

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

November 18, 2011

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

RE: **EM-VER-042-111101** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 94 East High Street, East Hampton, Connecticut.

Dear Attorney Baldwin:

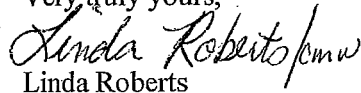
The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

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

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated October 28, 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 Christopher J. Goff, Chairman Town Council, Town of East Hampton
Alan H. Bergren, Town Manager, Town of East Hampton
James Carey, Zoning Enforcement Officer, Town of East Hampton
Crown Castle USA, Inc.

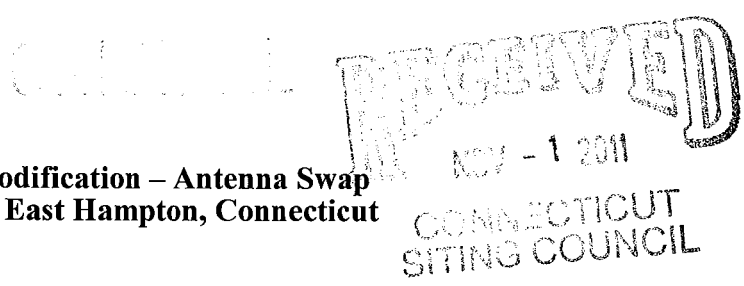


280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

EM-VER-042-111101

October 28, 2011

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



Re: **Notice of Exempt Modification – Antenna Swap
94 East High Street, East Hampton, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains wireless telecommunications antennas at the 108-foot level on the existing 120-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 2000. Cellco now intends to modify its installation by replacing twelve (12) of its existing antennas with four (4) model DB846F65ZAXY cellular antennas; two (2) model APL866513-42T0 cellular antennas; two (2) model BXA-171063-12BF PCS antennas; one (1) BXA-171063/8BF PCS antenna; two (2) BXA-70063/6CF LTE antennas; and one (1) model BXA-70063/4CF LTE antenna, all at the same 108-foot level on the tower. Cellco also intends to install six (6) coax cable diplexers on its antenna platform. Attached behind Tab 1 are the specifications for the proposed replacement antennas and cable diplexers.



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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 John Weichsel, Town Manager of the Town of East Hampton. A copy of this letter is also being sent to Pauls & Sandys Too, Inc., the owner of the property on which the tower is located.

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

ROBINSON & COLE_{LLP}

Linda Roberts
October 28, 2011
Page 2

1. The proposed modifications will not result in any increase in the overall height of the existing tower. Cellco's antennas and diplexers will be located at the same 108-foot level on the existing 120-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:

John Weichsel, East Hampton Town Manger
Pauls & Sandys Too, Inc.
Sandy M. Carter



Vertically Polarized Directed Dipole® Panel Antennas

806 · 960 MHz

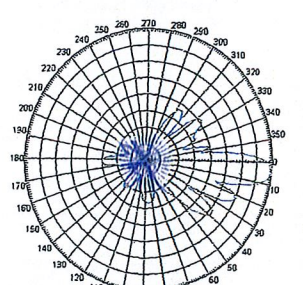
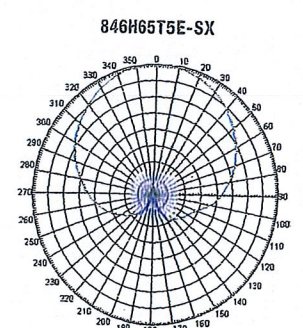
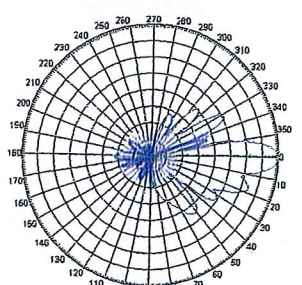
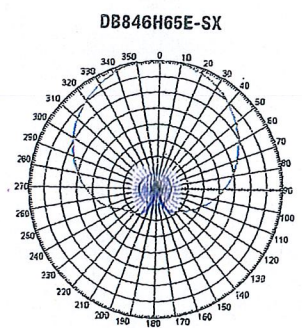
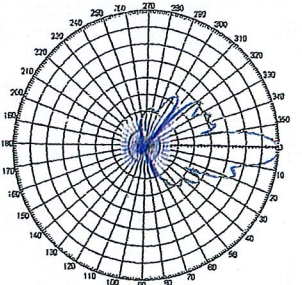
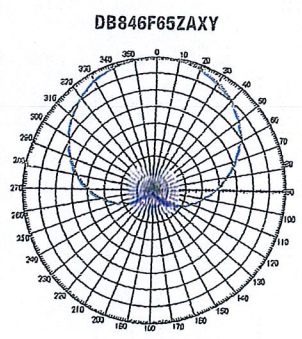
65° HORIZONTAL BEAMWIDTH

HORIZONTAL BEAMWIDTH	65°		65°	65°
FREQUENCY RANGE	806-960 MHz		806-896 MHz	806-896 MHz
	14.5 & 14.8 dBd / 0° Tilt		14.5 dBd / 0° Tilt	14.3 dBd / 5° Tilt
MODEL	DB846F65ZAXY		DB846H65E-SX	846H65T5E-SX
TYPE	Directed Dipole®, No Screen		Directed Dipole®	Directed Dipole®
ELECTRICAL SPECIFICATIONS				
Frequency Range (MHz)	806-896	870-960	806-896	806-896
Gain (dBd/dBi)	14.5 / 16.6	14.8 / 16.9	14.5 / 16.6	14.3 / 16.4
Horizontal Beamwidth (Deg.)	65	60	65	65
Elevation Beamwidth (Deg.)	11	10.5	11	10.5
USLS (dB)	>15	>15	N/A	N/A
Null Fill (dB) – Below Peak	N/A	N/A	N/A	N/A
Beam Tilt (Deg.)	0	0	0	5
VSWR	<1.33:1	<1.33:1	<1.5:1	<1.5:1
Front-To-Back Ratio (dB)	40	40	30	40
Isolation (dB)	N/A	N/A	N/A	N/A
Max. Input Power (Watts)	500	500	500	500
Polarization	Vertical	Vertical	Vertical	Vertical
Connector Location	Back	Back	Back	Back
Connector Type	7-16 DIN - Female	7-16 DIN - Female	7-16 DIN - Female	7-16 DIN - Female
Optional Connectors	N/A	N/A	N/A	N/A
MECHANICAL SPECIFICATIONS				
Length (inch/mm)	72 / 1,829	72 / 1,829	72 / 1,829	72 / 1,829
Width (inch/mm)	10 / 254	10 / 254	20.5 / 521	20.5 / 521
Depth (inch/mm)	8.5 / 216	8.5 / 216	9 / 229	9 / 229
Net Weight (lbs/kg)	21 / 9.5	21 / 9.5	24 / 10.9	24 / 10.9
Max. Flat Plate Area (ft²/m²)	1.61 / 0.15	1.61 / 0.15	4.95 / 0.46	4.95 / 0.46
Max. Wind Load at 100 mph (lbf/N)	87 / 386	87 / 386	273 / 1,214	273 / 1,214
Max. Wind Speed (mph/kmh)	125 / 201	125 / 201	125 / 201	125 / 201
Radome Material	ABS, UV Resistant	ABS, UV Resistant	ABS, UV Resistant	ABS, UV Resistant
Reflector Material	Pass. Aluminum	Pass. Aluminum	Pass. Aluminum	Pass. Aluminum
Radiator Material	Aluminum	Aluminum	Brass	Brass
Hardware Material	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel
Color	Light Gray	Light Gray	Light Gray	Light Gray
Std. Mounting Hardware	DB380	DB380	DB380	DB380
Optional Downtilt Kit	DB5083	DB5083	DB5083	DB5083
Optional Special Mounting	DB5084-AZ	DB5084-AZ	DB5084-AZ	DB5084-AZ

Specifications are subject to change. Please see our website for the latest information.

Azimuth Pattern

Elevation Pattern



Scale: 10° radials, 5 dB per division



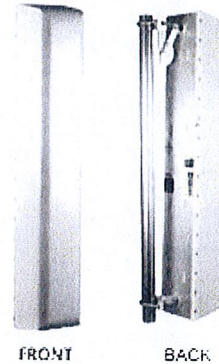
Maximizer® Log Periodic Antenna, 806-894, 65deg, 15.1dBi, 1.2m, FET, 0deg

Product Description

The Celwave® Maximizer series is a log periodic dipole array which uses a patented design to achieve a front-to-back ratio of 45 dB, the highest front-to-back ratio in the industry. Maximizers are available to cover ESMR, AMPS, PCS and DCS frequency ranges. They use RFS's patented monolithic CELLite® technology, which eliminates cable and soldered joints to reduce the possibility of inter-modulation products. The CELLite technology assures high reliability and excellent repeatability of electrical characteristics. The cellular Maximizers are available in 65°, 80° and 90° horizontal beamwidths and the PCS/DCS Maximizers are available in 65° and 90° horizontal beamwidths. Patent number 6,133,889.

Features/Benefits

- 45 dB front-to-back ratio reduces co-channel interference.
- Monolithic construction reduces IM.
- No solder joints, high reliability.
- Surface treated components prevent galvanic corrosion.
- UV stabilized radome assures long life without radome deterioration due to UV exposure.



