ROBINSON & COLE LLP

KENNETH C. BALDWIN

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Also admitted in Massachusetts

April 22, 2014

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

Re: **Notice of Exempt Modification – Facility Modification**
1 Hartford Square, New Britain, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 140-foot level of the existing 176-foot tower at 1 Hartford Square in New Britain, Connecticut (the "Property"). The tower is owned by SBA. The Council approved Cellco's use of this tower in 2004. Cellco now intends to replace three (3) of its existing antennas with three (3) model 800 10735V01, 700 MHz antennas at the same height on the tower. Included in Attachment 1 is the specification sheet for Cellco's proposed 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 Erin Stewart, Mayor of the City of New Britain. A copy of this letter is being sent to Hartford Square Associates, the owner of the Property.

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 three (3) replacement antennas will be located at the 145-foot level on the 188-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 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 replacement antennas 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 RF emissions calculation for the modified facility is 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 Report included in Attachment 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:
Erin Stewart, New Britain Mayor
Hartford Square Associates
Sandy M. Carter

ATTACHMENT 1

KATHREIN
SCALA DIVISION

800 10735V01

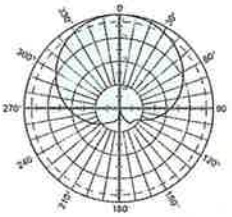
65° Single Band Panel Antenna, 6'

	Antenna
Single Band (MHz)	**698–894**
Dual Polarization	**X**
HPBW	**65°**
Adj. Electrical Downtilt Manual or optional remote control	**0°–10°**

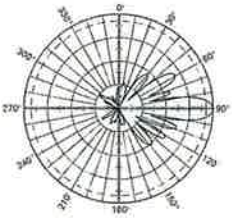
General specifications:

Frequency range	698–894 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° and -45°
Maximum input power	500 watts per input (at 50°C)
Connector	2 x 7-16 DIN female (long neck) (bottom mounted)
Isolation	>30 dB
Electrical downtilt	0–10 degrees (continuously adjustable)
See reverse for order information.	

698–894 MHz



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization
0°–10° electrical downtilt

Specifications:

	698–806 MHz	824–894 MHz
Gain	15.5 dBi	16 dBi
Front-to-back ratio	>30 dB (co-polar) 35 dB (average)	>30 dB (co-polar) 35 dB (average)
+45° and -45° polarization horizontal beamwidth	67° (half-power)	65° (half-power)
+45° and -45° polarization vertical beamwidth	11.3° (half-power)	10° (half-power)
Min. sidelobe suppression for first sidelobe above main beam average	0° 5° 10° T 16 17 17 dB 16 19 20 dB	0° 5° 10° T 18 17 16 dB 20 20 20 dB
Cross polar ratio Main direction 0° Sector ±60°	25 dB (typical) >11 dB, Average: 15 dB	25 dB (typical) >11 dB, Average: 15 dB

IRT specifications:

Logical interface ex factory[1]	3GPP/AISG 2.0
Protocols	AISG 1.1 and 3GPP/AISG 2.0 compliant
Hardware interface[2]	2 x 8 pin connector acc. IEC 60130-9; according to AISG: – IRT in (male): Control / Daisy chain in – IRT in (female): Daisy chain out
Power supply	10–30 V
Power consumption	<1 watt (standby) <8.5 watts (motor activated)
Adjustment time (full range)	40 sec.
Adjustment cycles	>50,000
Certification	FCC 15.107 Class B Computing Devices

[1] The protocol of the logical interface can be switched from 3GPP/AISG 2.0 to AISG 1.1 and vice versa with a vendor specific command. Start-up operation of the RCU 86010149 is possible in an RET system supporting AISG 1.1 or supporting 3GPP/AISG 2.0 after performing a layer 2 reset before address assignment. The protocol can also be changed as follows: AISG 1.1 to 3GPP: Enter "3GPP" into the additional data filed "Installer's ID" and perform a layer 7 reset or a power reset. 3GPP to AISG 1.1: Enter "AISG 1" into the additional datafield "Installer's ID" and perform a layer 2 reset or a power reset. After switching the protocol any other information can be entered into the "Installer's ID" field.

[2] The tightning torque for fixing the connector must be 0.5 – 1.0 Nm ("hand-tightened"). The connector should be tightened by hand only!

11387-D Oct 19, 2012
936.4273/a

RoHS Lead-Free

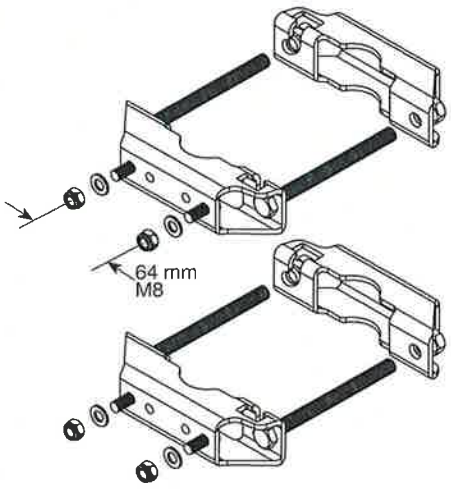
AISG Antenna Interface Standards Group

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

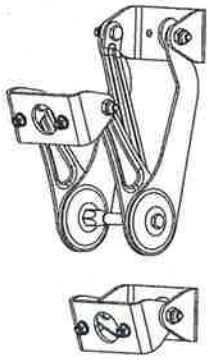
KATHREIN
SCALA DIVISION

800 10735V01

65° Single Band Panel Antenna, 6'



