

KENNETH C. BALDWIN

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Also admitted in Massachusetts

RECEIVED
MAY - 7 2014
CONNECTICUT
SITING COUNCIL

May 5, 2014

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-085-131028B – Cellco Partnership d/b/a Verizon Wireless
500 Moose Hill Road, Monroe, Connecticut**

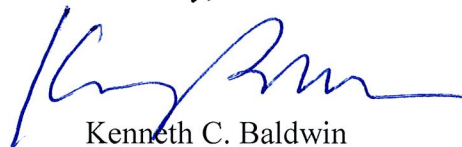
Dear Ms. Bachman:

On November 14, 2013, the Siting Council acknowledged receipt of Cellco's notice of intent to modify its telecommunications facility at 500 Moose Hill Road in Monroe. The modification involved the replacement of certain antennas.

As a condition of the acknowledgement, Cellco was required to provide the Council with a letter stating that the recommendations specified in the structural report were implemented. Attached is a Tower Modification Certification Letter verifying that these conditions have been satisfied. All construction associated with these modifications has now been completed.

If you have any questions please do not hesitate to contact me or Rachel Mayo.

Sincerely,



Kenneth C. Baldwin

Attachment

Copy to:

Sandy M. Carter
Brian Ragozzine
Mark Gauger



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April 30, 2014

Mr. Mark Gauger
Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108

Re: Existing Telecommunications Facility Tower Modification Certification Letter

Project: Verizon Monroe East
500 Moosehill Road
Monroe, CT

Tower Owner: SBA Communications Corporation
5900 Broken Sound Parkway NW
Boca Raton, FL 33487

Engineer: FDH Engineering
6521 Meridien Drive, Raleigh, NC 27616

Centek Project No.: 13017.065

Dear Mr. Gauger,

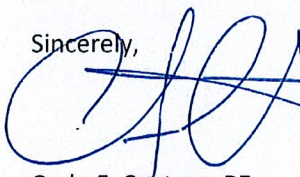
We are providing this "Existing Telecommunications Facility Tower Modification Certification Letter" with regard to the antenna upgrade by Verizon Wireless at the above referenced project.

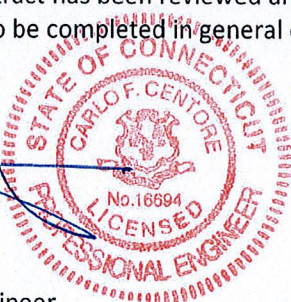
The following are the basis for substantiating compliance with the FDH Engineering structural analysis report (FDH Project No. 13SCPG1400) dated September 27, 2013:

- Review of the FDH structural analysis report dated 09/27/2013.
- Field observations by Centek personnel of the coax and diplexer installation on 04/14/2014 which determined all coax lines and diplexers were installed in general compliance with the recommendations of the structural analysis report prepared by FDH on 09/27/2013.

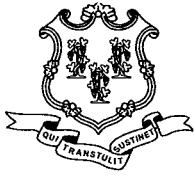
The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above.

Sincerely,


Carlo F. Centore, PE
Principal ~ Structural Engineer



CC: Rachel Mayo, Tim Parks, Aleksey Tyurin



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

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November 14, 2013

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

RE: **EM-VER-085-131028B** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 500 Moose Hill Road, Monroe, 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:

- The proposed feed lines and accessory equipment shall be installed as specified in the Structural Analysis Report prepared by FDH Engineering dated September 27, 2013 and stamped by Christopher Murphy;
- Within 45 days following completion of the antenna installation, Verizon shall provide documentation certified by a professional engineer that its installation complied with the recommendations of the structural analysis;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the 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;
- Within 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 23, 2013. 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,



Melanie A. Bachman
Acting Executive Director

MAB/CDM/jb

- c: The Honorable Stephen Vavrek, First Selectman, Town of Monroe
William Agresta, Planning Administrator, Town of Monroe
Sean Gormley, SBA



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

October 29, 2013

The Honorable Stephen Vavrek
First Selectman
Town of Monroe
Town Hall
7 Fan Hill Road
Monroe, CT 06468-1800

RE: **EM-VER-085-131028A** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 1428 Monroe Turnpike, Monroe, Connecticut.

EM-VER-085-131028B – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 500 Moose Hill Road, Monroe, Connecticut.