FRONT

BACK

Technical Specifications

Electrical Specifications

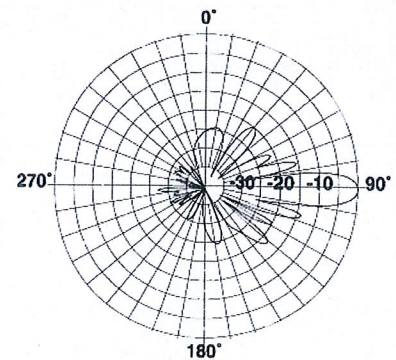
Frequency Range, MHz	806-894
Horizontal Beamwidth, deg	65
Vertical Beamwidth, deg	15
Electrical Downtilt, deg	0
Gain, dBi (dBd)	15.1 (13)
1st Upper Sidelobe Suppression, dB	>20
Upper Sidelobe Suppression, dB	>20
Front-To-Back Ratio, dB	45
Polarization	Vertical
VSWR	< 1.5:1
Impedance, Ohms	50
Maximum Power Input, W	500
Lightning Protection	Direct Ground
Connector Type	7-16 DIN Female

Mechanical Specifications

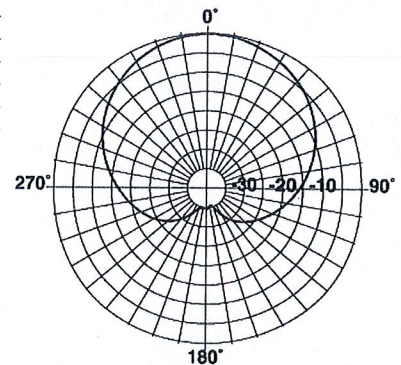
Dimensions - HxWxD, mm (in)	1219 x 234 x 203 (48 x 9.2 x 8)
Weight w/o Mtg Hardware, kg (lb)	7 (15.7)
Survival Wind Speed, km/h (mph)	200 (125)
Rated Wind Speed, km/h (mph)	180 (112)
Max Wind Loading Area, m² (ft²)	0.376 (4.05)
Maximum Thrust @ Rated Wind, N (lbf)	903 (203)
Wind Load - Side @ Rated Wind, N (lbf)	594 (133.5)
Radome Material	UV Stabilized High Impact ABS
Shipping Weight, kg (lb)	9.1 (20)
Packing Dimensions, HxWxD, mm (in)	1594 x 343 x 349 (62.75 x 13.5 x 13.75)

Ordering Information

Mounting Hardware	APM21-3
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Vertical Pattern



Horizontal Pattern

Other Documentation

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

BXA-171063-12BF-EDIN-X

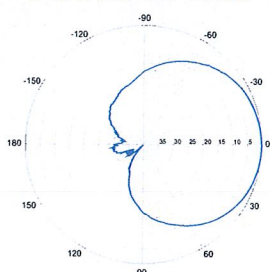
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 63° | 19.0 dBi

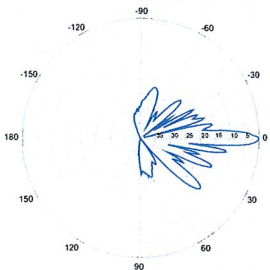
Electrical Characteristics	1710-2170 MHz				
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz		
Polarization	±45°	±45°	±45°		
Horizontal beamwidth	68°	65°	60°		
Vertical beamwidth	4.5°	4.5°	4.5°		
Gain	16.1 dBd / 18.2 dBi	16.5 dBd / 18.6 dBi	16.9 dBd / 19.0 dBi		
Electrical downtilt (X)	0, 2, 5				
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-171063-12BF-EDIN-X-FP				



BXA-171063-12BF-EDIN-X

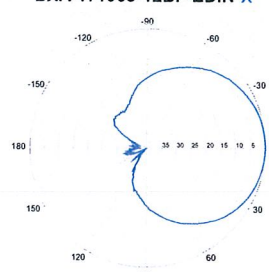


Horizontal | 1710-1880 MHz
BXA-171063-12BF-EDIN-0

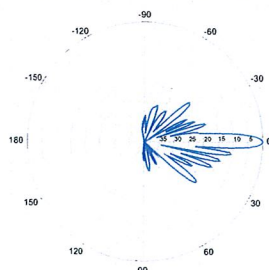


0° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-X

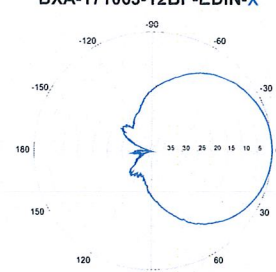


Horizontal | 1850-1990 MHz
BXA-171063-12BF-EDIN-0

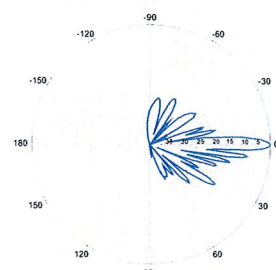


0° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171063-12BF-EDIN-0



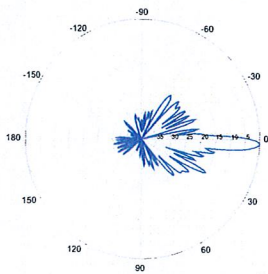
0° | Vertical | 1920-2170 MHz

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-171063-12BF-EDIN-X

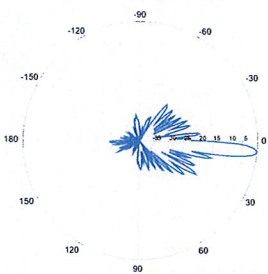
X-Pol | FET Panel | 63° | 19.0 dBi

BXA-171063-12BF-EDIN-2



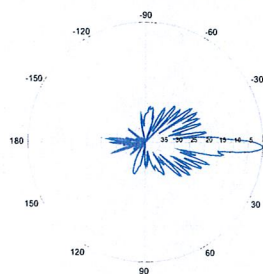
2° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-5



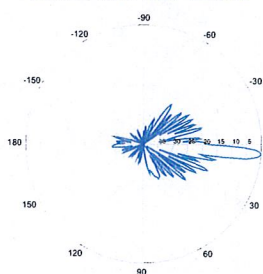
5° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-2



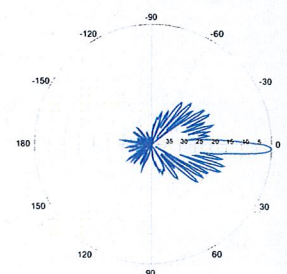
2° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-5



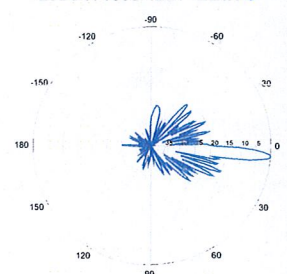
5° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-5



5° | Vertical | 1920-2170 MHz

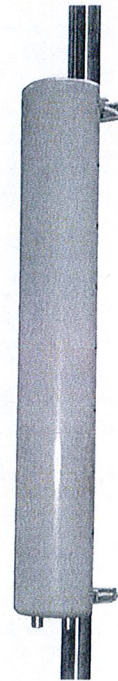
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product.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

BXA-171063-8BF-EDIN-X

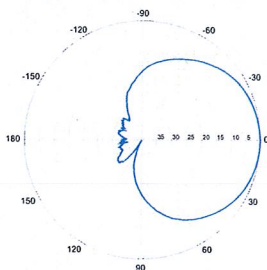
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 63° | 17.4 dBi

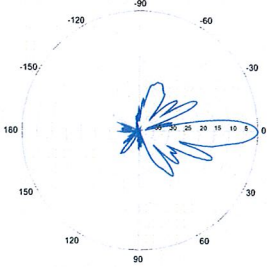
Electrical Characteristics	1710-2170 MHz				
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz		
Polarization	±45°	±45°	±45°		
Horizontal beamwidth	68°	65°	60°		
Vertical beamwidth	7°	7°	7°		
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi		
Electrical downtilt (X)	0, 2, 4, 8				
Impedance	50Ω				
VSWR	≤1.5:1				
First upper sidelobe	< -17 dB				
Front-to-back isolation	> 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	1232 x 154 x 105 mm		48.5 x 6.1 x 4.1 in		
Depth with t-brackets	133 mm		5.2 in		
Weight without mounting brackets	4.8 kg		10.5 lbs		
Survival wind speed	296 km/hr		184 mph		
Wind area	Front: 0.19 m ² Side: 0.14 m ²	Front: 2.0 ft ² Side: 1.5 ft ²			
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 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-171063-8BF-EDIN-X-FP				



BXA-171063-8BF-EDIN-X

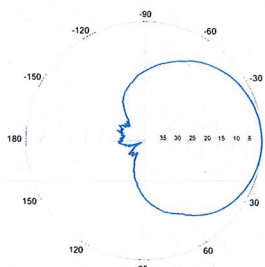


Horizontal | 1710-1880 MHz
BXA-171063-8BF-EDIN-0

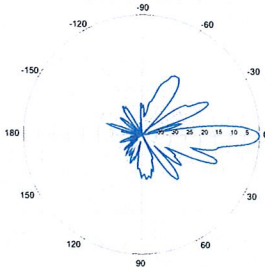


0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-X

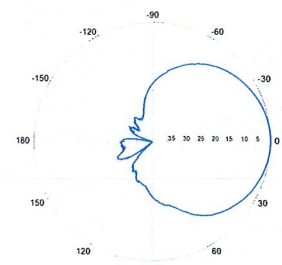


Horizontal | 1850-1990 MHz
BXA-171063-8BF-EDIN-0

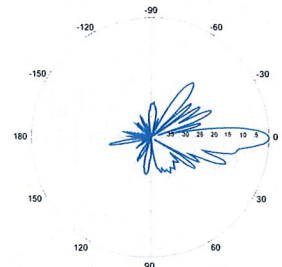


0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171063-8BF-EDIN-0



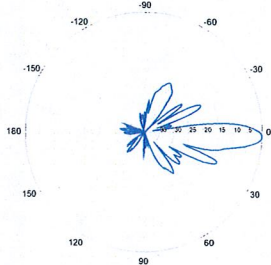
0° | Vertical | 1920-2170 MHz

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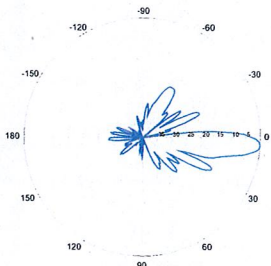
BXA-171063-8BF-EDIN-X

