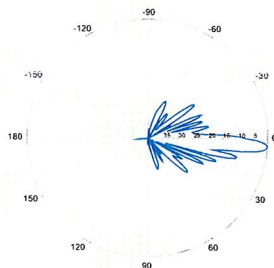


4° | Vertical | 1710-1880 MHz

BXA-171085-12BF-EDIN-2

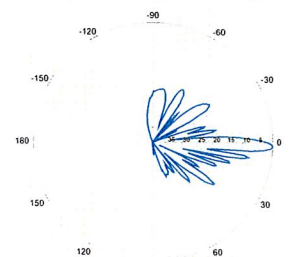


2° | Vertical | 1850-1990 MHz
BXA-171085-12BF-EDIN-4

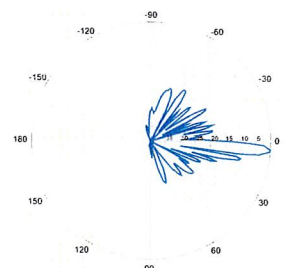


4° | Vertical | 1850-1990 MHz

BXA-171085-12BF-EDIN-2



2° | Vertical | 1920-2170 MHz
BXA-171085-12BF-EDIN-4



4° | Vertical | 1920-2170 MHz

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

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

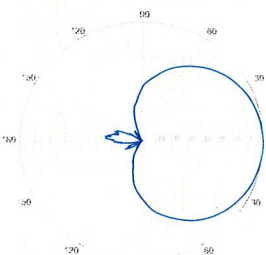
Replace "X" with desired electrical downtilt.

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



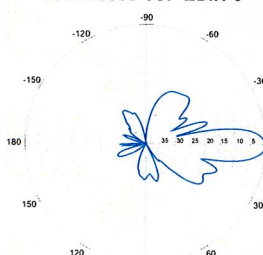
Electrical Characteristics	696-900 MHz		
Frequency bands	696-806 MHz	806-900 MHz	
Polarization	±45°		
Horizontal beamwidth	65°	63°	
Vertical beamwidth	13°	11°	
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10		
Impedance	50Ω		
VSWR	≤1.35:1		
Upper sidelobe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

BXA-70063-6CF-EDIN-X



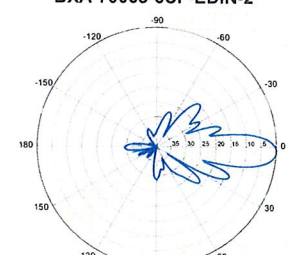
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

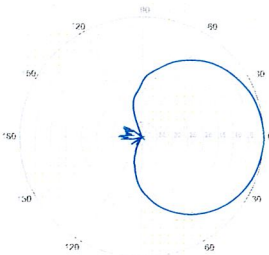


0° | Vertical | 750 MHz

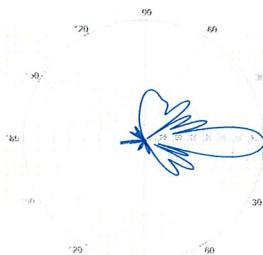
BXA-70063-6CF-EDIN-2



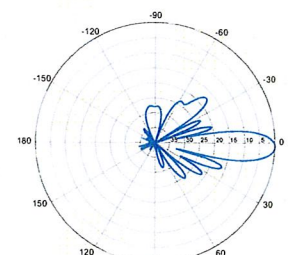
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



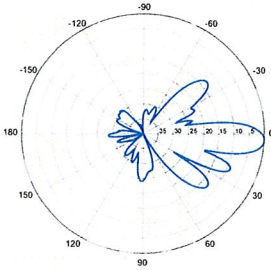
2° | Vertical | 850 MHz

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

BXA-70063-6CF-EDIN-X

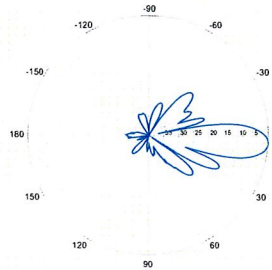
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



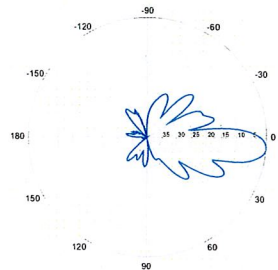
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

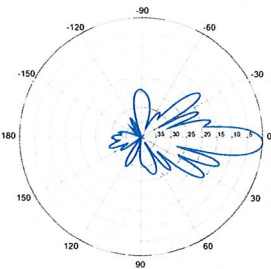


4° | Vertical | 750 MHz

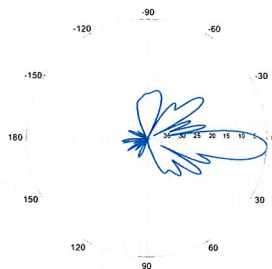
BXA-70063-6CF-EDIN-5



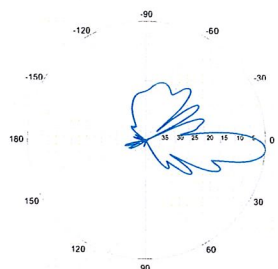
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