Dear First Selectman Vavrek:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by November 12, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

A handwritten signature in black ink, appearing to read "Melanie Bachman".

Melanie Bachman
Acting Executive Director

MB/jb

c: William Agresta, Planning Administrator, Town of Monroe

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October 23, 2013

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

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OCT 28 2013
CONNECTICUT
SITING COUNCIL

Re: **Notice of Exempt Modification – Antenna Swap
500 Moose Hill Road, Monroe, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 99-foot level of the existing 149-foot tower at the above-referenced address. The tower is owned by SBA. The Council approved Cellco’s shared use of this tower in 2005. Cellco now intends to replace one (1) of its existing antennas with one (1) model BXA-70063-6CF LTE antenna at the same level on the tower. Included in Attachment 1 are specifications for the replacement antenna.

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 Steve Vavrek, First Selectman for the Town of Monroe. A copy of this letter is also being sent to St. John The Baptist Greek Catholic Cemetery Association Inc., the owner of the property where 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 height of the existing tower. Cellco’s replacement antenna will be located at the 99-foot level of the 149-foot tower.



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Melanie A. Bachman

October 23, 2013

Page 2

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

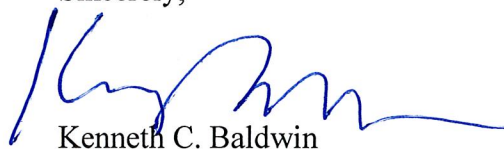
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for Cellco's modified facility is provided in the General Power Density table included in Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (*See Structural Analysis included in Attachment 3*). Contrary to the recommendations included on page 3 of the Structural Analysis, Cellco's proposed modifications do not include the installation of new antenna cables.

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:

Steve Vavrek, Monroe First Selectman

St. John The Baptist Greek Catholic Cemetery Association Inc.

Sandy M. Carter



ATTACHMENT 1

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

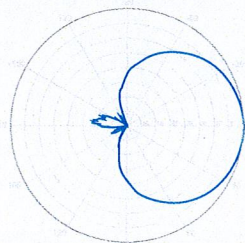
Replace "X" with desired electrical downtilt.

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

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

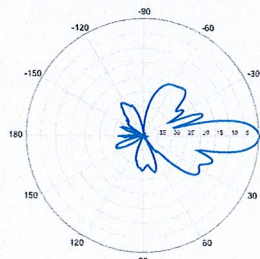


BXA-70063-6CF-EDIN-X



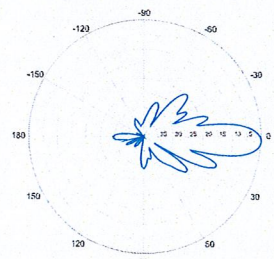
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

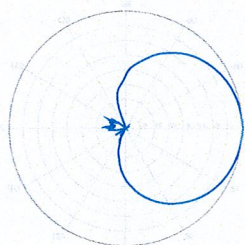


0° | Vertical | 750 MHz

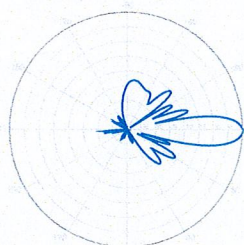
BXA-70063-6CF-EDIN-2



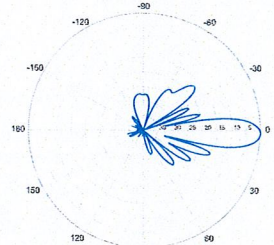
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



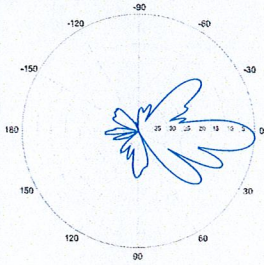
2° | Vertical | 850 MHz

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

BXA-70063-6CF-EDIN-X

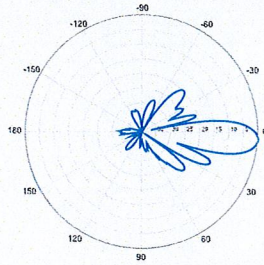
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



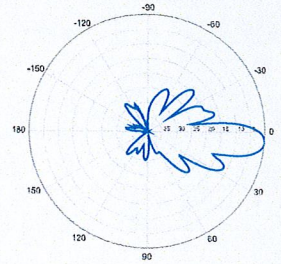
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

