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Also admitted in Massachusetts

August 2, 2013

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

Re: **Notice of Exempt Modification – Facility Modification  
175 Dickinson Road, Glastonbury, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 167-foot level on an existing 176-foot tower at the above-referenced address. The tower is owned by SBA. Cellco’s use of the tower was approved by the Council in 2010. Cellco now intends to replace three (3) of its existing antennas with three (3) model BXA-70063-6CF LTE antennas, at the same 167-foot level. Attached behind Tab 1 are the specifications for Cellco’s replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Richard J. Johnson, Town Manager of the Town of Glastonbury. A copy of this letter is also being sent to Randall Chapman and Brian Bronzi, the owners of the property on which the tower is located.

The planned modifications to the Cellco 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 antennas will be located at the 167-foot level on the existing 176-foot tower.



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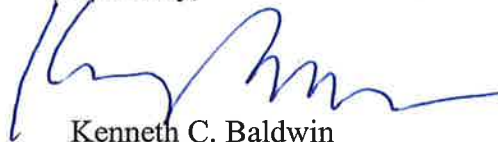
# ROBINSON & COLE<sub>LLP</sub>

Melanie A. Bachman  
August 2, 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 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.
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 attached behind 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:

Richard J. Johnson, Glastonbury Town Manager  
Randall Chapman and Brian Bronzi  
Sandy M. Carter



# TAB 1

**BXA-70063-6CF-EDIN-X**

X-Pol | FET Panel | 63° | 14.5 dBd

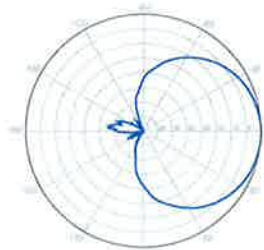
Replace "X" with desired electrical downtilt

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 <sup>2</sup> Side: 0.24 m <sup>2</sup>	Front: 5.5 ft <sup>2</sup> Side: 2.6 ft <sup>2</sup>		
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		

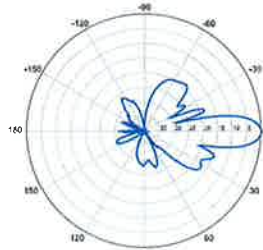


**BXA-70063-6CF-EDIN-X**



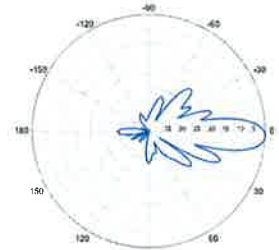
Horizontal | 750 MHz

**BXA-70063-6CF-EDIN-0**

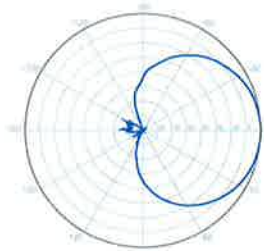


0° | Vertical | 750 MHz

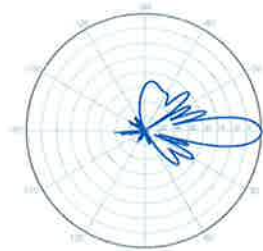
**BXA-70063-6CF-EDIN-2**



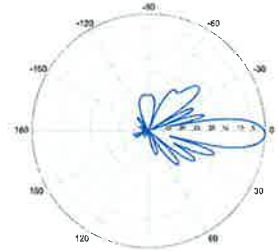
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