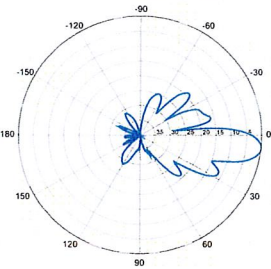


4° | Vertical | 850 MHz



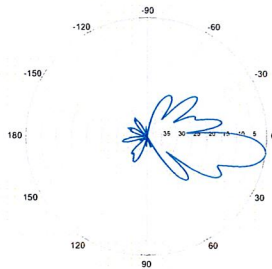
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



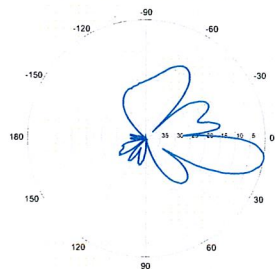
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

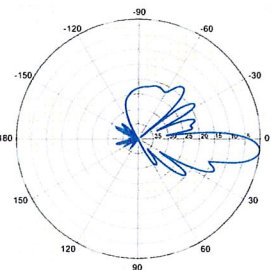


8° | Vertical | 750 MHz

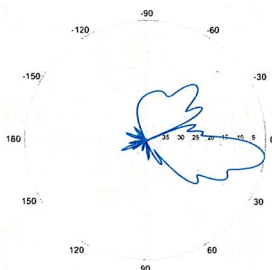
BXA-70063-6CF-EDIN-10



10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

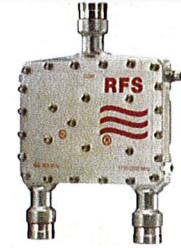
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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



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 Range 1, MHz	698-960
Frequency Range 2, MHz	1710-2200
Application	LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS
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)
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, Path 1, dB	0.07 typ.
Insertion Loss, Path 2, dB	0.13 typ.
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
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

All information contained in the present datasheet is subject to confirmation at time of ordering

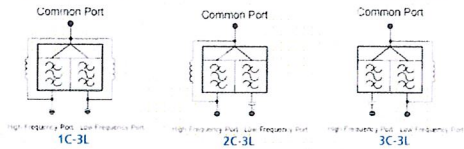


ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Other Documentation

FD9R6004/2C-3L Installation Instructions: [Wideband_Diplexer_Installation_Rev5.pdf](#)

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



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 FD9R6004/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)	

All information contained in the present datasheet is subject to confirmation at time of ordering

Date: December 14, 2011

Veronica Harris
Crown Castle
1200 McArthur Blvd
Mahwah, NJ 07430

Subject: Structural Analysis Report



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

Carrier Designation: Verizon Wireless Co-Locate
Carrier Site Name: Harwinton 1

Crown Castle Designation: Crown Castle BU Number: 876369
Crown Castle Site Name: HARWINTON / BUCKLEY BROADCAST
Crown Castle JDE Job Number: 171929
Crown Castle Work Order Number: 456083
Crown Castle Application Number: 134417 Rev. 3

Engineering Firm Designation: Crown Castle Project Number: 456083

Site Data: 64 Hungerford Lane, Harwinton, Litchfield County, CT
Latitude 41° 45' 26.15", Longitude -73° 3' 9.2"
178 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 456083, in accordance with application 134417, revision 3.

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 building requirements based upon a wind speed of 80 mph fastest mile.

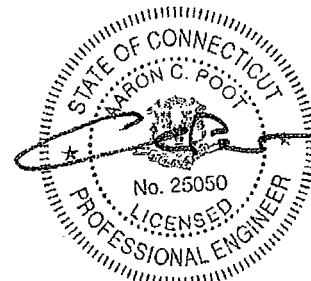
All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Tyler Stevens, E.I.T. / MRC
Respectfully submitted by:

A handwritten signature in black ink, appearing to read 'A. Poot'.