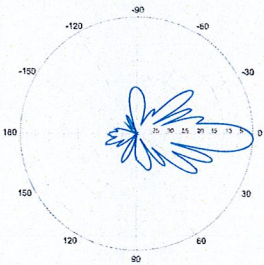


4° | Vertical | 750 MHz

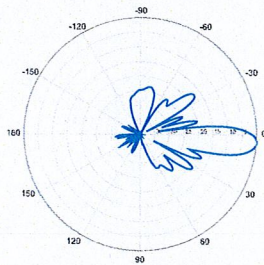
BXA-70063-6CF-EDIN-5



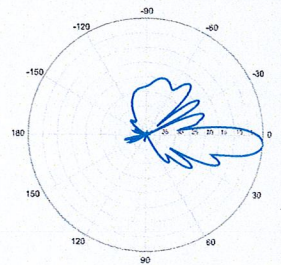
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

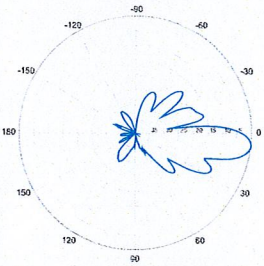


4° | Vertical | 850 MHz



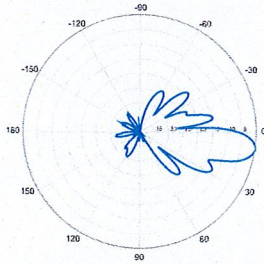
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



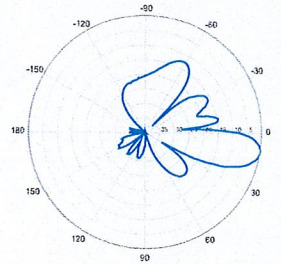
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

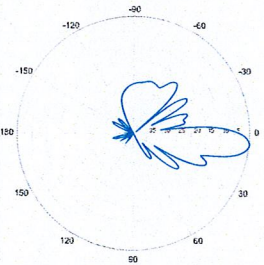


8° | Vertical | 750 MHz

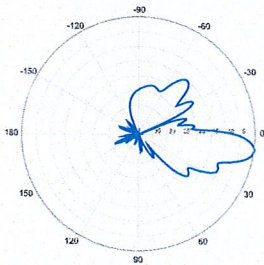
BXA-70063-6CF-EDIN-10



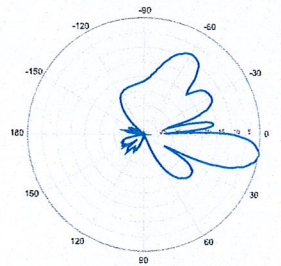
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

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

ATTACHMENT 2

Site Name: Monroe E		General		Power		Density							
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
T-Mobile GSM/UMTS	2	12	121	0.0006	1950	1.0000	0.06%						
T-Mobile UMTS	2	12	121	0.0006	2100	1.0000	0.06%						
T-Mobile LTE	2	24	121	0.0012	2100	1.0000	0.12%						
Clearwire	2	153	147	0.0051	2496	1.0000	0.51%						
Clearwire	1	211	147	0.0035	11 GHz	1.0000	0.35%						
Sprint	3	778	147.5	0.0386	1900	1.0000	3.86%						
Sprint	1	438	147.5	0.0072	850	0.5667	1.28%						
Sprint WiMAX	3	562	147.5	0.0279	2657	1.0000	2.79%						
Sprint/Nextel Microwave	2	2512	148	0.0825	19500	1.0000	8.25%						
Sprint/Nextel Microwave	2	708	148	0.0232	11500	1.0000	2.32%						
AT&T UMTS	1	500	138	0.0094	880	0.5867	1.61%						
AT&T UMTS	1	500	138	0.0094	1900	1.0000	0.94%						
AT&T GSM	4	296	138	0.0224	880	0.5867	3.81%						
AT&T GSM	2	427	138	0.0161	1900	1.0000	1.61%						
AT&T LTE	1	500	138	0.0094	740	0.4933	1.91%						
Town PD	only - no RF emissions												
Nextel	12	100	107.5	0.0373	851	0.5673	6.58%						
Verizon PCS	15	443	99	0.2438	1970	1.0000	24.38%						
Verizon Cellular	9	406	99	0.1341	869	0.5793	23.14%						
Verizon AWS	1	1750	99	0.0642	2145	1.0000	6.42%						
Verizon 700	1	840	99	0.0308	698	0.4653	6.62%						96.62%
* Source: Siting Council													