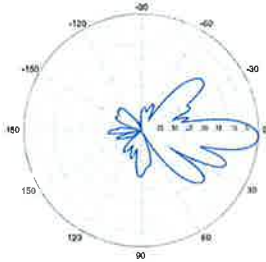
2° | Vertical | 850 MHz

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**

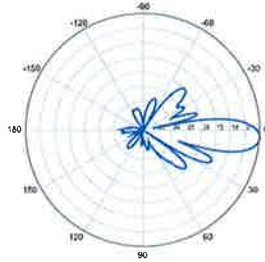
X-Pol | FET Panel | 63° | 14.5 dBd

**BXA-70063-6CF-EDIN-3**



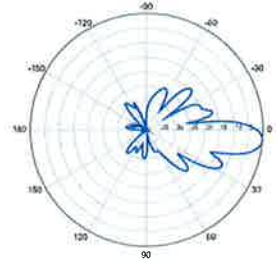
3° | Vertical | 750 MHz

**BXA-70063-6CF-EDIN-4**

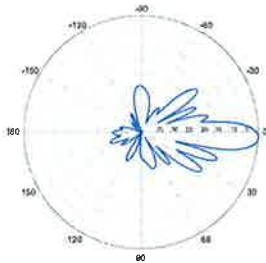


4° | Vertical | 750 MHz

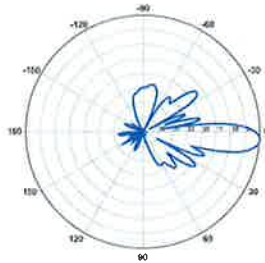
**BXA-70063-6CF-EDIN-5**



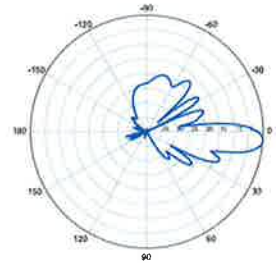
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

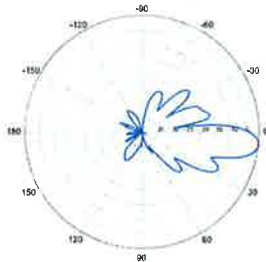


4° | Vertical | 850 MHz



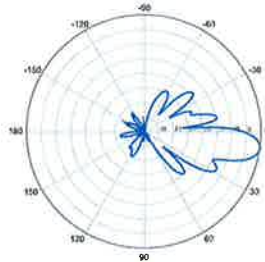
5° | Vertical | 850 MHz

**BXA-70063-6CF-EDIN-6**



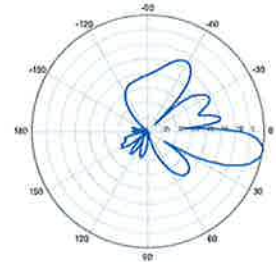
6° | Vertical | 750 MHz

**BXA-70063-6CF-EDIN-8**

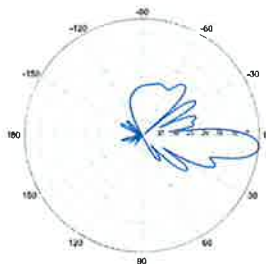


8° | Vertical | 750 MHz

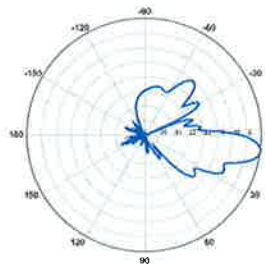
**BXA-70063-6CF-EDIN-10**



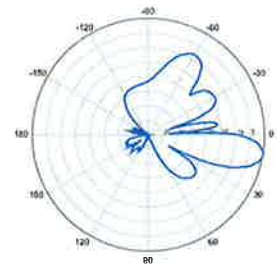
10° | Vertical | 750 MHz



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.

# **TAB 2**

		General		Power		Density							
Site Name: East Glastonbury 2													
Tower Height: Verizon @ 167ft													
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*VoiceStream	4	470	177	0.0216	1930	1.0000	2.16%						
*Pocket (now MetroPCS)	3	631	147	0.0315	2130	1.0000	3.15%						
*Sprint CDMA/LTE	2	625	157.4	0.0181	1900	1.0000	1.81%						
*AT&T UMTS	2	565	137	0.0216	880	0.5867	3.69%						
*AT&T UMTS	2	875	137	0.0335	1900	1.0000	3.35%						
*AT&T GSM	1	283	137	0.0054	880	0.5867	0.92%						
*AT&T GSM	4	525	137	0.0402	1900	1.0000	4.02%						
*AT&T LTE	1	1313	137	0.0252	734	0.4893	5.14%						
<b>Verizon PCS</b>	<b>11</b>	<b>229</b>	<b>167</b>	<b>0.0325</b>	<b>1970</b>	<b>1.0000</b>	<b>3.25%</b>						
<b>Verizon Cellular</b>	<b>9</b>	<b>243</b>	<b>167</b>	<b>0.0282</b>	<b>869</b>	<b>0.5793</b>	<b>4.87%</b>						
<b>Verizon AWS</b>	<b>1</b>	<b>1750</b>	<b>167</b>	<b>0.0226</b>	<b>2145</b>	<b>1.0000</b>	<b>2.26%</b>						
<b>Verizon 700</b>	<b>1</b>	<b>802</b>	<b>167</b>	<b>0.0103</b>	<b>698</b>	<b>0.4653</b>	<b>2.22%</b>						
								<b>36.85%</b>					
* Source: Siting Council													