Aaron C. Poot, P.E.
Engineering Supervisor



12/14/11

1) INTRODUCTION

This tower is a 178 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in November of 2007. 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 80 mph with no ice, 28.1 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
166.0	168.0	3	antel	BXA-171085-12BF-2 w/ Mount Pipe			
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe	-	-	-
		6	rfs celwave	FD9R6004/2C-3L			

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
	178.0	1	tower mounts	Platform Mount [LP 712-1]			
178.0	177.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
		9	mla	MLA_ANTENNA w/ Mount Pipe	9	1-5/8	2
166.0	168.0	6	decibel	DB950G85E-M w/ Mount Pipe	-	-	3
	166.0	6	antel	LPA-80080/6CF w/ Mount Pipe	12	1-5/8	1
156.0	158.0	1	tower mounts	Platform Mount [LP 303-1]			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP2140X	12	1-5/8	1
75.0	156.0	1	tower mounts	Platform Mount [LP 303-1]			
	76.0	1	lucent	KS24019-L112A			
	75.0	1	tower mounts	Side Arm Mount [SO 701-1]	1	1/2	1

Notes:

- 1) Existing Equipment
- 2) MLA Equipment Controlling; Used in this Analysis
- 3) Equipment to be Removed

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	178 - 129.87	Pole	TP29.64x19.5x0.25	1	-8.28	1175.45	68.6	Pass
L2	129.87 - 84.8307	Pole	TP38.5x28.2446x0.375	2	-15.85	2290.41	68.2	Pass
L3	84.8307 - 41.2839	Pole	TP46.8x36.6403x0.4375	3	-26.42	3250.65	67.1	Pass
L4	41.2839 - 0	Pole	TP54.5x44.5913x0.5	4	-42.02	4455.18	62.8	Pass
Summary								
Pole (L1)							68.6	Pass
Rating =							68.6	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.6	Pass
1	Base Plate	0	69.7	Pass
1	Base Foundation	0	74.2	Pass

Structure Rating (max from all components) =	74.2%
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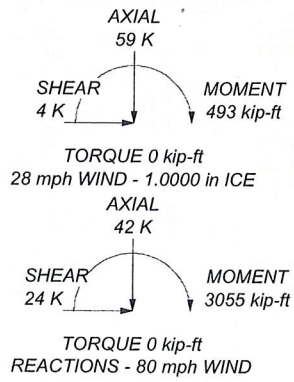
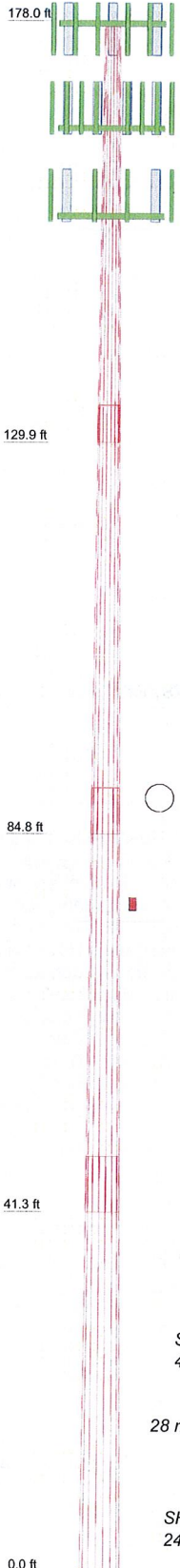
Notes:

- 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.

Section	1	2	3	4
Length (ft)	48'-9/16"	49'-3-15/32"	48'-10-9/16"	47'-8-13/32"
Number of Sides	18	18	18	18
Thickness (in)	0.2500	0.3750	0.4375	0.5000
Socket Length (ft)	4'-3"	5'-3-31/32"	6'-5-1/32"	44.5913
Top Dia (in)	19.5000	28.2446	36.6403	54.5000
Bot Dia (in)	29.6400	38.5000	46.8000	12.6
Grade			A572-65	
Weight (K)	3.2	6.6	9.5	31.9



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(3) MLA_ANTENNA w/ Mount Pipe	178	(2) FD9R6004/2C-3L	166
(3) MLA_ANTENNA w/ Mount Pipe	178	Platform Mount [LP 303-1]	166
(3) MLA_ANTENNA w/ Mount Pipe	178	(2) 7770.00 w/ Mount Pipe	156
Platform Mount [LP 712-1]	178	(4) LGP2140X	156
(2) LPA-80080/6CF w/ Mount Pipe	166	(2) 7770.00 w/ Mount Pipe	156
BXA-171085-12BF-2 w/ Mount Pipe	166	(4) LGP2140X	156
BXA-70063-6CF-2 w/ Mount Pipe	166	(2) 7770.00 w/ Mount Pipe	156
(2) FD9R6004/2C-3L	166	(4) LGP2140X	156
(2) LPA-80080/6CF w/ Mount Pipe	166	Platform Mount [LP 303-1]	156
BXA-171085-12BF-2 w/ Mount Pipe	166	(2) 6' x 2" Mount Pipe	156
BXA-70063-6CF-2 w/ Mount Pipe	166	(2) 6' x 2" Mount Pipe	156
(2) FD9R6004/2C-3L	166	(2) 6' x 2" Mount Pipe	156
(2) LPA-80080/6CF w/ Mount Pipe	166	KS24019-L112A	75
BXA-171085-12BF-2 w/ Mount Pipe	166	Side Arm Mount [SO 701-1]	75
BXA-70063-6CF-2 w/ Mount Pipe	166		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 68.6%