X-Pol | FET Panel | 63° | 17.4 dBi

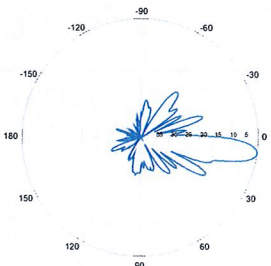
BXA-171063-8BF-EDIN-2



2° | Vertical | 1710-1880 MHz
BXA-171063-8BF-EDIN-4

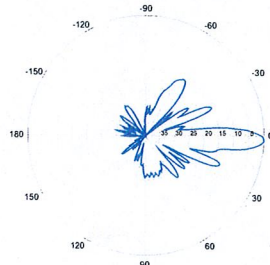


4° | Vertical | 1710-1880 MHz
BXA-171063-8BF-EDIN-8

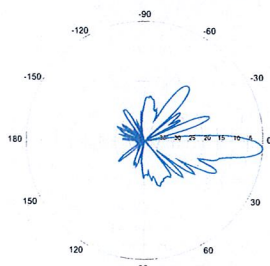


8° | Vertical | 1710-1880 MHz

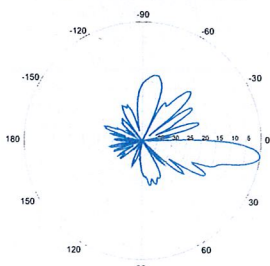
BXA-171063-8BF-EDIN-2



2° | Vertical | 1850-1990 MHz
BXA-171063-8BF-EDIN-4

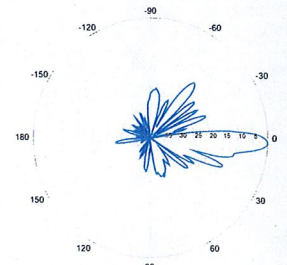


4° | Vertical | 1850-1990 MHz
BXA-171063-8BF-EDIN-8

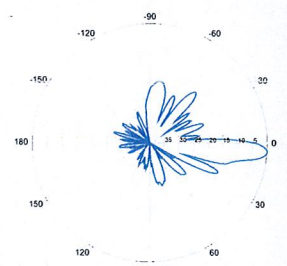


8° | Vertical | 1850-1990 MHz

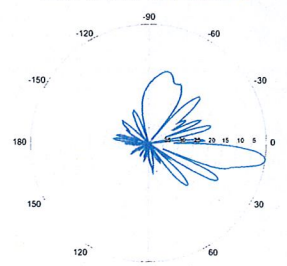
BXA-171063-8BF-EDIN-2



2° | Vertical | 1920-2170 MHz
BXA-171063-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz
BXA-171063-8BF-EDIN-8



8° | 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

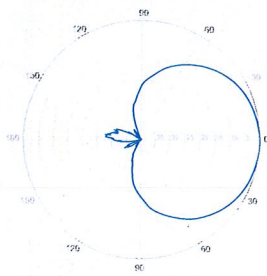
Replace "X" with desired electrical downtilt.

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	1804 x 285 x 132 mm		71.0 x 11.2 x 5.2 in	
Dimensions Length x Width x Depth	172 mm		6.8 in	
Depth with z-brackets	7.9 kg		17 lbs	
Weight without mounting brackets	> 201 km/hr		> 125 mph	
Survival wind speed	Front: 0.51 m ²	Side: 0.24 m ²	Front: 5.5 ft ²	Side: 2.6 ft ²
Wind area	Front: 759 N	Side: 391 N	Front: 169 lbf	Side: 89 lbf
Wind load @ 161 km/hr (100 mph)	Part Number	Fits Pipe Diameter	Weight	
Mounting Options	36210003	50-160 mm 2.0-6.3 in	6.3 kg	14 lbs
3-Point Mounting Bracket Kit	36210004	50-160 mm 2.0-6.3 in	7.3 kg	16 lbs
3-Point Downtilt Bracket Kit (0-14°)	A mounting bracket and downtilt bracket kit must be ordered for downtilt applications			
Downtilt Mounting Applications	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP			
Concealment Configurations				

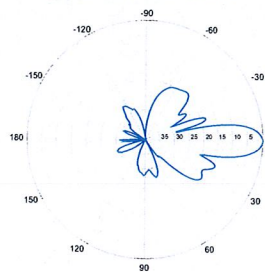


BXA-70063-6CF-EDIN-X



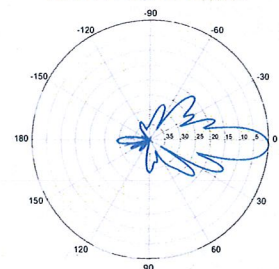
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

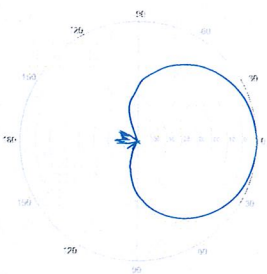


0° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-2



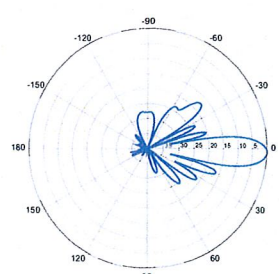
2° | Vertical | 750 MHz



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.

Mechanical specifications

Length	1205 mm	47.4 in
Width	285 mm	11.2 in
Depth	126 mm	5.0 in
Depth with z-bracket	166 mm	6.5 in
Weight ⁴⁾	4.5 kg	9.9 lbs
Wind Area Fore/Aft	0.36 m ²	3.9 ft ²
Wind Area Side	0.15 m ²	1.7 ft ²
Max Wind Survivability	>201 km/hr	>125 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	522 N	117 lbf
Side	244 N	55 lbf

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

Mounting & Downtilting

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

Mounting Bracket Kit	36210002
Downtilt Bracket Kit	36114003

Electrical specifications

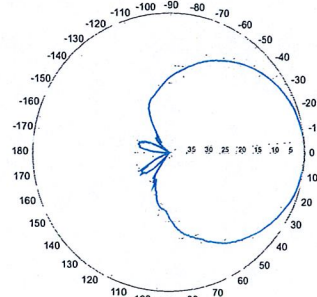
Frequency Range	696-900 MHz
Impedance	50 Ω
Connector ³⁾	NE or E-DIN Female 2 ports / Center
VSWR ¹⁾	$\leq 1.4:1$
Polarization	Slant $\pm 45^\circ$
Isolation Between Ports ¹⁾	< -30 dB
Gain ¹⁾	13.0 dBd 15.0 dBi
Power Rating ²⁾	500 W
Half Power Angle ¹⁾	
Horizontal Beamwidth	63°
Vertical Beamwidth	15°
Electrical downtilt ⁵⁾	0°
Null fill ¹⁾	5%
Lightning protection	Direct ground

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

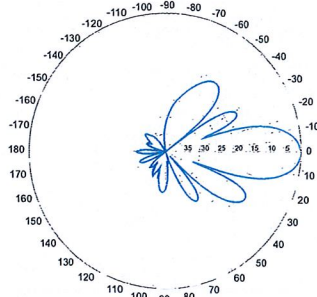
- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector.
E-DIN indicates an elongated DIN connector.
- 4) Antenna weight does not include brackets.
- 5) Add'l downtilts may be available. Check website for details.

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

Radiation-pattern¹⁾
750 MHz

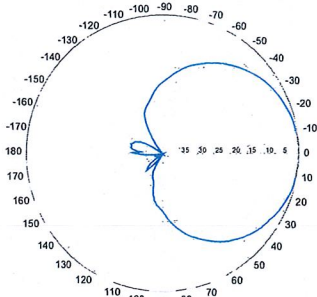


Horizontal

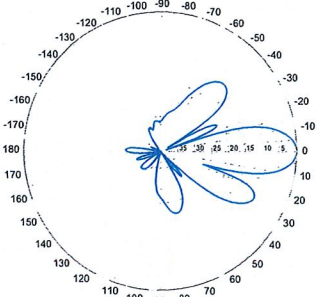


Vertical

850 MHz



Horizontal

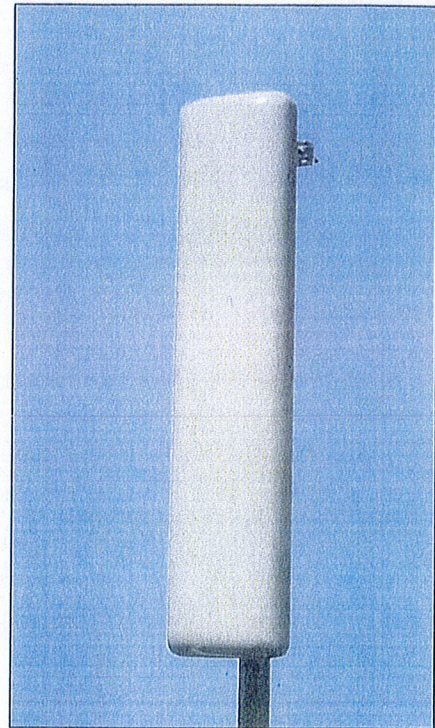


Vertical

696-900 MHz

BXA-70063/4CF

When ordering replace " _ " with connector type.



