ROBINSON & COL

EM-VER-002-120515

KENNETH C. BALDWIN

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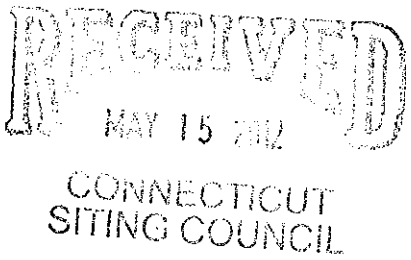
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

May 14, 2012



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

Re: **Notice of Exempt Modification – Antenna Swap**
1 Deerfield Lane, Ansonia, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 157-foot level on the existing 169-foot tower at the above-referenced address. The tower is owned by SBA. The Council approved Cellco's shared use of the tower in 2007 (Docket No. 340). Cellco now intends to modify its facility by adding two (2) model SLCP 2x6014 LTE antennas and one (1) model BXA-70063-6CF LTE antenna, for a total of fifteen (15) antennas, all at the same 157-foot level on the tower. Cellco also intends to attach six (6) additional coax cables to the outside of the monopole. Attached behind Tab 1 are the specifications for the proposed antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to James Della Volpe, Mayor of the City of Ansonia. A copy of this letter is also being sent to Macabee Properties LLC, 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 antennas will be located at the 157-foot level on the existing 169-foot tower.

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

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

4. The operation of the new antennas will not increase radio frequency (RF) emissions 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.

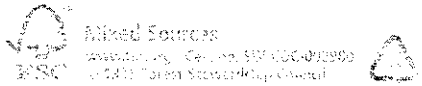
Also attached is a Structural Analysis confirming that the tower and foundation can support Cellco's proposed modifications. (See Tab 3).

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

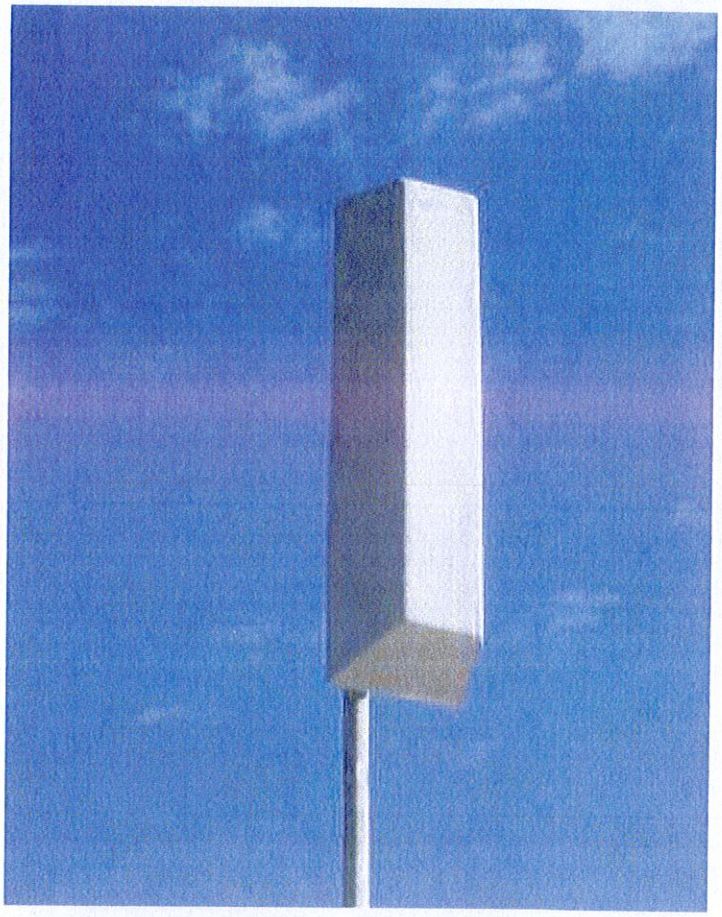
Enclosures
Copy to:
James Della Volpe, Ansonia Mayor
Macabee Properties LLC
Sandy M. Carter


Mixed Sources

Swedcom

SLCP 2x6014

Dual (2x) Circularly Polarized log-periodic antenna



Features

- Transmit Diversity Gain
- Can be configured to combine space & polarization diversity
- Outstanding performance over the entire band (700 - 800 MHz)
- Excellent Axial Ratio
- Optimized for 4G & 3G systems
- Low intermodulation
- Improved Side-to-side rejection
- Fading reduction
- Excellent isolation between ports