<p>Crown Castle 2000 Corporate Drive Canonsburg, PA 15317 We Are Solutions Phone: (724) 416-2000 FAX: (724) 416-4677</p>	Job: BU# 876369		
	Project:		
	Client: Crown Castle	Drawn by: Tyler Stevens	App'd:
	Code: TIA/EIA-222-F	Date: 12/12/11	Scale: NTS
	Path: R:\SA Models - Letters\Work Area\TStevens\876369\876369.en	Dwg No. E-1	

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	19.8008	15.2749	715.1161	6.8338	9.9060	72.1902	1431.1733	7.6389	2.9920	11.968
	30.0972	23.3210	2544.9728	10.4335	15.0571	169.0212	5093.2943	11.6627	4.7766	19.107
L2	29.5783	33.1718	3255.1321	9.8937	14.3483	226.8659	6514.5473	16.5891	4.3111	11.496
	39.0939	45.3783	8333.0732	13.5344	19.5580	426.0698	16677.111	22.6935	6.1160	16.309
L3	38.3312	50.2721	8324.3325	12.8520	18.6133	447.2255	16659.618	25.1408	5.6787	12.98
	47.5220	64.3801	17483.282	16.4587	23.7744	735.3827	34989.569	32.1962	7.4668	17.067
L4	46.6327	69.9729	17185.937	15.6524	22.6524	758.6812	34394.488	34.9931	6.9681	13.936
	55.3408	85.6980	31571.532	19.1700	27.6860	1140.3428	63184.606	42.8571	8.7120	17.424

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 178'-129'10"-7'16"				1	1	1		
L2 129'10"-7'16"-84'9"-31'32"				1	1	1		
L3 84'9"-31'32"-41'3"-3'8"				1	1	1		
L4 41'3"-3'8"-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _{AA} A	Weight	
				ft		ft ² /ft	plf	
LDF7-50A(1-5/8")	C	No	Inside Pole	178' - 7'	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	A	No	Inside Pole	166' - 7'	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	B	No	Inside Pole	156' - 7'	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF4-50A(1/2")	C	No	Inside Pole	75' - 7'	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft					
(3) MLA_ANTENNA w/ Mount Pipe	A	From Leg	4.00	0.0000	178'	No Ice	8.64	6.95	0.07	
			0'			1/2"	9.29	8.13	0.13	
			-1'			Ice	9.91	9.02	0.21	
			1" Ice			11.18	10.84	0.39		
			2" Ice			13.83	14.85	0.90		
(3) MLA_ANTENNA w/ Mount Pipe	B	From Leg	4.00	0.0000	178'	No Ice	8.64	6.95	0.07	
			0'			1/2"	9.29	8.13	0.13	
			-1'			Ice	9.91	9.02	0.21	
			1" Ice			11.18	10.84	0.39		
			2" Ice			13.83	14.85	0.90		
(3) MLA_ANTENNA w/ Mount Pipe	C	From Leg	4.00	0.0000	178'	No Ice	8.64	6.95	0.07	
			0'			1/2"	9.29	8.13	0.13	
			-1'			Ice	9.91	9.02	0.21	
			1" Ice			11.18	10.84	0.39		
			2" Ice			13.83	14.85	0.90		
Platform Mount [LP 712-1]	C	None		0.0000	178'	No Ice	24.53	24.53	1.34	
						1/2"	29.94	29.94	1.65	
						Ice	35.35	35.35	1.96	
						1" Ice	46.17	46.17	2.58	
						2" Ice	67.81	67.81	3.82	
* (2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00	0.0000	166'	No Ice	4.56	10.73	0.05	
			0'			1/2"	5.11	11.99	0.11	
			2'			Ice	5.61	12.97	0.19	
			1" Ice			6.65	14.98	0.36		
			2" Ice			8.83	19.22	0.86		
BXA-171085-12BF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	166'	No Ice	4.97	5.23	0.04	
			0'			1/2"	5.52	6.39	0.08	
			2'			Ice	6.04	7.26	0.14	
			1" Ice			7.09	9.05	0.27		
			2" Ice			9.36	12.82	0.67		
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	166'	No Ice	7.97	5.80	0.04	
			0'			1/2"	8.61	6.95	0.10	
			2'			Ice	9.22	7.82	0.17	
			1" Ice			10.46	9.60	0.34		
			2" Ice			13.07	13.37	0.80		
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	166'	No Ice	0.37	0.08	0.00	
			0'			1/2"	0.45	0.14	0.01	
			2'			Ice	0.54	0.20	0.01	
			1" Ice			0.75	0.34	0.02		
			2" Ice			1.28	0.74	0.06		
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00	0.0000	166'	No Ice	4.56	10.73	0.05	
			0'			1/2"	5.11	11.99	0.11	
			2'			Ice	5.61	12.97	0.19	
			1" Ice			6.65	14.98	0.36		
			2" Ice			8.83	19.22	0.86		
BXA-171085-12BF-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	166'	No Ice	4.97	5.23	0.04	
			0'			1/2"	5.52	6.39	0.08	
			2'			Ice	6.04	7.26	0.14	
			1" Ice			7.09	9.05	0.27		
			2" Ice			9.36	12.82	0.67		