Featuring our Exclusive
3T Technology™
Antenna Design:

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

Warranty:

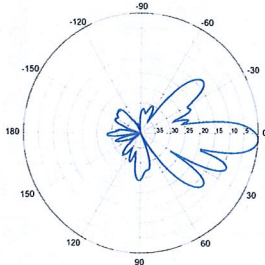
This antenna is under a five-year limited warranty for repair or replacement.

Revision Date 10/27/08

BXA-70063-6CF-EDIN-X

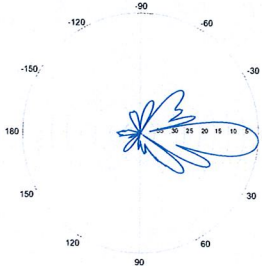
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



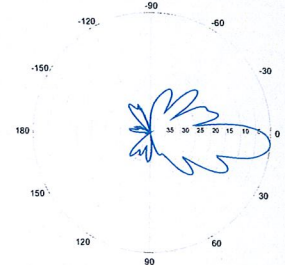
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

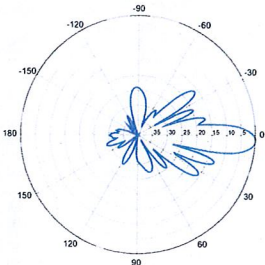


4° | Vertical | 750 MHz

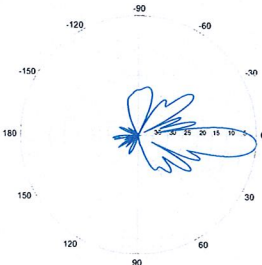
BXA-70063-6CF-EDIN-5



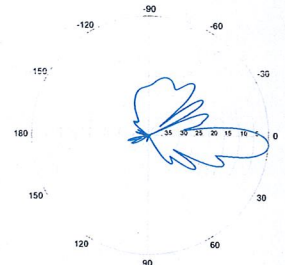
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

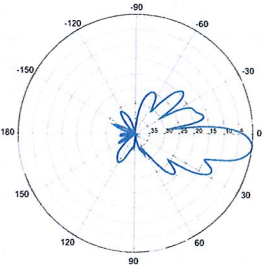


4° | Vertical | 850 MHz



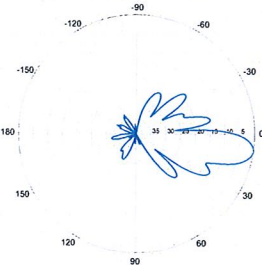
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



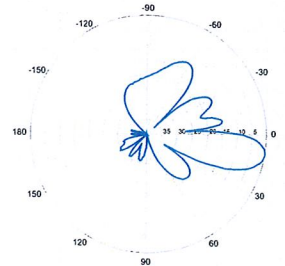
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

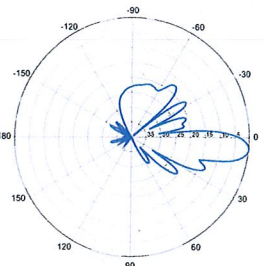


8° | Vertical | 750 MHz

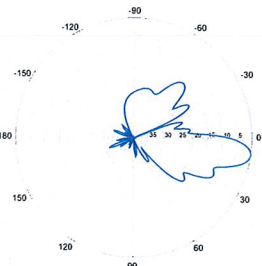
BXA-70063-6CF-EDIN-10



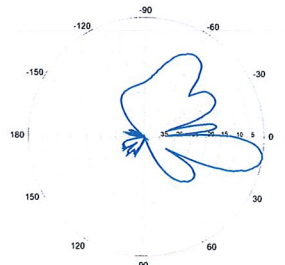
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

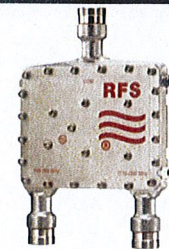
Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. 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

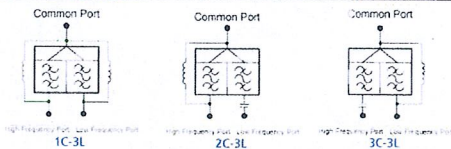


ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

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

General		Power	Density					
Site Name: East Hampton Tower Height: Verizon @ 108ft								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Town	4	100	120	0.0100	453.63	0.3024	3.30%	
*Town	4	100	120	0.0100	155.49	0.2000	4.99%	
*Town	4	100	120	0.0100	46.18	0.2000	4.99%	
*Sprint	11	122	120	0.0335	1962.5	1.0000	3.35%	
*Cingular UMTS	1	500	95	0.0199	880	0.5867	3.40%	
*Cingular GSM	4	296	95	0.0472	880	0.5867	8.04%	
*Cingular GSM	2	427	95	0.0340	1930	1.0000	3.40%	
*Nextel	12	100	113	0.0338	851	0.5673	5.96%	
Verizon PCS	11	296	108	0.1004	1970	1.0000	10.04%	
Verizon Cellular	9	397	108	0.1101	869	0.5793	19.01%	
Verizon AWS	1	739	108	0.0228	2145	1.0000	2.28%	
Verizon 700	2	734	108	0.0453	698	0.4653	9.73%	
* Source: Siting Council								78.49%

Date: **September 27, 2011**

Eva Morales
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6612



Tower Engineering Professionals, Inc.
3703 Junction Boulevard
Raleigh, NC 27603
(919) 661-6351
crown@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation:

Verizon Wireless Co-Locate
Carrier Site Number: N/A
Carrier Site Name: East Hampton, CT

Crown Castle Designation:

Crown Castle BU Number: 876352
Crown Castle Site Name: Richard Wall
Crown Castle JDE Job Number: 166766
Crown Castle Work Order Number: 438161

Engineering Firm Designation:

TEP Project Number: 113414

Site Data:

94 East Hight Street, East Hampton, Middlesex County, CT 06424
Latitude 41° 35' 14.2", Longitude -72° 29' 19.6"
117.5 Foot - Monopole Tower

Dear Ms. Morales,

Tower Engineering Professionals, 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 432324, in accordance with application 130995, revision 1.

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

LC5: Existing + Proposed Equipment

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

Sufficient Capacity

The analysis has been performed in accordance with the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, ASCE 7-05 Minimum Design Loads for Buildings and Other Structures and the 2003 International Building Code (State Building Code, 2005 CT supplement) based upon a fastest mile wind speed of 85 mph.

All modifications and equipment proposed in this report shall be installed in accordance with Tables 1 and 2 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals, 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.

Analysis prepared by: Adolfo J. Obregon-Salinas, E.I.

Respectfully submitted by:

Pete Jernigan, F.E.



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3.2) Assumptions

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7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 117.5 ft monopole tower designed by Engineered Endeavors in May of 1999. The tower was originally designed for a fastest mile wind speed of 89.25 mph and .50 in radial ice thickness per TIA/EIA-222-F. TEP visited the site in October of 2005 to gather tower reinforcement information. All additional information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with .75 inch escalating 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
105	108	2	Antel	BXA-171063-12BF w/ Mount Pipe			
		1	Antel	BXA-171063-8BF-2 w/ Mount Pipe			
		1	Antel	BXA-70063/4CFx5 w/ Mount Pipe			
		1	Antel	BXA-70063/6CF-2 w/ Mount Pipe	-	-	1
		1	Antel	BXA-70063/6CFx4 w/ Mount Pipe			
		4	Decibel	DB846F65ZAXY w/ Mount Pipe			
		2	RFS Celwave	APL866513-42T0 w/ Mount Pipe			
		6	RFS Celwave	FD9R6004/2C-3L			

Notes:

- 1) Proposed equipment to reuse existing feed lines.

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
118	130	1	Decibel	DB264-A	2	7/8	1
		1	Decibel	DB420-A			
	126	1	Decibel	ASP-2011	1	1/2	
		6	EMS Wireless	RR65-12-05DBL w/ Mount Pipe	18	1-5/8	1
	120	3	EMS Wireless	RR90-17-02DP w/ Mount Pipe			
	9	Sprint MLA	SPRINT MLA_ANTENNA w/ Mount Pipe	9	1-5/8	2	
105	118	1	Tower Mounts	Platform Mount [LP 712-1]	-	-	1
	108	6	Decibel	DB844H80-XY	-	-	3
		6	Decibel	DB948F85T2E-M	12	1-1/4	1
	105	1	Tower Mounts	Platform Mount [LP 714-1]			
91		6	Powerwave Technologies	7770.00 w/ Mount Pipe	12	1-5/8	1
	93	6	Powerwave Technologies	LGP 17201			
		6	Powerwave Technologies	LGP21903	3	1-1/4	4
	91	1	Tower Mounts	Platform Mount [LP 714-1]			
75	76	1	Lucent	KS24019-L112A	1	1/2	1
	75	1	Tower Mounts	3' Standoff			

Notes:

- 1) Existing equipment.
- 2) MLA equipment controlling; not considered in this analysis.
- 3) Existing equipment to be removed.
- 4) Existing equipment, abandoned feed lines.