ATTACHMENT 3



FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012

**Structural Analysis for
SBA Network Services, Inc.**

149' Monopole Tower

**SBA Site Name: Moosehill
SBA Site ID: CT13056-A-05
Verizon Site Name: Monroe East**

FDH Project Number 13SCPG1400

Analysis Results

Tower Components	90.5 %	Sufficient
Foundation	91.1 %	Sufficient

Prepared By:

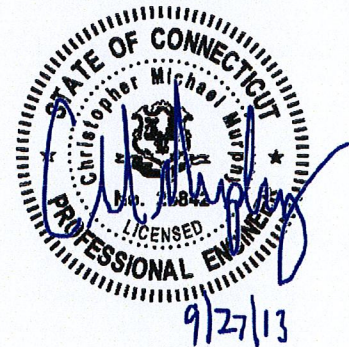
Mark S. Girgis, EI
Project Engineer

Reviewed By:

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

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com

September 27, 2013



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

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Monroe, 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 Building Code (CBC)*. Information pertaining to the existing/proposed antenna loading, current tower geometry, geotechnical data, and member sizes was obtained from:

- Sabre Communications Corporation (Job No. 02-03107 Revision A) Structural Design Report dated April 3, 2002
- FDH, Inc. (Job No. 08-07121T Revised) TIA Inspection Report dated November 10, 2008
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CBC* 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 99 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 CBC* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundations were designed and constructed to support the original design reactions (see Sabre Job No.02-03107 Revision A), the foundation should have the necessary capacity to support both the existing and proposed 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.

Recommendations

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

1. The proposed feed lines should be installed inside the pole's shaft.
2. The existing diplexers should be installed directly behind the proposed panel antennas.

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	Feed ¹ Lines	Carrier	Mount Elevation (ft)	Mount Type
152.5	(1) Decibel DB404-B Dipole	(1) 7/8"	Town of Monroe	149	(1) Pipe Mount
147 ²	(3) RFS APXVSPP18-C-A20 (3) Alcatel lucent 1900 MHz RRHs (3) Alcatel lucent 800 MHz RRHs (3) Alcatel lucent 800 MHz Filters (4) RFS ACU-A20-N RETs (3) Argus LLPX310R (1) Andrew VHLP2-11 Dish (1) Andrew VHLP800-11-DW1 Dish (3) U-RAS Flexible RRH ODUs	(3) 1-1/4" (2) 1/2" (6) 5/16"	Sprint/Clearwire	147	(1) 12.5' Low Profile Platform
139	(6) Powerwave 7770 (3) Powerwave P65-16 (6) Powerwave LGP 21401 TMAs (6) Powerwave LGP 13519 Diplexers (6) Ericsson RRUS-11 RRHs (1) Raycap DC6-48-60-18-8F Surge Suppressor	(12) 1-1/4" (1) 0.393" (2) 0.645"	AT&T	139	(1) 13' Low Profile Platform
---	---	---	---	128	(1) 12.5' Low Profile Platform
121	(3) Ericsson Air B2A/B4P (3) Ericsson Air B4A/B2P (3) Ericsson KRY 112 144 TMAs	(12) 1-5/8" (1) 1-5/8" Fiber	T-Mobile	121	(1) 13' Low Profile Platform
109	(12) Decibel DB844H90E-XY	(12) 7/8"	Nextel	109	(1) 14' Low Profile Platform
99 ³	(1) Antel BXA-70063/4CF (1) Swedcom SLCP 2x6014F (2) Antel LPA-80063/6CF (4) Celwave APL866513-42TO (1) Antel BXA-171063/12BF (2) Antel BXA-171063/8BF (1) Antel BXA-70063/6CF (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	99	(1) 12.5' Low Profile Platform
65.5 ⁴	(1) Decibel 26OB GPS	(1) 1/2"	Sprint	64	(1) 3' Standoff

1. Feed lines installed inside the pole's shaft unless otherwise noted.
2. The (3) 1-1/4" coax for Sprint/Clearwire is installed on the outside of the pole's shaft in a single row.
3. The coax for Verizon at 99 ft is installed on the outside of the pole's shaft double stacked.
4. The coax for Sprint at 64 ft is installed on the outside of the pole's shaft.