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						Vert
			ft	ft	ft	ft	ft ²	ft ²	K	
				2'			Ice	1.58	0.62	0.04
							1" Ice	1.94	0.89	0.06
							2" Ice	2.75	1.54	0.14
							4" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00		0.0000	156'	No Ice	6.12	4.25	0.06
			0'				1/2"	6.63	5.01	0.10
			2'				Ice	7.13	5.71	0.16
							1" Ice	8.16	7.16	0.29
							2" Ice	10.36	10.41	0.66
							4" Ice			
(4) LGP2140X	C	From Leg	4.00		0.0000	156'	No Ice	1.26	0.38	0.02
			0'				1/2"	1.42	0.49	0.03
			2'				Ice	1.58	0.62	0.04
							1" Ice	1.94	0.89	0.06
							2" Ice	2.75	1.54	0.14
							4" Ice			
Platform Mount [LP 303-1]	C	None			0.0000	156'	No Ice	14.66	14.66	1.25
							1/2"	18.87	18.87	1.48
							Ice	23.08	23.08	1.71
							1" Ice	31.50	31.50	2.18
							2" Ice	48.34	48.34	3.10
							4" Ice			
(2) 6' x 2" Mount Pipe	A	From Leg	4.00		0.0000	156'	No Ice	1.43	1.43	0.02
			0'				1/2"	1.92	1.92	0.03
			2'				Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
							4" Ice			
(2) 6' x 2" Mount Pipe	B	From Leg	4.00		0.0000	156'	No Ice	1.43	1.43	0.02
			0'				1/2"	1.92	1.92	0.03
			2'				Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
							4" Ice			
(2) 6' x 2" Mount Pipe	C	From Leg	4.00		0.0000	156'	No Ice	1.43	1.43	0.02
			0'				1/2"	1.92	1.92	0.03
			2'				Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice	4.70	4.70	0.23
							4" Ice			
*										
KS24019-L112A	B	From Leg	2.00		0.0000	75'	No Ice	0.10	0.10	0.01
			0'				1/2"	0.18	0.18	0.01
			1'				Ice	0.26	0.26	0.01
							1" Ice	0.42	0.42	0.01
							2" Ice	0.74	0.74	0.02
							4" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	1.00		0.0000	75'	No Ice	0.85	1.67	0.07
			0'				1/2"	1.14	2.34	0.08
			0'				Ice	1.43	3.01	0.09
							1" Ice	2.01	4.35	0.12
							2" Ice	3.17	7.03	0.18
							4" Ice			

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	41.2839		Max. Compression	14	-40.34	-0.25	-0.14
			Max. Mx	5	-26.42	-1991.61	0.25
			Max. My	8	-26.42	0.18	-1991.94
			Max. Vy	5	20.74	-1991.61	0.25
			Max. Vx	8	20.75	0.18	-1991.94
			Max. Torque	3			-0.17
L4	41.2839 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-58.85	-0.25	-0.14
			Max. Mx	5	-42.02	-3053.37	0.85
			Max. My	8	-42.02	0.78	-3054.40
			Max. Vy	5	23.73	-3053.37	0.85
			Max. Vx	8	23.74	0.78	-3054.40
			Max. Torque	3			-0.17

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	58.85	0.00	0.00
	Max. H _x	11	42.03	23.70	-0.01
	Max. H _z	2	42.03	-0.01	23.72
	Max. M _x	2	3054.20	-0.01	23.72
	Max. M _z	5	3053.37	-23.70	0.01
	Max. Torsion	9	0.17	11.86	-20.55
	Min. Vert	1	42.03	0.00	0.00
	Min. H _x	5	42.03	-23.70	0.01
	Min. H _z	8	42.03	0.01	-23.72
	Min. M _x	8	-3054.40	0.01	-23.72
	Min. M _z	11	-3053.03	23.70	-0.01
	Min. Torsion	3	-0.17	-11.86	20.55