# TAB 3





FDH Engineering, Inc., 6521 Meridien Dr. Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

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

**176' Monopole Tower**

**SBA Site Name: Glastonbury  
SBA Site ID: CT02216-S-03  
Verizon Site Name: East Glastonbury 2  
FDH Project Number 1342011400  
Analysis Results**

Tower Components	63.6%	Sufficient
Foundation	64.9%	Sufficient

Prepared By:

Adam Bryan, EI  
Project Engineer

Reviewed By:

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

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

July 12, 2013



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

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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 Glastonbury, 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, foundation dimensions, and member sizes was obtained from:

- Paul J. Ford & Co. (Job No. 29200-887) original design drawings dated June 19, 2000
- FDH Engineering, Inc. (Project No. 1204838EG1) Geotechnical Evaluation of Subsurface Conditions dated August 13, 2012
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 CBC* is 80 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

## Conclusions

With the existing and proposed antennas from Verizon in place at 167 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 foundation was designed and constructed to support the original design reactions (see Paul J. Ford & Co. Job No. 29200-887), the foundation should have the necessary capacity to support 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 existing coax should be used with the proposed loading.
2. The existing diplexers should be installed directly behind the existing and proposed 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	Coax and Lines <sup>1</sup>	Carrier	Mount Elevation (ft)	Mount Type
177	(6) EMS RR90-17-02DP (12) MHAs	(12) 1-5/8"	T-Mobile	176	(3) T-Arms
167	(4) Antel LPA-80063/4CF (3) Antel BXA-70063/4CF (3) Antel BXA-171085/8BF (2) RFS APL868013 (6) FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	167	(1) Low Profile Platform
157	(12) Decibel DB980H90E-M	(12) 1-5/8"	Sprint	157	(1) Low Profile Platform
147	(3) Kathrein 742 213	(6) 1-5/8"	Pocket Communications	147	Flush mount
137	(6) Powerwave 7770.00 (3) KMW AM-X-CD-16-65-00T (6) Powerwave LGP21401 TMAs (6) Ericsson RRUS-11 RRUs (6) Powerwave LGP21903 Diplexers (1) Raycap DC-48-60-18-8F Surge Arrestor (3) Andrew ABT-DFDM-ADBH	(12) 1-5/8" (1) 3" Flex Conduit	AT&T	137	(1) Low Profile Platform

1. Coax installed inside the pole shaft unless otherwise noted.

**Proposed Loading:**

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
167	(4) Antel LPA-80063/4CF (3) Antel BXA-70063/6CF (3) Antel BXA-171085/8BF (2) RFS APL868013 (6) FD9R6004/2C-3L Diplexers	(12) 1-5/8"	Verizon	167	(1) 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
Base Plate	50 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	176 - 131.25	Pole	TP32.817x24x0.25	41.4	Pass
L2	131.25 - 86.5	Pole	TP41.133x31.4796x0.375	58.1	Pass
L3	86.5 - 42.75	Pole	TP49.002x39.3487x0.4375	63.6	Pass
L4	42.75 - 0	Pole	TP56.55x46.8957x0.5	63.3	Pass
		Anchor Bolts	(24) 2.25"Ø w/ BC = 64"	52.0	Pass
		Base Plate	66" SQ PL x 3" thk.	47.2	Pass

\*Capacities include 1/3 allowable stress increase for wind.

**Table 4 - Maximum Base Reactions**

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	51 k*	47 k
Shear	27 k	38 k
Moment	3,310 k-ft	5,100 k-ft

\*Per our experience, the Axial load should not control the analysis.