Electrical specifications

Frequency range:	**700-800 MHz**	
Impedance:	**50 ohm**	
Connector type:	**7/16 Din**	
Return loss:	**18 dB**	
Polarization:	**Circular**	
Gain ea. port [Circular]:	**2x14 dBdC**	
Gain ea. port [Linear]:	**2x11 dBdL**	
Axial Ratio:	**2 dB**	
Isolation between ports (TX band):	**30 dB**	
Front-to-back ratio:	**30 dB**	
Intermodulation (2x20W):	**IM3**	**150 dB**
	IM5	**160 dB**
	IM7/9	**170 dB**
Power rating:	**2x 500 W**	
H-plane (-3 dB point):	**2x 55°**	
V-plane (-3 dB point):	**2x 16°**	
Lightning protection:	**DC grounded**	

Mechanical specifications

Overall height:	**53 in**	**[1346 mm]**
Width:	**14 in**	**[356 mm]**
Depth:	**11 in**	**[279 mm]**
Weight (excluding brackets):	**20 lbs**	**[9 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**5.15 sq. ft.**	**[0.48 sq.m]**
Lateral thrust at 113 mph/ 180 Km/h (worst case):	**263 lbs**	**[1171 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Mounting bolts:	**Stainless steel**

The SLCP 2x6014 is made in the U.S.A.

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

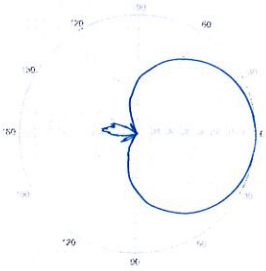
Antenna is also available with NE connector(s) Replace "EDIN" with "NE" in the model number when ordering.

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 m² Side: 0.24 m²	Front: 5.5 ft² Side: 2.6 ft²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

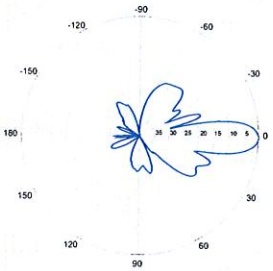
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



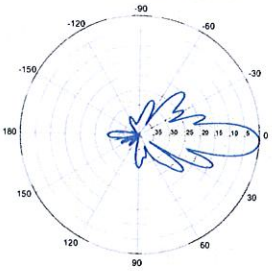
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

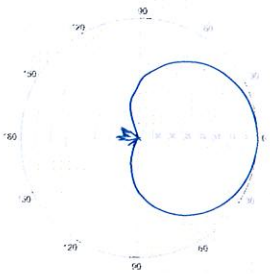


0° | Vertical | 750 MHz

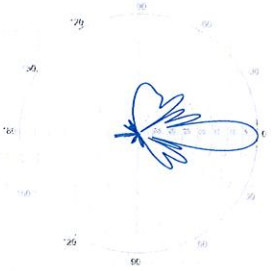
BXA-70063-6CF-EDIN-2



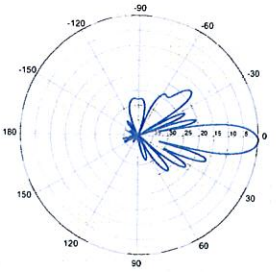
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz

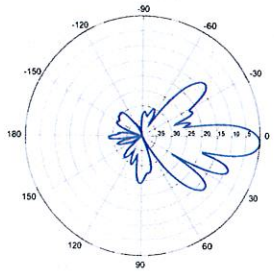


2° | Vertical | 850 MHz

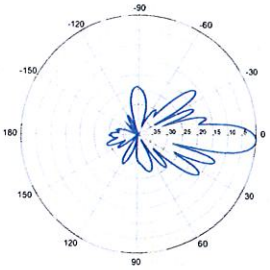
BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3