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	42.03	0.00	0.00	0.10	-0.17	0.00
Dead+Wind 0 deg - No Ice	42.03	0.01	-23.72	-3054.20	-1.12	0.14
Dead+Wind 30 deg - No Ice	42.03	11.86	-20.55	-2645.48	-1527.60	0.17
Dead+Wind 60 deg - No Ice	42.03	20.54	-11.87	-1527.88	-2644.81	0.14
Dead+Wind 90 deg - No Ice	42.03	23.70	-0.01	-0.85	-3053.37	0.08
Dead+Wind 120 deg - No Ice	42.03	20.52	11.85	1526.43	-2643.86	0.00
Dead+Wind 150 deg - No Ice	42.03	11.84	20.54	2644.73	-1525.95	-0.08
Dead+Wind 180 deg - No Ice	42.03	-0.01	23.72	3054.40	0.78	-0.14
Dead+Wind 210 deg - No Ice	42.03	-11.86	20.55	2645.68	1527.26	-0.17
Dead+Wind 240 deg - No Ice	42.03	-20.54	11.87	1528.08	2644.46	-0.14
Dead+Wind 270 deg - No Ice	42.03	-23.70	0.01	1.05	3053.03	-0.08
Dead+Wind 300 deg - No Ice	42.03	-20.52	-11.85	-1526.23	2643.51	0.00
Dead+Wind 330 deg - No Ice	42.03	-11.84	-20.54	-2644.54	1525.61	0.08
Dead+Ice+Temp	58.85	0.00	0.00	0.14	-0.25	0.00
Dead+Wind 0 deg+Ice+Temp	58.85	0.00	-3.55	-492.54	-0.50	0.03
Dead+Wind 30 deg+Ice+Temp	58.85	1.78	-3.08	-426.65	-246.68	0.04
Dead+Wind 60 deg+Ice+Temp	58.85	3.07	-1.78	-246.40	-426.83	0.03
Dead+Wind 90 deg+Ice+Temp	58.85	3.55	-0.00	-0.09	-492.68	0.02
Dead+Wind 120 deg+Ice+Temp	58.85	3.07	1.77	246.29	-426.59	0.00

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
26	-1.77	-58.85	-3.07	1.77	58.85	3.07	0.000%
27	0.00	-42.03	-9.27	-0.00	42.03	9.27	0.000%
28	4.63	-42.03	-8.03	-4.63	42.03	8.03	0.000%
29	8.02	-42.03	-4.64	-8.02	42.03	4.64	0.000%
30	9.26	-42.03	-0.00	-9.26	42.03	0.00	0.000%
31	8.02	-42.03	4.63	-8.02	42.03	-4.63	0.000%
32	4.63	-42.03	8.02	-4.63	42.03	-8.02	0.000%
33	-0.00	-42.03	9.27	0.00	42.03	-9.27	0.000%
34	-4.63	-42.03	8.03	4.63	42.03	-8.03	0.000%
35	-8.02	-42.03	4.64	8.02	42.03	-4.64	0.000%
36	-9.26	-42.03	0.00	9.26	42.03	-0.00	0.000%
37	-8.02	-42.03	-4.63	8.02	42.03	4.63	0.000%
38	-4.63	-42.03	-8.02	4.63	42.03	8.02	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00024588
3	Yes	5	0.00000001	0.00056919
4	Yes	5	0.00000001	0.00056780
5	Yes	4	0.00000001	0.00024314
6	Yes	5	0.00000001	0.00056826
7	Yes	5	0.00000001	0.00056860
8	Yes	4	0.00000001	0.00024440
9	Yes	5	0.00000001	0.00056760
10	Yes	5	0.00000001	0.00056910
11	Yes	4	0.00000001	0.00024396
12	Yes	5	0.00000001	0.00056810
13	Yes	5	0.00000001	0.00056766
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00013726
16	Yes	5	0.00000001	0.00014857
17	Yes	5	0.00000001	0.00014854
18	Yes	5	0.00000001	0.00013733
19	Yes	5	0.00000001	0.00014855
20	Yes	5	0.00000001	0.00014857
21	Yes	5	0.00000001	0.00013733
22	Yes	5	0.00000001	0.00014850
23	Yes	5	0.00000001	0.00014850
24	Yes	5	0.00000001	0.00013721
25	Yes	5	0.00000001	0.00014837
26	Yes	5	0.00000001	0.00014838
27	Yes	4	0.00000001	0.00007289
28	Yes	5	0.00000001	0.00005621
29	Yes	5	0.00000001	0.00005592
30	Yes	4	0.00000001	0.00007262
31	Yes	5	0.00000001	0.00005603
32	Yes	5	0.00000001	0.00005611
33	Yes	4	0.00000001	0.00007283
34	Yes	5	0.00000001	0.00005589
35	Yes	5	0.00000001	0.00005618
36	Yes	4	0.00000001	0.00007264
37	Yes	5	0.00000001	0.00005599
38	Yes	5	0.00000001	0.00005591