Proposed Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
99 ³	(1) Swedcom SLCP 2x6014F (2) Antel LPA-80063/6CF (4) Celwave APL866513-42TO (1) Antel BXA-171063/12BF (2) Antel BXA-171063/8BF (2) Antel BXA-70063/6CF (6) RFS FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	99	(1) 12.5' Low Profile Platform

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
Flange Plate	60 ksi
Flange Bolts	F _u = 120 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 105 % are considered acceptable.* **Table 4** displays the maximum foundation reactions. **Table 5** displays the maximum antennas rotations at service wind speeds (dishes only).

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	149 – 129	Pole	TP28.82x24x0.1875	29.3	Pass
	129	Flange Bolts	(8) 1" Ø w/ BC = 32.5"	58.7	Pass
	129	Flange Plate	36.25" Ø PL x 1" thk.	52.4	Pass
L2	129 – 96	Pole	TP36.9x28.82x0.25	61.6	Pass
L3	96 - 47.25	Pole	TP48.15x35.237x0.3125	88.4	Pass
L4	47.25 – 0	Pole	TP58.91x46.0768x0.375	89.9	Pass
		Anchor Bolts	(16) 2.25" Ø w/ BC = 66"	87.5	Pass
		Base Plate	PL 64" Sq x 3" Thk.	69.6	Pass

*Capacities include a 1/3 allowable stress increase for wind per TIA/EIA-222-F standards.

Table 4 - Maximum Base Reactions

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	41 k	45 k
Shear	36 k	39 k
Moment	3,811 k-ft	4,184 k-ft

Table 5 - Maximum Antenna Rotations at Service Wind Speeds (Dishes Only)

Centerline Elevation (ft)	Antenna	Tilt* (deg)	Twist* (deg)
147	(1) Andrew VHLP2-11 Dish (1) Andrew VHLP800-11-DW1 Dish	1.7188	0.0031

*Allowable tilt and twist values to be determined by the carrier.

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

CLIMBING PEGS
AND SAFETY CABLE

(3) 1-1/4" EXISTING COAX
(1) 1/2" EXISTING COAX
FOR SPRINT TO 147' & 64'

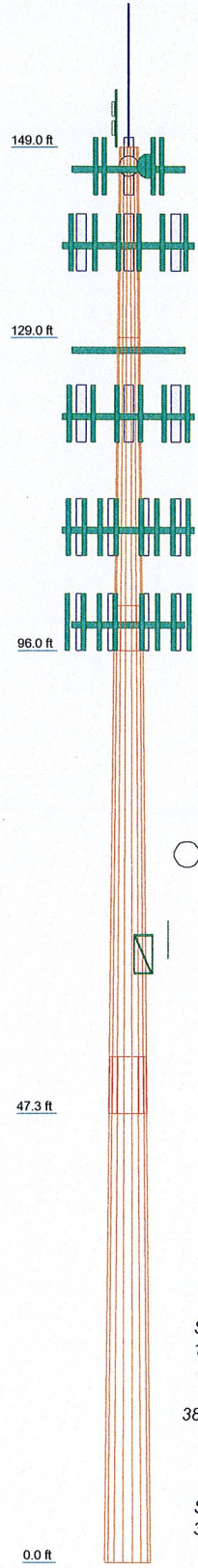
ALL OTHER COAX
INSIDE THE POLE

(12) 1-5/8" EXISTING COAX
FOR VERIZON TO 99'

● EXISTING
○ PROPOSED
○ FUTURE

Figure 1 – Assumed Feed Line Layout

Section	1	2	3	4	
Length (ft)	20.00	33.00	53.50	53.25	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.2500	0.3125	0.3750	
Socket Length (ft)		4.75	6.00	46.0768	
Top Dia (in)	24.0000	28.8200	35.2370	58.9100	
Bot Dia (in)	28.8200	36.9000	48.1500		
Grade			A572-65		
Weight (K)	1.1	2.9	7.5	11.2	22.7