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)
118	118	12	Decibel	DB980H	Unknown	Unknown
		1	Tower Mounts	Low Profile Platform		
105	105	12	Allgon	ALP9212-N	Unknown	Unknown
		1	Tower Mounts	Low Profile Platform		
95	95	12	Allgon	ALP9212-N	Unknown	Unknown
		1	Tower Mounts	Low Profile Platform		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Tower Manufacturer Drawings	Engineered Endeavors, Inc., dated May 28, 1999. Job No. 5069.	2122777	CCISITES
Foundation Drawings	Engineered Endeavors, Inc., dated May 28, 1999. Job No. 5069.	2122776	CCISITES
Geotechnical Report	Clough, Harbour, & Associates LLP, dated May 20, 1999. Project No. 7472.07.03.	1532964	CCISITES
Post Modification Inspection Report	TEP, dated October 31, 2005. Project No. 05947.	2055770	CCISITES
Previous Structural Analysis	GPD Associates, dated November 6, 2008. Project No. 2008281.73.	2340799	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) The tower and foundation were built in accordance with the manufacturer's specifications.
- 2) The tower and foundation 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.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by the standard.
- 5) All tower components are in sufficient condition to carry their full design capacity.
- 6) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 7) The following material grades were assumed:
 - a) Base Plate Stiffeners: A36

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals, Inc. 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 (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail	
L1	117.5 - 86.29	Pole	TP22.9x15x0.1875	1	-6561.99	675938.94	78.4	Pass	
L2	86.29 - 42.6267	Pole	TP33.46x21.6602x0.3125	2	-12552.60	1647854.53	85.8	Pass	
L3	42.6267 - 0	Pole	TP43.5x31.6445x0.3125	3	-21142.20	2197996.94	94.4	Pass	
							Summary!		
							Pole (L3)	94.4	Pass
							RATING =	94.4	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	72.0	Pass
1	Base Plate	0	82.6	Pass
1	Base Foundation (Soil Interaction)	0	66.7	Pass
1	Base Foundation (Structural)	0	93.3	Pass
Structure Rating (max from all components) =				94.4%

Notes:

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

4.1) Recommendations

- 1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.

APPENDIX A
RISA TOWER OUTPUT

117.5 ft

1
31.21
18
0.1875
3.42
15.0000
22.9000
1185.8

86.3 ft

2
47.08
18
0.3125
4.75
21.6602
33.4600
A572-65
4329.7

42.6 ft

3
47.38
18
0.3125
31.6445
43.5000
A572-65
5957.9
11473.5

0.0 ft

DESIGNED APPURTENANCE LOADING

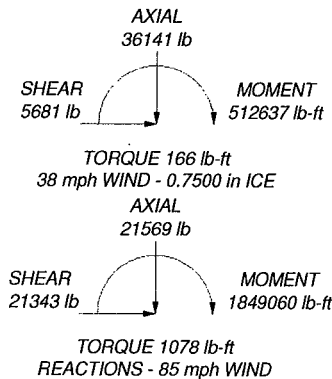
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 712-1]	118	(2) FD9R6004/2C-3L (Proposed)	105
DB420-A	118	BXA-171063-12BF w/ Mount Pipe (Proposed)	105
(2) RR65-12-05DBL w/ Mount Pipe	118	BXA-70063/6CF-2 w/ Mount Pipe (Proposed)	105
RR90-17-02DP w/ Mount Pipe	118	(2) DB846F65ZAXY w/ Mount Pipe (Proposed)	105
DB264-A	118	(2) FD9R6004/2C-3L (Proposed)	105
(2) RR65-12-05DBL w/ Mount Pipe	118	Platform Mount [LP 714-1] (Installed)	91
RR90-17-02DP w/ Mount Pipe	118	(2) 7770.00 w/ Mount Pipe (Installed)	91
ASP-2011	118	(2) LGP 17201 (Installed)	91
(2) RR65-12-05DBL w/ Mount Pipe	118	(2) LGP21903 (Installed)	91
RR90-17-02DP w/ Mount Pipe	118	(2) 7770.00 w/ Mount Pipe (Installed)	91
Platform Mount [LP 714-1]	105	(2) LGP 17201 (Installed)	91
BXA-171063-12BF w/ Mount Pipe (Proposed)	105	(2) 7770.00 w/ Mount Pipe (Installed)	91
BXA-70063/6CFx4 w/ Mount Pipe (Proposed)	105	(2) LGP 17201 (Installed)	91
(2) DB846F65ZAXY w/ Mount Pipe (Proposed)	105	(2) LGP21903 (Installed)	91
(2) FD9R6004/2C-3L (Proposed)	105	(2) LGP 17201 (Installed)	91
BXA-171063-8BF-2 w/ Mount Pipe (Proposed)	105	(2) LGP21903 (Installed)	91
BXA-70063/4CFx5 w/ Mount Pipe (Proposed)	105	(2) 2.4" Dia. x 6.5' Mount Pipe	91
(2) APL866513-42T0 w/ Mount Pipe (Proposed)	105	(2) 2.4" Dia. x 6.5' Mount Pipe	91
		KS24019-L112A	75
		Side Arm Mount [SO 701-1]	75


MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex 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: 94.4%



 <p>Tower Engineering Professionals, Inc. 3703 Junction Boulevard Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	Job: RICHARD WALL BU# 876352
	Project: TEP#113414
	Client: Crown Castle USA Drawn by: AJO App'd:
	Code: TIA/EIA-222-F Date: 09/27/11 Scale: NTS
	Path: P:\3414_Richard Wall\Structural\RIS\ALL CO\Richard Wall (BU#876352)-LCS.dwg Dwg No. E-1

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	Client Crown Castle USA	Designed by AJO

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 Middlesex County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.7500 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

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="padding-left: 40px;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	117.50-86.29	31.21	3.42	18	15.0000	22.9000	0.1875	0.7500	A572-65 (65 ksi)
L2	86.29-42.63	47.08	4.75	18	21.6602	33.4600	0.3125	1.2500	A572-65 (65 ksi)
L3	42.63-0.00	47.38		18	31.6445	43.5000	0.3125	1.2500	A572-65 (65 ksi)

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Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	15.2314	8.8153	244.3603	5.2584	7.6200	32.0683	489.0422	4.4085	2.3100	12.32
	23.2533	13.5168	880.9281	8.0629	11.6332	75.7253	1763.0154	6.7597	3.7004	19.735
L2	22.8638	21.1742	1219.1165	7.5784	11.0034	110.7949	2439.8371	10.5891	3.2622	10.439
	33.9762	32.8782	4564.0115	11.7674	16.9977	268.5079	9134.0285	16.4422	5.3390	17.085
L3	33.3396	31.0774	3854.4135	11.1229	16.0754	239.7709	7713.8988	15.5417	5.0194	16.062
	44.1711	42.8366	10094.1229	15.3316	22.0980	456.7890	20201.5279	21.4224	7.1060	22.739

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
L1 117.50-86.29				1	1	1		
L2 86.29-42.63				1	1	1		
L3 42.63-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C _A A _A	Weight	
				ft		ft ² /ft	plf	
Step Pegs (5/8" SR) 7-in w/ 15-in step	B	No	CaAa (Out Of Face)	117.50 - 0.00	1	No Ice	0.03	0.33
						1/2" Ice	0.14	0.85
						1" Ice	0.23	1.98
						2" Ice	0.43	6.08
						4" Ice	0.83	21.59
Safety Line 3/8	B	No	CaAa (Out Of Face)	117.50 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46

LDF4-50A(1/2")	A	No	Inside Pole	117.50 - 0.00	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
LDF5-50A(7/8")	A	No	Inside Pole	117.50 - 0.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33

LDF7-50A(1-5/8")	C	No	Inside Pole	117.50 - 0.00	6	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	CaAa (Out Of Face)	117.50 - 0.00	10	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight plf
						ft ² /ft	plf	
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	117.50 - 0.00	2	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.20 0.30 0.40 0.60 1.00	30.04 0.82 2.33 4.46 10.54 30.04

LDF6-50A(1-1/4")	A	No	Inside Pole	105.00 - 0.00	12	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.66 0.66 0.66 0.66 0.66

LDF6-50A(1-1/4") (Abandoned)	B	No	CaAa (Out Of Face)	91.00 - 0.00	3	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.66 1.91 3.78 9.33 27.78
LCF158-50A(1-5/8")	B	No	Inside Pole	91.00 - 0.00	9	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.80 0.80 0.80 0.80 0.80
LCF158-50A(1-5/8")	B	No	CaAa (Out Of Face)	91.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.80 2.31 4.44 10.52 30.02
LCF158-50A(1-5/8")	B	No	CaAa (Out Of Face)	91.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.20 0.30 0.40 0.60 1.00	0.80 2.31 4.44 10.52 30.02

LDF4-50A(1/2")	C	No	Inside Pole	75.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.15 0.15 0.15 0.15 0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	117.50-86.29	A	0.000	0.000	0.000	12.359	480.57
		B	0.000	0.000	0.000	3.195	71.83
		C	0.000	0.000	0.000	0.000	153.55
L2	86.29-42.63	A	0.000	0.000	0.000	17.291	810.83
		B	0.000	0.000	0.000	11.811	529.81
		C	0.000	0.000	0.000	0.000	219.68
L3	42.63-0.00	A	0.000	0.000	0.000	16.880	791.58
		B	0.000	0.000	0.000	11.531	517.23
		C	0.000	0.000	0.000	0.000	216.12

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Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	117.50-86.29	A	0.858	0.000	0.000	0.000	23.067	1617.56
		B		0.000	0.000	0.000	14.711	221.07
		C		0.000	0.000	0.000	0.000	153.55
L2	86.29-42.63	A	0.811	0.000	0.000	0.000	32.271	2401.50
		B		0.000	0.000	0.000	34.282	1363.79
		C		0.000	0.000	0.000	0.000	219.68
L3	42.63-0.00	A	0.750	0.000	0.000	0.000	30.715	2243.70
		B		0.000	0.000	0.000	32.282	1277.57
		C		0.000	0.000	0.000	0.000	216.12