Compression Checks

Pole Design Data

Section No.	Elevation <i>ft</i>	Size	L <i>ft</i>	L_u <i>ft</i>	Kl/r	F_a <i>ksi</i>	A <i>in²</i>	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	178 - 129.87 (1)	TP29.64x19.5x0.25	48'1-9/16"	0'	0.0	39.000	22.6105	-8.28	881.81	0.009
L2	129.87 - 84.8307 (2)	TP38.5x28.2446x0.375	49'3-15/32"	0'	0.0	39.000	44.0575	-15.85	1718.24	0.009
L3	84.8307 - 41.2839 (3)	TP46.8x36.6403x0.4375	48'10-9/16"	0'	0.0	39.000	62.5281	-26.42	2438.60	0.011
L4	41.2839 - 0 (4)	TP54.5x44.5913x0.5	47'8-13/32"	0'	0.0	39.000	85.6980	-42.02	3342.22	0.013

Pole Bending Design Data

Section No.	Elevation <i>ft</i>	Size	Actual M_x <i>kip-ft</i>	Actual f_{bx} <i>ksi</i>	Allow. F_{bx} <i>ksi</i>	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y <i>kip-ft</i>	Actual f_{by} <i>ksi</i>	Allow. F_{by} <i>ksi</i>	Ratio $\frac{f_{by}}{F_{by}}$
L1	178 - 129.87 (1)	TP29.64x19.5x0.25	466.80	35.266	39.000	0.904	0.00	0.000	39.000	0.000
L2	129.87 - 84.8307 (2)	TP38.5x28.2446x0.375	1174.1	35.091	39.000	0.900	0.00	0.000	39.000	0.000
L3	84.8307 - 41.2839 (3)	TP46.8x36.6403x0.4375	1992.0	34.470	39.000	0.884	0.00	0.000	39.000	0.000
L4	41.2839 - 0 (4)	TP54.5x44.5913x0.5	3054.8	32.147	39.000	0.824	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation <i>ft</i>	Size	Actual V K	Actual f_v <i>ksi</i>	Allow. F_v <i>ksi</i>	Ratio $\frac{f_v}{F_v}$	Actual T <i>kip-ft</i>	Actual f_{vt} <i>ksi</i>	Allow. F_{vt} <i>ksi</i>	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	178 - 129.87 (1)	TP29.64x19.5x0.25	14.53	0.642	26.000	0.049	0.00	0.000	26.000	0.000
L2	129.87 - 84.8307 (2)	TP38.5x28.2446x0.375	17.67	0.401	26.000	0.031	0.00	0.000	26.000	0.000
L3	84.8307 - 41.2839 (3)	TP46.8x36.6403x0.4375	20.76	0.332	26.000	0.026	0.17	0.001	26.000	0.000
L4	41.2839 - 0 (4)	TP54.5x44.5913x0.5	23.75	0.277	26.000	0.021	0.17	0.001	26.000	0.000