DESIGNED APPURTENANCE LOADING

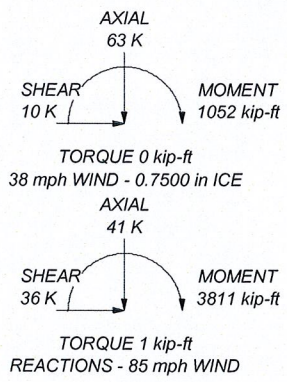
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	149	Empty Mount Pipe	139
Pipe Mount	149	Empty Mount Pipe	139
DB404-B	149	Empty Mount Pipe	139
Pipe Mount	149	13' Low Profile Platform	139
APXVSP18-C-A20 w/Mount Pipe	147	(2) 7770.00 w/Mount Pipe	139
APXVSP18-C-A20 w/Mount Pipe	147	(2) 7770.00 w/Mount Pipe	139
APXVSP18-C-A20 w/Mount Pipe	147	(4) Empty Mount Pipe	128
LLPX310R w/Mount Pipe	147	12.5' Low Profile Platform	128
LLPX310R w/Mount Pipe	147	(4) Empty Mount Pipe	128
LLPX310R w/Mount Pipe	147	(4) Empty Mount Pipe	128
U-RAS Flexible RRH ODU	147	AIR 21 B2A/B4P w/Mount Pipe	121
U-RAS Flexible RRH ODU	147	AIR 21 B4A/B2P w/Mount Pipe	121
U-RAS Flexible RRH ODU	147	AIR 21 B4A/B2P w/Mount Pipe	121
1900 MHz RRH	147	AIR 21 B4A/B2P w/Mount Pipe	121
1900 MHz RRH	147	KRY 112 144 TMA	121
1900 MHz RRH	147	KRY 112 144 TMA	121
800 MHz RRH	147	KRY 112 144 TMA	121
800 MHz RRH	147	13' Low Profile Platform	121
800 MHz RRH	147	AIR 21 B2A/B4P w/Mount Pipe	121
800 MHz Filter	147	AIR 21 B2A/B4P w/Mount Pipe	121
800 MHz Filter	147	(4) DB844H90E-XY w/Mount Pipe	109
800 MHz Filter	147	14' Low Profile Platform	109
(2) ACU-A20-N RET	147	(4) DB844H90E-XY w/Mount Pipe	109
ACU-A20-N RET	147	(4) DB844H90E-XY w/Mount Pipe	109
ACU-A20-N RET	147	LPA-80063/6CF w/ Mount Pipe	99
12.5' Low Profile Platform	147	LPA-80063/6CF w/ Mount Pipe	99
VHLP2-11	147	APL866513-42TO w/ Mount Pipe	99
VHLP800-11-DW1	147	(2) APL866513-42TO w/ Mount Pipe	99
(2) 7770.00 w/Mount Pipe	139	APL866513-42TO w/ Mount Pipe	99
P65-16 w/Mount Pipe	139	BXA-171063-12BF w/ Mount Pipe	99
P65-16 w/Mount Pipe	139	BXA-171063/8BF w/ Mount Pipe	99
P65-16 w/Mount Pipe	139	BXA-171063/8BF w/ Mount Pipe	99
(2) LGP21401 TMA	139	BXA-70063/6CF w/Mount Pipe	99
(2) LGP21401 TMA	139	(2) FD9R6004/2C-3L Diplexer	99
(2) LGP21401 TMA	139	(2) FD9R6004/2C-3L Diplexer	99
(2) LGP13519 Diplexer	139	(2) FD9R6004/2C-3L Diplexer	99
(2) LGP13519 Diplexer	139	12.5' Low Profile Platform	99
(2) LGP13519 Diplexer	139	BXA-70063/6CF w/Mount Pipe	99
(2) RRUS-11	139	SLCP 2x6014F w/ Mount Pipe	99
(2) RRUS-11	139	Decibel - 260B GPS	64
(2) RRUS-11	139	3' Standoff	64
DC6-48-60-18-8F Surge Arrestor	139		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 90.5%



	FDH Engineering, Inc. 6521 Meridien Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	Job: Moosehill, CT13056-A-05 Project: 13SCPG1400 Client: SBA Network Services, Inc.	Drawn by: Mark S. Girgis Date: 09/27/13 Scale: NTS	App'd: Dwg No. E-1	