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	117.50-86.29	0.1063	-0.3901	0.3366	-0.4026
L2	86.29-42.63	0.2733	-0.3042	0.5948	-0.3031
L3	42.63-0.00	0.2905	-0.3234	0.6527	-0.3403

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb	
Platform Mount [LP 712-1]	A	None		0.0000	118.00	No Ice	24.53	24.53	1335.00
						1/2" Ice	29.94	29.94	1645.59
						1" Ice	35.35	35.35	1956.18
						2" Ice	46.17	46.17	2577.36
						4" Ice	67.81	67.81	3819.72
DB420-A	A	From Centroid-Le g	4.00 5.00 12.00	0.0000	118.00	No Ice	3.33	3.33	34.00
						1/2" Ice	5.99	5.99	44.20
						1" Ice	8.66	8.66	54.40
						2" Ice	13.99	13.99	74.80
						4" Ice	24.64	24.64	115.60
(2) RR65-12-05DBL w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	118.00	No Ice	6.55	5.17	50.20
						1/2" Ice	7.36	6.36	102.56
						1" Ice	8.10	7.40	166.11
						2" Ice	9.42	9.16	316.11
						4" Ice	12.24	12.89	745.45
RR90-17-02DP w/ Mount Pipe	A	From Centroid-Le g	4.00 -5.00 2.00	0.0000	118.00	No Ice	4.59	3.32	34.18
						1/2" Ice	5.09	4.09	69.33
						1" Ice	5.58	4.78	113.86
						2" Ice	6.59	6.23	223.79
						4" Ice	8.73	9.31	556.77
DB264-A	B	From	4.00	0.0000	118.00	No Ice	3.16	3.16	36.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	lb
		Centroid-Le	5.00			1/2" Ice	5.69	5.69	46.80
		g	12.00			1" Ice	8.22	8.22	57.60
						2" Ice	13.27	13.27	79.20
						4" Ice	23.38	23.38	122.40
(2) RR65-12-05DBL w/ Mount Pipe	B	From	4.00	0.0000	118.00	No Ice	6.55	5.17	50.20
		Centroid-Le	0.00			1/2" Ice	7.36	6.36	102.56
		g	2.00			1" Ice	8.10	7.40	166.11
						2" Ice	9.42	9.16	316.11
						4" Ice	12.24	12.89	745.45
RR90-17-02DP w/ Mount Pipe	B	From	4.00	0.0000	118.00	No Ice	4.59	3.32	34.18
		Centroid-Le	-5.00			1/2" Ice	5.09	4.09	69.33
		g	2.00			1" Ice	5.58	4.78	113.86
						2" Ice	6.59	6.23	223.79
						4" Ice	8.73	9.31	556.77
ASP-2011	C	From	4.00	0.0000	118.00	No Ice	1.06	1.06	4.00
		Centroid-Le	5.00			1/2" Ice	1.93	1.93	13.22
		g	8.00			1" Ice	2.82	2.82	27.90
						2" Ice	4.22	4.22	74.31
						4" Ice	6.42	6.42	239.50
(2) RR65-12-05DBL w/ Mount Pipe	C	From	4.00	0.0000	118.00	No Ice	6.55	5.17	50.20
		Centroid-Le	0.00			1/2" Ice	7.36	6.36	102.56
		g	2.00			1" Ice	8.10	7.40	166.11
						2" Ice	9.42	9.16	316.11
						4" Ice	12.24	12.89	745.45
RR90-17-02DP w/ Mount Pipe	C	From	4.00	0.0000	118.00	No Ice	4.59	3.32	34.18
		Centroid-Le	-5.00			1/2" Ice	5.09	4.09	69.33
		g	2.00			1" Ice	5.58	4.78	113.86
						2" Ice	6.59	6.23	223.79
						4" Ice	8.73	9.31	556.77

KS24019-L112A	C	From Leg	3.00	30.0000	75.00	No Ice	0.09	0.09	5.00
			0.00			1/2" Ice	0.15	0.15	6.25
			1.00			1" Ice	0.22	0.22	8.26
						2" Ice	0.40	0.40	15.18
						4" Ice	0.89	0.89	44.91
Side Arm Mount [SO 701-1]	C	From Leg	1.50	30.0000	75.00	No Ice	0.85	1.67	65.00
			0.00			1/2" Ice	1.14	2.34	79.00
			0.00			1" Ice	1.43	3.01	93.00
						2" Ice	2.01	4.35	121.00
						4" Ice	3.17	7.03	177.00

Platform Mount [LP 714-1]	A	None		0.0000	105.00	No Ice	37.47	37.47	1600.00
						1/2" Ice	44.23	44.23	2039.88
						1" Ice	50.99	50.99	2479.76
						2" Ice	64.51	64.51	3359.52
						4" Ice	91.55	91.55	5119.04
BXA-171063-12BF w/ Mount Pipe (Proposed)	A	From	4.00	0.0000	105.00	No Ice	4.97	5.23	40.46
		Centroid-Le	0.00			1/2" Ice	5.52	6.39	83.27
		g	3.00			1" Ice	6.04	7.26	137.46
						2" Ice	7.09	9.05	270.75
						4" Ice	9.36	12.82	671.23
BXA-70063/6CFx4 w/ Mount Pipe (Proposed)	A	From	4.00	0.0000	105.00	No Ice	7.97	5.40	42.25
		Centroid-Le	0.00			1/2" Ice	8.61	6.55	98.33
		g	3.00			1" Ice	9.22	7.41	166.06
						2" Ice	10.46	9.18	327.31
						4" Ice	13.07	12.93	787.05
(2) DB846F65ZAXY w/	A	From	4.00	0.0000	105.00	No Ice	7.27	7.82	46.55

RISATower Tower Engineering Professionals, Inc. 3703 Junction Boulevard Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job						Page	
	RICHARD WALL BU# 876352						6 of 9	
	Project						Date	
TEP#113414						16:11:13 09/27/11		
Client						Designed by		
Crown Castle USA						AJO		

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral					
			Vert		°	ft	ft ²	ft ²	lb
			ft						
			ft						
			ft						
Mount Pipe (Proposed)		Centroid-Le	0.00			1/2" Ice	7.88	9.01	111.10
		g	3.00			1" Ice	8.48	9.91	187.61
						2" Ice	9.72	11.81	367.24
						4" Ice	12.33	15.98	867.25
(2) FD9R6004/2C-3L (Proposed)	A	From	4.00	0.0000	105.00	No Ice	0.37	0.08	3.10
		Centroid-Le	0.00			1/2" Ice	0.45	0.14	5.40
		g	3.00			1" Ice	0.54	0.20	8.79
						2" Ice	0.75	0.34	19.61
						4" Ice	1.28	0.74	62.87
BXA-171063-8BF-2 w/ Mount Pipe (Proposed)	B	From	4.00	0.0000	105.00	No Ice	3.18	3.35	28.90
		Centroid-Le	0.00			1/2" Ice	3.56	3.97	59.02
		g	3.00			1" Ice	3.96	4.60	97.53
						2" Ice	4.85	5.89	193.32
						4" Ice	6.77	8.89	487.48
BXA-70063/4CFx5 w/ Mount Pipe (Proposed)	B	From	4.00	0.0000	105.00	No Ice	5.40	3.62	27.97
		Centroid-Le	0.00			1/2" Ice	5.84	4.22	67.90
		g	3.00			1" Ice	6.30	4.83	116.47
						2" Ice	7.24	6.16	233.26
						4" Ice	9.26	9.18	572.59
(2) APL866513-42T0 w/ Mount Pipe (Proposed)	B	From	4.00	0.0000	105.00	No Ice	4.53	4.92	33.95
		Centroid-Le	0.00			1/2" Ice	4.97	5.60	76.49
		g	3.00			1" Ice	5.41	6.28	127.80
						2" Ice	6.34	7.71	250.44
						4" Ice	8.32	10.83	603.04
(2) FD9R6004/2C-3L (Proposed)	B	From	4.00	0.0000	105.00	No Ice	0.37	0.08	3.10
		Centroid-Le	0.00			1/2" Ice	0.45	0.14	5.40
		g	3.00			1" Ice	0.54	0.20	8.79
						2" Ice	0.75	0.34	19.61
						4" Ice	1.28	0.74	62.87
BXA-171063-12BF w/ Mount Pipe (Proposed)	C	From	4.00	0.0000	105.00	No Ice	4.97	5.23	40.46
		Centroid-Le	0.00			1/2" Ice	5.52	6.39	83.27
		g	3.00			1" Ice	6.04	7.26	137.46
						2" Ice	7.09	9.05	270.75
						4" Ice	9.36	12.82	671.23
BXA-70063/6CF-2 w/ Mount Pipe (Proposed)	C	From	4.00	0.0000	105.00	No Ice	7.97	5.40	42.25
		Centroid-Le	0.00			1/2" Ice	8.61	6.55	98.33
		g	3.00			1" Ice	9.22	7.41	166.06
						2" Ice	10.46	9.18	327.31
						4" Ice	13.07	12.93	787.05
(2) DB846F65ZAXY w/ Mount Pipe (Proposed)	C	From	4.00	0.0000	105.00	No Ice	7.27	7.82	46.55
		Centroid-Le	0.00			1/2" Ice	7.88	9.01	111.10
		g	3.00			1" Ice	8.48	9.91	187.61
						2" Ice	9.72	11.81	367.24
						4" Ice	12.33	15.98	867.25
(2) FD9R6004/2C-3L (Proposed)	C	From	4.00	0.0000	105.00	No Ice	0.37	0.08	3.10
		Centroid-Le	0.00			1/2" Ice	0.45	0.14	5.40
		g	3.00			1" Ice	0.54	0.20	8.79
						2" Ice	0.75	0.34	19.61
						4" Ice	1.28	0.74	62.87