APPENDIX B
BASE LEVEL DRAWING

APPENDIX C
ADDITIONAL CALCULATIONS

Individual Bars

Bar #	Angle from first bar (deg)	Distance to centroid (in)	Distance to neutral axis (in)	Distance to equivalent comp. zone (in)	Strain	Area of steel in compression (in ²)	Stress (ksi)	Axial force (kips)
1	0.00	0.00	-29.71	-31.55	-0.0072495	0.00	-60.00	-47.40
2	7.83	5.24	-24.46	-26.31	-0.0059702	0.00	-60.00	-47.40
3	15.65	10.39	-19.32	-21.16	-0.0047147	0.00	-60.00	-47.40
4	23.48	15.34	-14.37	-16.21	-0.0035064	0.00	-60.00	-47.40
5	31.30	20.00	-9.70	-11.55	-0.0023678	0.00	-60.00	-47.40
6	39.13	24.30	-5.41	-7.25	-0.0013202	0.00	-38.29	-30.25
7	46.96	28.14	-1.57	-3.41	-0.000383	0.00	-11.11	-8.78
8	54.78	31.45	1.75	-0.10	0.0004262	0.00	12.36	9.77
9	62.61	34.18	4.48	2.63	0.0010925	0.79	31.68	22.34
10	70.43	36.28	6.57	4.73	0.0016034	0.79	46.50	34.05
11	78.26	37.69	7.99	6.14	0.0019494	0.79	56.53	41.97
12	86.09	38.41	8.70	6.86	0.002124	0.79	60.00	44.71
13	93.91	38.41	8.70	6.86	0.002124	0.79	60.00	44.71
14	101.74	37.69	7.99	6.14	0.0019494	0.79	56.53	41.97
15	109.57	36.28	6.57	4.73	0.0016034	0.79	46.50	34.05
16	117.39	34.18	4.48	2.63	0.0010925	0.79	31.68	22.34
17	125.22	31.45	1.75	-0.10	0.0004262	0.00	12.36	9.77
18	133.04	28.14	-1.57	-3.41	-0.000383	0.00	-11.11	-8.78
19	140.87	24.30	-5.41	-7.25	-0.0013202	0.00	-38.29	-30.25
20	148.70	20.00	-9.70	-11.55	-0.0023678	0.00	-60.00	-47.40
21	156.52	15.34	-14.37	-16.21	-0.0035064	0.00	-60.00	-47.40
22	164.35	10.39	-19.32	-21.16	-0.0047147	0.00	-60.00	-47.40
23	172.17	5.24	-24.46	-26.31	-0.0059702	0.00	-60.00	-47.40
24	180.00	0.00	-29.71	-31.55	-0.0072495	0.00	-60.00	-47.40
25	187.83	-5.24	-34.95	-36.79	-0.0085288	0.00	-60.00	-47.40
26	195.65	-10.39	-40.09	-41.94	-0.0097844	0.00	-60.00	-47.40
27	203.48	-15.34	-45.05	-46.89	-0.0109926	0.00	-60.00	-47.40
28	211.30	-20.00	-49.71	-51.55	-0.0121312	0.00	-60.00	-47.40
29	219.13	-24.30	-54.00	-55.85	-0.0131788	0.00	-60.00	-47.40
30	226.96	-28.14	-57.84	-59.69	-0.014116	0.00	-60.00	-47.40
31	234.78	-31.45	-61.16	-63.00	-0.0149253	0.00	-60.00	-47.40
32	242.61	-34.18	-63.89	-65.73	-0.0155915	0.00	-60.00	-47.40
33	250.43	-36.28	-65.98	-67.83	-0.0161024	0.00	-60.00	-47.40
34	258.26	-37.69	-67.40	-69.25	-0.0164484	0.00	-60.00	-47.40
35	266.09	-38.41	-68.12	-69.96	-0.016623	0.00	-60.00	-47.40
36	273.91	-38.41	-68.12	-69.96	-0.016623	0.00	-60.00	-47.40
37	281.74	-37.69	-67.40	-69.25	-0.0164484	0.00	-60.00	-47.40
38	289.57	-36.28	-65.98	-67.83	-0.0161024	0.00	-60.00	-47.40
39	297.39	-34.18	-63.89	-65.73	-0.0155915	0.00	-60.00	-47.40
40	305.22	-31.45	-61.16	-63.00	-0.0149253	0.00	-60.00	-47.40
41	313.04	-28.14	-57.84	-59.69	-0.014116	0.00	-60.00	-47.40
42	320.87	-24.30	-54.00	-55.85	-0.0131788	0.00	-60.00	-47.40
43	328.70	-20.00	-49.71	-51.55	-0.0121312	0.00	-60.00	-47.40
44	336.52	-15.34	-45.05	-46.89	-0.0109926	0.00	-60.00	-47.40
45	344.35	-10.39	-40.09	-41.94	-0.0097844	0.00	-60.00	-47.40
46	352.17	-5.24	-34.95	-36.79	-0.0085288	0.00	-60.00	-47.40

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

TIA Rev F

Site Data

BU#: 876369
Site Name: HARWINTON / BUCKLEY
App #: 134417; Rev. 3
Pole Manufacturer: Other

Reactions		
Moment:	3055	ft-kips
Axial:	42	kips
Shear:	24	kips

Anchor Rod Data

Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	63	in

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

Anchor Rod Results

Maximum Rod Tension:	114.3 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	58.6% Pass

Rigid
Service ASD
Fty*ASIF

Plate Data

Diam:	69	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.65	in

Base Plate Results

Base Plate Stress:	41.8 ksi	Flexural Check
Allowable Plate Stress:	60.0 ksi	
Base Plate Stress Ratio:	69.7% Pass	

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
31.60

Stiffener Data (Welding at both sides)

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

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

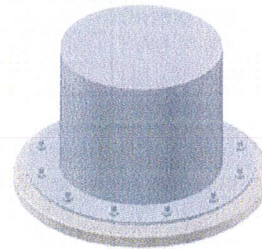
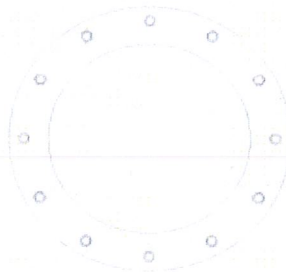
Pole Punching Shear Check:	n/a
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Pole Data

Diam:	54.5	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
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* 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