## **GENERAL COMMENTS**

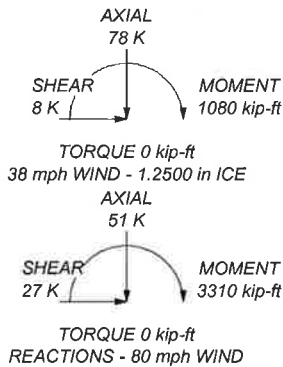
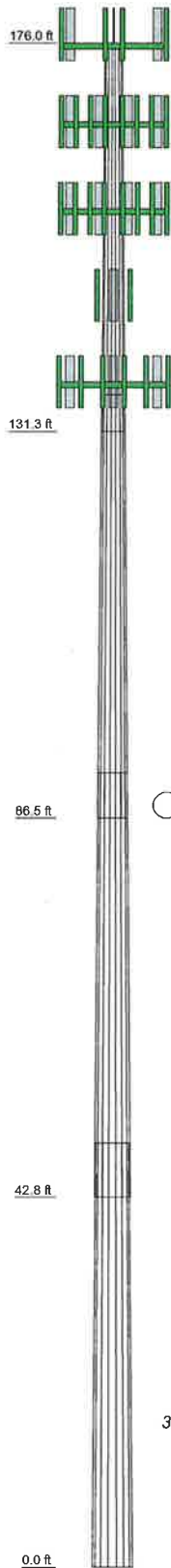
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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)	44.75	49.00	49.00	49.00	
Number of Slides	18	18	18	18	
Thickness (in)	0.2500	0.3750	0.4375	0.5000	
Socket Length (ft)	4.25	5.25	6.25		
Top Dia (in)	24.0000	31.4796	39.3467	46.8657	
Bot Dia (in)	32.8170	41.1330	49.0020	56.5500	
Grade			A572-55		
Weight (K)	3.4	7.1	10.1	13.6	34.2



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	176	742 213 w/ Mount Pipe	147
(2) RR90-17-02DP w/ Mount Pipe	176	742 213 w/ Mount Pipe	147
(2) RR90-17-02DP w/ Mount Pipe	176	742 213 w/ Mount Pipe	147
(2) RR90-17-02DP w/ Mount Pipe	176	(2) 7770.00 W/ Mount Pipe	137
(4) MHA	176	(2) 7770.00 W/ Mount Pipe	137
(4) MHA	176	(2) 7770.00 W/ Mount Pipe	137
(4) MHA	176	KMW AM-X-CD-16-65-00T w/ Mount Pipe	137
(3) T-Arms	176		
(2) LPA-80063/4CF w/ Mount Pipe	167	KMW AM-X-CD-16-65-00T w/ Mount Pipe	137
LPA-80063/4CF w/ Mount Pipe	167		
LPA-80063/4CF w/ Mount Pipe	167	KMW AM-X-CD-16-65-00T w/ Mount Pipe	137
BXA-70063/6CF w/ Mount Pipe	167		
BXA-70063/6CF w/ Mount Pipe	167	(2) LGP21401 TMA	137
BXA-70063/6CF w/ Mount Pipe	167	(2) LGP21401 TMA	137
BXA-171085/8BF w/ Mount Pipe	167	(2) LGP21401 TMA	137
BXA-171085/8BF w/ Mount Pipe	167	(2) LGP21903 Diplexer	137
BXA-171085/8BF w/ Mount Pipe	167	(2) LGP21903 Diplexer	137
APL868013 w/ Mount Pipe	167	(2) LGP21903 Diplexer	137
APL868013 w/ Mount Pipe	167	(2) RRUS-11	137
(2) FD9R6004/2C-3L diplexer	167	(2) RRUS-11	137
(2) FD9R6004/2C-3L diplexer	167	(2) RRUS-11	137
(2) FD9R6004/2C-3L diplexer	167	ABT-DFDM-ADBH	137
Low Profile Platform	167	ABT-DFDM-ADBH	137
(4) DB980H90E-M w/ Mount Pipe	157	ABT-DFDM-ADBH	137
(4) DB980H90E-M w/ Mount Pipe	157	Raycap DC-48-60-18-8F Surge Arreslor	137
(4) DB980H90E-M w/ Mount Pipe	157	Low Profile Platform	137
Low Profile Platform	157		

### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
3. Deflections are based upon a 50 mph wind.
4. Tower is located in Hartford County, Connecticut
5. TOWER RATING: 63.6%

<p>Tower Analysis</p>	<b>FDH Engineering, Inc.</b> 6521 Meridien Drive, Suite 107 Raleigh, NC 27616 Phone: 919-7551012 FAX: 919-7551031		<b>Job: Glastonbury, CT02216-S-03</b> Project: 1342011400	
	Client: SBA Network Services, Inc.		Drawn by: Adam Bryan	App'd:
	Code: TIA/EIA-222-F		Date: 07/12/13	Scale: NTS
	Path:			Dwg No. E-1