Platform Mount [LP 714-1] (Installed)	A	None		0.0000	91.00	No Ice	37.47	37.47	1600.00
						1/2" Ice	44.23	44.23	2039.88
						1" Ice	50.99	50.99	2479.76
						2" Ice	64.51	64.51	3359.52
						4" Ice	91.55	91.55	5119.04
(2) 7770.00 w/ Mount Pipe (Installed)	A	From	4.00	-10.0000	91.00	No Ice	6.12	4.25	55.38
		Centroid-Le	0.00			1/2" Ice	6.63	5.01	100.55

RISATower Tower Engineering Professionals, Inc. 3703 Junction Boulevard Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	RICHARD WALL BU# 876352	Page	7 of 9
	Project	TEP#113414	Date	16:11:13 09/27/11
	Client	Crown Castle USA	Designed by	AJO

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
		g	2.00			1" Ice	7.13	155.33
						2" Ice	8.16	286.50
						4" Ice	10.36	664.71
(2) LGP 17201 (Installed)	A	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	1.95	31.00
		g	2.00			1/2" Ice	2.13	41.95
						1" Ice	2.33	55.17
						2" Ice	2.75	89.19
						4" Ice	3.69	193.00
(2) LGP21903 (Installed)	A	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	0.27	11.02
		g	2.00			1/2" Ice	0.34	13.44
						1" Ice	0.43	16.93
						2" Ice	0.62	27.95
						4" Ice	1.10	71.54
(2) 7770.00 w/ Mount Pipe (Installed)	B	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	6.12	55.38
		g	2.00			1/2" Ice	6.63	100.55
						1" Ice	7.13	155.33
						2" Ice	8.16	286.50
						4" Ice	10.36	664.71
(2) LGP 17201 (Installed)	B	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	1.95	31.00
		g	2.00			1/2" Ice	2.13	41.95
						1" Ice	2.33	55.17
						2" Ice	2.75	89.19
						4" Ice	3.69	193.00
(2) LGP21903 (Installed)	B	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	0.27	11.02
		g	2.00			1/2" Ice	0.34	13.44
						1" Ice	0.43	16.93
						2" Ice	0.62	27.95
						4" Ice	1.10	71.54
(2) 7770.00 w/ Mount Pipe (Installed)	C	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	6.12	55.38
		g	2.00			1/2" Ice	6.63	100.55
						1" Ice	7.13	155.33
						2" Ice	8.16	286.50
						4" Ice	10.36	664.71
(2) LGP 17201 (Installed)	C	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	1.95	31.00
		g	2.00			1/2" Ice	2.13	41.95
						1" Ice	2.33	55.17
						2" Ice	2.75	89.19
						4" Ice	3.69	193.00
(2) LGP21903 (Installed)	C	From Centroid-Le	4.00 0.00	-10.0000	91.00	No Ice	0.27	11.02
		g	2.00			1/2" Ice	0.34	13.44
						1" Ice	0.43	16.93
						2" Ice	0.62	27.95
						4" Ice	1.10	71.54
(2) 2.4" Dia. x 6.5' Mount Pipe	A	From Centroid-Le	4.00 0.00	0.0000	91.00	No Ice	1.54	23.73
		g	0.00			1/2" Ice	2.16	38.31
						1" Ice	2.58	58.57
						2" Ice	3.47	107.37
						4" Ice	5.49	269.57
(2) 2.4" Dia. x 6.5' Mount Pipe	B	From Centroid-Le	4.00 0.00	0.0000	91.00	No Ice	1.54	23.73
		g	0.00			1/2" Ice	2.16	38.31
						1" Ice	2.58	58.57
						2" Ice	3.47	107.37
						4" Ice	5.49	269.57
(2) 2.4" Dia. x 6.5' Mount Pipe	C	From Centroid-Le	4.00 0.00	0.0000	91.00	No Ice	1.54	23.73
		g	0.00			1/2" Ice	2.16	38.31
						1" Ice	2.58	58.57
						2" Ice	3.47	107.37
						4" Ice	5.49	269.57

RISATower Tower Engineering Professionals, Inc. 3703 Junction Boulevard Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	RICHARD WALL BU# 876352	Page	8 of 9
	Project	TEP#113414	Date	16:11:13 09/27/11
	Client	Crown Castle USA	Designed by	AJO

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Offsets: Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			ft	ft	°	ft	ft ²	ft ²	lb
						4" Ice	5.49	5.49	269.57

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _n	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P/P _a
	ft		ft	ft		ksi	in ²	lb	lb	
L1	117.5 - 86.29 (1)	TP22.9x15x0.1875	31.21	0.00	0.0	39.000	13.0021	-6561.99	507081.00	0.013
L2	86.29 - 42.6267 (2)	TP33.46x21.6602x0.3125	47.08	0.00	0.0	39.000	31.6973	-12552.60	1236200.00	0.010
L3	42.6267 - 0 (3)	TP43.5x31.6445x0.3125	47.38	0.00	0.0	39.000	42.2797	-21142.20	1648910.00	0.013

Pole Bending Design Data

Section No.	Elevation	Size	Actual M _x	Actual f _{bx}	Allow. F _{bx}	Ratio f _{bx} /F _{bx}	Actual M _y	Actual f _{by}	Allow. F _{by}	Ratio f _{by} /F _{by}
	ft		lb-ft	ksi	ksi		lb-ft	ksi	ksi	
L1	117.5 - 86.29 (1)	TP22.9x15x0.1875	234447.50	40.165	39.000	1.030	0.00	0.000	39.000	0.000
L2	86.29 - 42.6267 (2)	TP33.46x21.6602x0.3125	919191.67	44.213	39.000	1.134	0.00	0.000	39.000	0.000
L3	42.6267 - 0 (3)	TP43.5x31.6445x0.3125	1801341.67	48.581	39.000	1.246	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V	Actual f _v	Allow. F _v	Ratio f _v /F _v	Actual T	Actual f _{vt}	Allow. F _{vt}	Ratio f _{vt} /F _{vt}
	ft		lb	ksi	ksi		lb-ft	ksi	ksi	
L1	117.5 - 86.29 (1)	TP22.9x15x0.1875	14484.40	1.114	26.000	0.086	997.42	0.083	26.000	0.003
L2	86.29 - 42.6267 (2)	TP33.46x21.6602x0.3125	17886.90	0.564	26.000	0.043	1084.53	0.025	26.000	0.001
L3	42.6267 - 0 (3)	TP43.5x31.6445x0.3125	21365.20	0.505	26.000	0.038	750.79	0.010	26.000	0.000

RISATower Tower Engineering Professionals, Inc. 3703 Junction Boulevard Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job RICHARD WALL BU# 876352	Page 9 of 9
	Project TEP#113414	Date 16:11:13 09/27/11
	Client Crown Castle USA	Designed by AJO

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P P_a	Ratio f_{bx} F_{bx}	Ratio f_{by} F_{by}	Ratio f_v F_v	Ratio f_{vt} F_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	117.5 - 86.29 (1)	0.013	1.030	0.000	0.086	0.003	1.045	1.333	H1-3+VT ✓
L2	86.29 - 42.6267 (2)	0.010	1.134	0.000	0.043	0.001	1.144	1.333	H1-3+VT ✓
L3	42.6267 - 0 (3)	0.013	1.246	0.000	0.038	0.000	1.259	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF* P_{allow} lb	% Capacity	Pass Fail	
L1	117.5 - 86.29	Pole	TP22.9x15x0.1875	1	-6561.99	675938.94	78.4	Pass	
L2	86.29 - 42.6267	Pole	TP33.46x21.6602x0.3125	2	-12552.60	1647854.53	85.8	Pass	
L3	42.6267 - 0	Pole	TP43.5x31.6445x0.3125	3	-21142.20	2197996.94	94.4	Pass	
							Summary		
							Pole (L3)	94.4	Pass
							RATING =	94.4	Pass