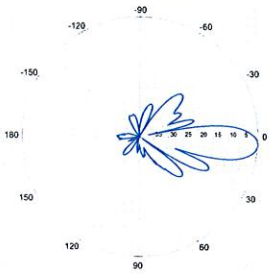


3° | Vertical | 750 MHz

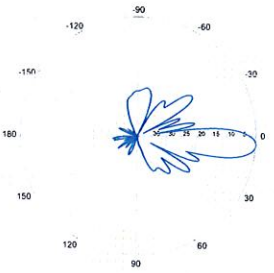


3° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-4

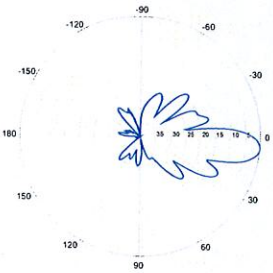


4° | Vertical | 750 MHz

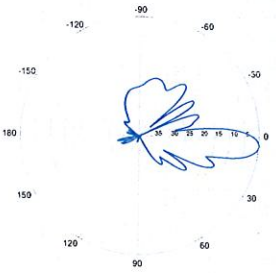


4° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-5

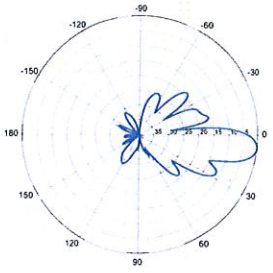


5° | Vertical | 750 MHz

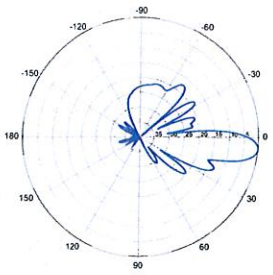


5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6

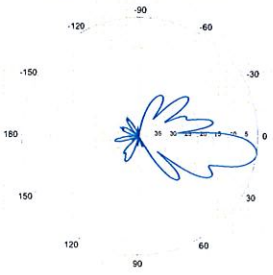


6° | Vertical | 750 MHz

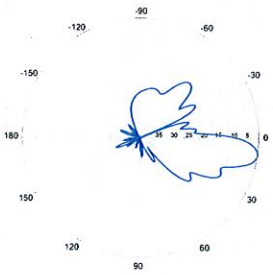


6° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-8

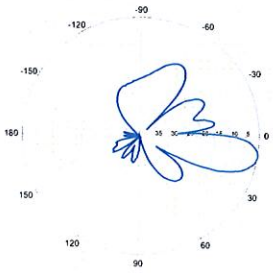


8° | Vertical | 750 MHz

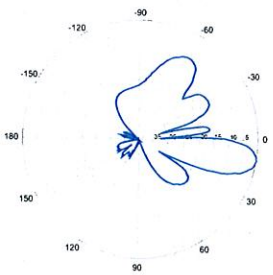


8° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-10

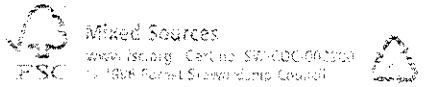


10° | Vertical | 750 MHz



10° | Vertical | 850 MHz

	General	Power	Density					
Site Name: Ansonia E								
Tower Height: Verizon @ 157ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*T-Mobile GSM	8	113	167.5	0.0116	1945	1.0000	1.16%	
*T-Mobile UMTS	2	639	167.5	0.0164	2100	1.0000	1.64%	
*Clearwire	2	153	127	0.0068	2496	1.0000	0.68%	
*Clearwire	1	211	127	0.0047	11 GHz	1.0000	0.47%	
*Pocket	3	631	137	0.0363	2130	1.0000	3.63%	
*Cingular GSM	2	296	147	0.0099	1900	1.0000	0.99%	
*Cingular GSM	4	296	147	0.0197	880	0.5867	3.36%	
*Cingular UMTS	1	500	147	0.0083	880	0.5867	1.42%	
Verizon PCS	**7**	**337**	**157**	**0.0344**	**1970**	**1.0000**	**3.44%**	
Verizon Cellular	**9**	**368**	**157**	**0.0483**	**869**	**0.5793**	**8.34%**	
Verizon AWS	**1**	**843**	**157**	**0.0123**	**2145**	**1.0000**	**1.23%**	
Verizon 700	**1**	**770**	**157**	**0.0112**	**698**	**0.4653**	**2.41%**	
								28.76%
* Source: Siting Council								


Mixed Sources
FSC

FDH Engineering, Inc., 2730 Rowland Rd. Raleigh, NC 27615, Ph. 919.755.1012, Fax 919.755.1031

Structural Analysis for SBA Network Services, Inc.

169' Monopole Tower

SBA Site Name: Woodbridge
SBA Site ID: CT13071-A
Verizon Site Name: Ansonia East

FDH Project Number 11-12287E S1 (R1)

Analysis Results

Tower Components	83.2%	Sufficient
Foundation	94.5%	Sufficient

Prepared By:

Bradley Smith, EI
Project Engineer

Reviewed By:

Christopher M Murphy, PE
President
CT PE License No. 25842

FDH Engineering, Inc.
2730 Rowland Rd.
Raleigh, NC 27615
(919) 755-1012
info@fdh-inc.com

May 10, 2012

Prepared pursuant to TIA/EIA-222-F June 1996 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 Connecticut State Building Code

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Ansonia, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and *2005 Connecticut State Building Code.* Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, foundation dimensions, and member sizes was obtained from:

- Sabre Tower and Poles (Job No. 08-01016) Structural Design Report dated January 30, 2008
- FDH, Inc. (Project No. 08-07136T) TIA Inspection Report dated September 9, 2008
- JGI Eastern, Inc. (Project No. J2085109) Geotechnical Evaluation dated January 29, 2008
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from Verizon in place at 157 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* provided the **Recommendation** listed below is satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Sabre Job No. 08-01016), the foundation should have the necessary capacity to support both the proposed and existing loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendation

To ensure the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut State Building Code* are met with the existing and proposed loading in place, we have the following recommendation:

1. The proposed coax may be installed outside the monopoles shaft in a single row.

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1.** *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Coax and Lines[1]	Carrier	Mount Elevation (ft)	Mount Type
167.5	(3) RFS APXV18-209014 (6) RFS APX16DWV-16DWV-A20 (3) Andrew ATMAA1214 TMAs (6) Ericsson KRY1271/201 TMAs	(18) 1-5/8"	T-Mobile	167.5	(3) 4' T-Arms
157[2,3]	(4) Decibel DB846F65ZAXY (2) Decibel DB846H80E-SX (6) Antel LPA-185063/12CF (3) Antel BXA-70063/6CF (1) GPS	(18) 1-5/8" (1) 1/2"	Verizon	157	(3) T-Arms
148	(6) Powerwave 7770 (6) Powerwave LGP21401 TMAs (6) Powerwave LGP13519 Diplexers	(12) 1-5/8"	AT&T	148	(3) T-Arms
137	(3) RFS APXV18-206517S-C	(6) 1-5/8"	Pocket	137	(3) Pipe Mounts
127	(3) Argus LLPX310R (3) Samsung 2.5Ghz RRH BTSs (3) Andrew VHLP2-11 Dishes (1) Andrew VHLP800-11 Dish	(3) 5/16" (4) 1/2" (3) 5/8" (3) 1/4"	Clearwire	127	(3) 12' T-Arms

1. Coax installed inside the pole's shaft unless otherwise noted.
2. Currently, Verizon has installed (4) Decibel DB846F65AXY antennas, (2) Decibel DB846H80E-SX antennas, (6) Antel LPA-185063/12CF antennas, (1) GPS, (12) 1-5/8" coax, and (1) 1/2" coax at 157 ft. According to information provided by SBA, Verizon reserves the right to install an additional (3) Antel BXA-70063/6CF antennas and (6) 1-5/8" coax to their existing loading at 157'. Analysis performed with full leased loading in place.
3. Verizon may install (6) 1-5/8" coax outside the pole in a single row.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
157[1]	(4) Decibel DB846F65ZAXY (2) Decibel DB846H80E-SX (6) Antel LPA-185063/12CF (1) Antel BXA-70063/6CF (2) Swedcom SLCP 2X6014 (1) GPS	(18) 1-5/8" (1) 1/2"	Verizon	157	(3) T-Arms

1. This represents the final configuration for Verizon at 157'. According to information provided by SBA, Verizon will remove (2) Antel BXA-70063/6CF antennas at 157' and install (2) Swedcom SLCP 2X6014 antennas, and (6) 1-5/8" coax to their existing loading at 157'. The proposed coax may be installed outside the pole's shaft in a single row.

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	169 - 139	Pole	TP30x24x0.1875	36.4	Pass
L2	139 - 89.25	Pole	TP39.58x28.875x0.25	83.2	Pass
L3	89.25 - 40.75	Pole	TP48.78x38.0795x0.375	73.8	Pass
L4	40.75 - 0	Pole	TP56.18x46.7799x0.4375	72.4	Pass
		Anchor Bolts	(16) 2.25" Ø on 62.75" BC	79.4	Pass
		Base Plate	PL 3" thk. x 61.25" square	59.0	Pass

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis *(TIA/EIA-222-F)*	Original Design *(ANSI/TIA-222-G)*
Axial	42 k	60 k
Shear	28 k	44 k
Moment	3,292 k-ft	4,977 k-ft

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

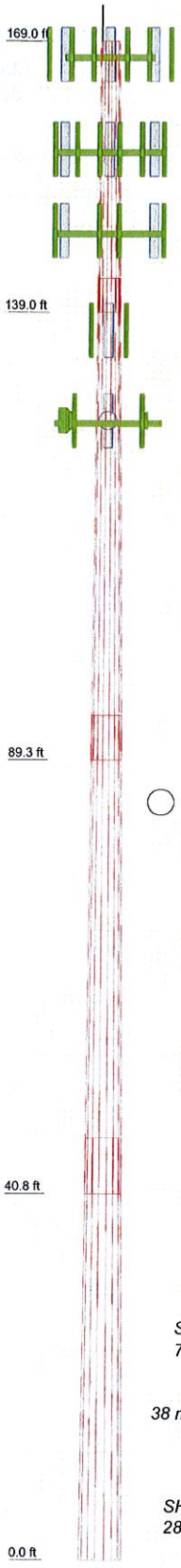
LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX

Section	1	2	3	4
Length (ft)	30.00	53.50	53.50	47.00
Number of Sides	18	18	18	18
Thickness (in)	0.1875	0.2500	0.3750	0.4375
Socket Length (ft)	3.75	5.00	6.25	
Top Dia (in)	24.0000	28.8750	38.0795	46.7799
Bot Dia (in)	30.0000	39.5800	48.7800	56.1800
Grade	A572-65			
Weight (K)	1.6	4.9	9.3	11.3

27.2



AXIAL
56 K
SHEAR
7 K
MOMENT
835 kip-ft
TORQUE 1 kip-ft
38 mph WIND - 0.7500 in ICE
AXIAL
42 K
SHEAR
28 K
MOMENT
3292 kip-ft
TORQUE 2 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	169	(3) T-Arms (Verizon)	157
APXV18-209014-C w/ mount pipe (T-Mobile)	167.5	GPS (Verizon)	157
APXV18-209014-C w/ mount pipe (T-Mobile)	167.5	SLCP 2X6014 w/Mount Pipe (Verizon)	157
APXV18-209014-C w/ mount pipe (T-Mobile)	167.5	SLCP 2X6014 w/Mount Pipe (Verizon)	157
ATMAA1412 TMA (T-Mobile)	167.5	(2) 7770.00 w/ mount pipe (ATT)	148
ATMAA1412 TMA (T-Mobile)	167.5	(2) LGP 21401 TMA (ATT)	148
ATMAA1412 TMA (T-Mobile)	167.5	(2) LGP 21401 TMA (ATT)	148
(3) 4' T-Arms (T-Mobile)	167.5	(2) LGP 21401 TMA (ATT)	148
(2) APX16DWV-16DWVS-A20 w/ mount pipe (T-Mobile)	167.5	(2) LGP 13519 Diplexer (ATT)	148
(2) APX16DWV-16DWVS-A20 w/ mount pipe (T-Mobile)	167.5	(2) LGP 13519 Diplexer (ATT)	148
(2) APX16DWV-16DWVS-A20 w/ mount pipe (T-Mobile)	167.5	(2) LGP 13519 Diplexer (ATT)	148
(2) KRY1271/201 TMA (T-Mobile)	167.5	(3) T-Arms (ATT)	148
(2) KRY1271/201 TMA (T-Mobile)	167.5	(2) 7770.00 w/ mount pipe (ATT)	148
(2) KRY1271/201 TMA (T-Mobile)	167.5	(2) 7770.00 w/ mount pipe (ATT)	148
(2) DB846F65ZAXY w/Mount Pipe (Verizon)	157	APXV18-206517 w/ mount pipe (Pocket)	137
(2) DB846F65ZAXY w/Mount Pipe (Verizon)	157	APXV18-206517 w/ mount pipe (Pocket)	137
(2) DB846H80E-SX w/Mount Pipe (Verizon)	157	APXV18-206517 w/ mount pipe (Pocket)	137
(2) LPA-185063/12CF w/ mount pipe (Verizon)	157	LLPX310R w/ mount pipe (Clearwire)	127
(2) LPA-185063/12CF w/ mount pipe (Verizon)	157	2.5 Ghz RRH BTS (Clearwire)	127
(2) LPA-185063/12CF w/ mount pipe (Verizon)	157	2.5 Ghz RRH BTS (Clearwire)	127
BXA-70063/6CF w/ mount pipe (Verizon)	157	2.5 Ghz RRH BTS (Clearwire)	127
		(3) 12' T-Arms (Clearwire)	127
		LLPX310R w/ mount pipe (Clearwire)	127
		LLPX310R w/ mount pipe (Clearwire)	127
		VHLP800-11 (Clearwire)	127
		VHLP2-11 (Clearwire)	127
		VHLP2-11 (Clearwire)	127
		VHLP2-11 (Clearwire)	127

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven 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: 83.2%

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job: Woodbridge, CT13071-A		
Project: 11-12287E S1 (R1)		
Client: SBA	Drawn by: Bradley Smith	App'd:
Code: TIA/EIA-222-F	Date: 05/10/12	Scale: NTS
Path: C:\Users\Bradley Smith\Desktop\Completed Projects\Woodbridge, CT\S1-SA Version\Woodbridge, CT13071-1.eri		Dwg No. E-1