APPENDIX B
BASE LEVEL DRAWING

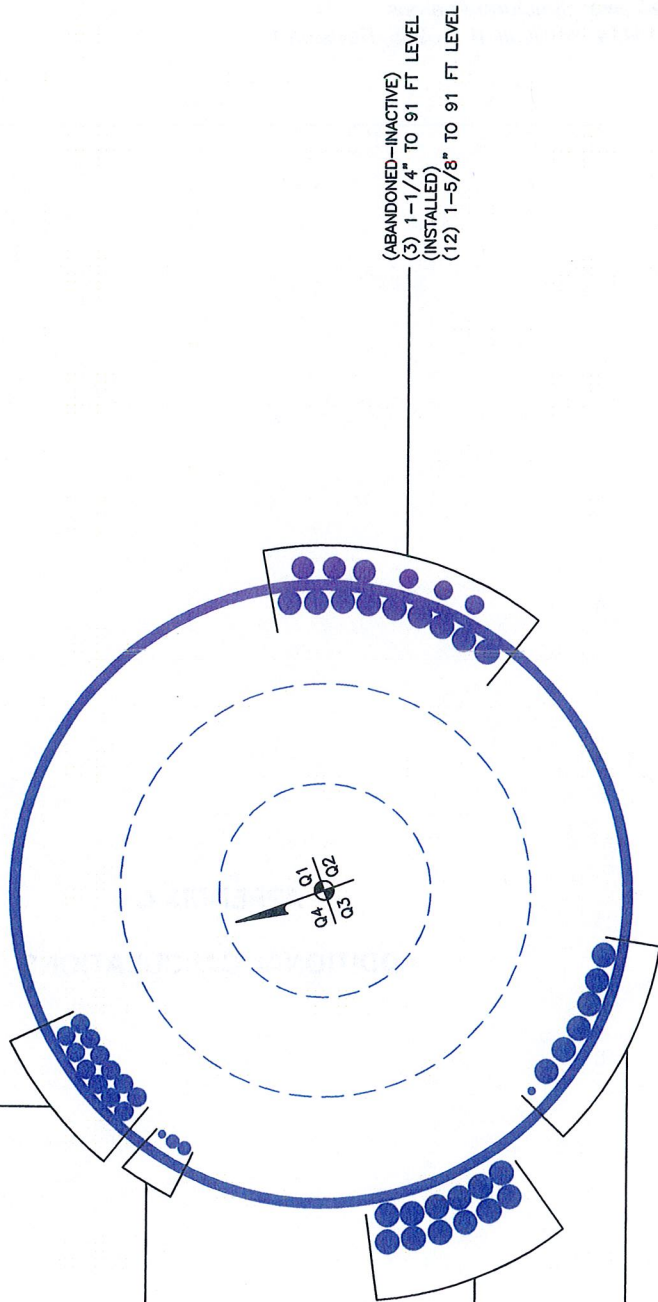


(INSTALLED)
(12) 1-1/4" TO 105 FT LEVEL

(INSTALLED)
(2) 7/8" TO 118 FT LEVEL
(1) 1/2" TO 118 FT LEVEL

(MLA)
(9) 1-5/8" TO 118 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 118 FT LEVEL

(INSTALLED)
(1) 1/2" TO 75 FT LEVEL
(6) 1-5/8" TO 118 FT LEVEL



(ABANDONED-INACTIVE)
(3) 1-1/4" TO 91 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 91 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: 876352
 Site Name: Richard Wall
 App #:

Pole Manufacturer: *Other*

Reactions		
Moment:	1849.06	ft-kips
Axial:	21.569	kips
Shear:	21.343	kips

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	52	in

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

Anchor Rod Results

Maximum Rod Tension: 140.4 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 72.0% **Pass**

Stiffened
Service, ASD
Fty*ASIF

Plate Data

Diam:	58	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.51	in

Base Plate Results

Base Plate Stress: 42.7 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 71.2% **Pass**

Flexural Check

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

Stiffener Data (Welding at both sides)

Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.625	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	20	in
Thick:	0.75	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Stiffener Results

Horizontal Weld : 61.7% **Pass**
 Vertical Weld: 37.6% **Pass**
 Plate Flex+Shear, fb/Fb+(fv/Fv)^2: 24.0% **Pass**
 Plate Tension+Shear, ft/Ft+(fv/Fv)^2: 76.2% **Pass**
 Plate Comp. (AISC Bracket): 82.6% **Pass**

Pole Results

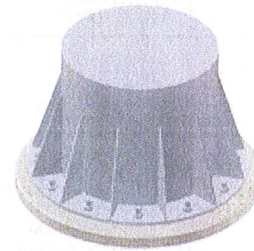
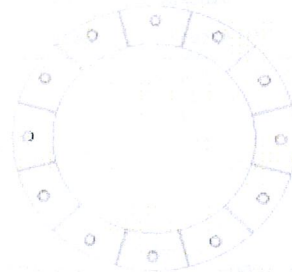
Pole Punching Shear Check: 12.4% **Pass**

Pole Data

Diam:	43.5	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

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



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

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

 * CAISSON - Pier Foundations Analysis and Design - Copyright Power Line Systems, Inc. 1993-2010 *
 *

Project Title: Richard Wall (BU#876352)
 Project Notes: TEP#113414

Calculation Method: Full 8CD

***** I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
6.00	1.00		

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	3.33	0.00	120.0			
2	Sand	3.17	3.33	120.0		3.392	33.00
3	Sand	4.50	6.50	120.0		3.392	33.00
4	Sand	24.00	11.00	120.0		3.392	33.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure	
1849.1	21.6	21.34	3.00	Soil Interaction: $2.0 / 3.0 * 100\% = 66.7\%$

***** R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
23.000	97.546	762.8

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft^3)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	1.00	3.33	120.0			0.00	2.67
Sand	4.33	3.17	120.0		3.392	114.16	6.09
Sand	7.50	4.50	120.0		3.392	288.50	9.94
Sand	12.00	5.01	120.0		3.392	495.97	14.66
Sand	17.01	5.99	120.0		3.392	-833.88	20.16

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	64.7	5979.1	21.6	1993.0
2.30	64.7	6128.0	21.6	2042.7
4.60	57.9	6276.0	19.3	2092.0
6.90	-22.2	6324.5	-7.4	2108.2
9.20	-141.0	6144.4	-47.0	2048.1
11.50	-298.5	5646.4	-99.5	1882.1
13.80	-494.9	4741.4	-165.0	1580.5
16.10	-729.9	3340.3	-243.3	1113.4
18.40	-664.0	1586.6	-221.3	528.9
20.70	-351.4	411.5	-117.1	137.2
23.00	0.0	0.0	0.0	0.0

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: 876352
 Site Name: Richard Wall
 App #:

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties	
Concrete:	
Pier Diameter =	6.0 ft
Concrete Area =	4071.5 in ²
Reinforcement:	
Clear Cover to Tie =	4.00 in
Horiz. Tie Bar Size =	5
Vert. Cage Diameter =	5.11 ft
Vert. Cage Diameter =	61.34 in
Vertical Bar Size =	11
Bar Diameter =	1.41 in
Bar Area =	1.56 in ²
Number of Bars =	14
As Total =	21.84 in ²
A s/ Aconc, Rho:	0.0054 0.54%

ACI 10.5, ACI 21.10.4, and IBC 1810.
 Min As for Flexural, Tension Controlled, Shafts:
 (3)*(Sqrt(f'c)/Fy) = 0.0027
 200 / Fy = 0.0033
 IBC 1810.1.2: 0.0025 SDC C
 Governing: 0.0033 **0.33%**

ACI 10.8 and 10.9
 Min As for Columns, Comp. Controlled, Shafts:
 Min As: 0.0050 **0.50%**

Minimum Rho Check:
 Actual Req'd Min. Rho: 0.33% Flexural
 Provided Rho: 0.54% **OK**

<-- Comment Box

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = ($\phi=0.65$) Pn		
Pn per ACI 318 (10-2)	6051.26	kips
at Mu=($\phi=0.65$)Mn=	3126.24	ft-kips
Max Tu, ($\phi=0.9$) Tn =	1179.36	kips
at Mu= $\phi(0.90)Mn=$	0.00	ft-kips

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	2108.2	ft-kips (* Note)
Max. Service Shaft P:	21.569	kips
Max Axial Force Type:	Comp.	

(* Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

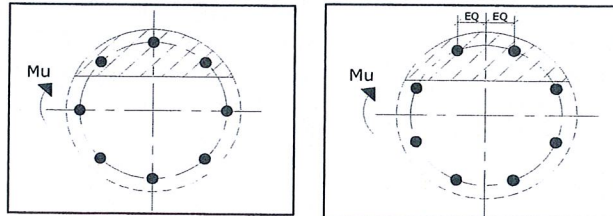
Load Factor	Shaft Factored Loads	
1.30	Mu:	2740.66 ft-kips
1.30	Pu:	28.0397 kips

Material Properties		
Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code =	2005	
Seismic Properties		
Seismic Design Category =	C	
Seismic Risk =	Moderate	

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: 1



Case 1 Case 2

Dist. From Edge to Neutral Axis: **11.63** in
 Extreme Steel Strain, ϵ_t : **0.0142**
 $\epsilon_t > 0.0050$, Tension Controlled
 Reduction Factor, ϕ : **0.900**

Output Note: Negative Pu=Tension
 For Axial Compression, ϕ Pn = Pu: 28.04 kips
 Drilled Shaft Moment Capacity, ϕ Mn: **2936.42** ft-kips
 Drilled Shaft Superimposed Mu: **2740.66** ft-kips

(Mu/ ϕ Mn, Drilled Shaft Flexure CSR): **93.33%**

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

February 21, 2012

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

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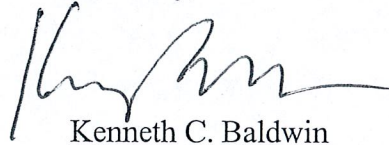
Re: **EM-VER-027-111130 – 48 Cow Hill Road, Clinton, Connecticut**
EM-VER-038-111108 – 101 Old Blue Hill, Durham, Connecticut
EM-VER-042-111101 – 94 High Street, East Hampton, Connecticut
EM-VER-060-111101 – 1919 Boston Post Road, Guilford, Connecticut
EM-VER-061-111107 – 539 Plains Road, Haddam, Connecticut
EM-VER-070-111108 – Route 80, Killingworth, Connecticut
Completion of Construction Activity

Dear Ms. Roberts:

The purpose of this letter is to notify you and the Connecticut Siting Council that construction activity associated with each of the above-referenced modification filings has now been completed.

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

Sincerely,



Kenneth C. Baldwin

Copy to:
Sandy M. Carter



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