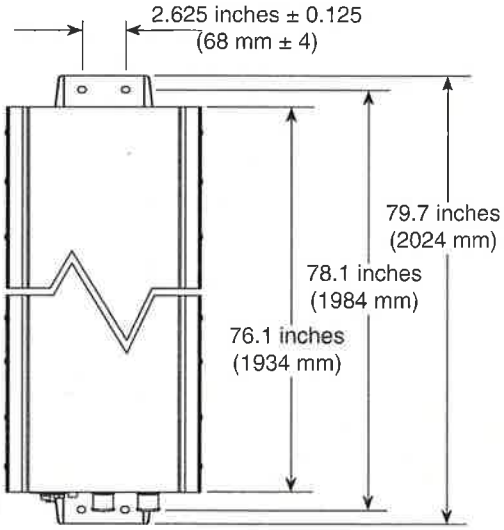
Mounting Brackets
for use with 2-point mount antennas
Mast dia. 2–4.5 inches (50–115 mm)
Weight: 4.4 lb (2 kg)



Mechanical Tilt Brackets
for use with 2-point mount antennas
Weight: 9.5 lb (4.3 kg)
(Model 850 10008)

Mechanical specifications:

Weight	30,9 lb (14 kg)	35.3 lb (16 kg) clamps included
Dimensions H x W x D	76.1 x 11.9 x 3.9 inches (1934 x 303 x 99 mm)	
Wind load Front/Side/Rear Mounting category	at 93 mph (150kph) 203 lbf / 70 lbf / 232 lbf (900 N / 310 N / 1030 N) H (Heavy)	
Wind survival rating*	150 mph (240 kph)	
Shipping dimensions	81.1 x 12.4 x 4.5 inches (2060 x 315 x 115 mm)	
Shipping weight	39.7 lb (18 kg)	
Mounting bracket	2-point hot-dip galvanized with stainless steel hardware for 2 to 4.5 inch (50 to 115 mm) OD masts.	

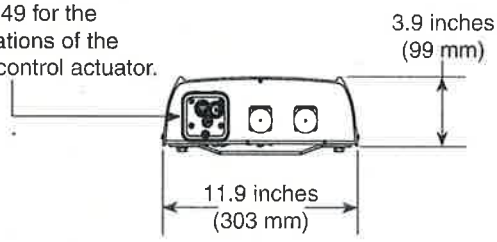


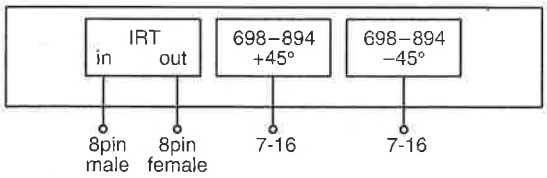
KATHREIN 860 10149

FC Tested To Comply With FCC Standards

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: Refer to part number 860 10149 for the specifications of the remote control actuator.





Order Information:

Model	Description
800 10735V01	Antenna with mounting bracket 0°–10° electrical downtilt
800 10735V01K	Antenna with mounting bracket and mechanical tilt bracket 0°–10° electrical downtilt

*Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

ATTACHMENT 2

	General	Power	Density					
Site Name: New Britain 2								
Tower Height: 176Ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Nextel	9	100	172	0.0109	851	0.5673	1.93%	
*Clearwire	2	153	172	0.0037	2496	1.0000	0.37%	
*Clearwire	1	211	172	0.0026	11 GHz	1.0000	0.26%	
*T-Mobile GSM/UMTS	2	12	152	0.0004	1950	1.0000	0.04%	
*T-Mobile LTE	2	24	152	0.0007	2100	1.0000	0.07%	
*T-Mobile UMTS	2	12	152	0.0004	2100	1.0000	0.04%	
*MetroPCS CDMA	3	727	130	0.0464	2135	1.0000	4.64%	
*MetroPCS LTE	1	1200	130	0.0255	2130	1.0000	2.55%	
*AT&T UMTS	2	565	162	0.0155	880	0.5867	2.64%	
*AT&T UMTS	2	1077	162	0.0295	1900	1.0000	2.95%	
*AT&T GSM	1	283	162	0.0039	880	0.5867	0.66%	
*AT&T GSM	4	646	162	0.0354	1900	1.0000	3.54%	
*AT&T LTE	1	1313	162	0.0180	734	0.4893	3.68%	
Verizon	**11**	**408**	**140**	**0.0823**	**1970**	**1.0000**	**8.23%**	
Verizon	**9**	**386**	**140**	**0.0637**	**869**	**0.5793**	**11.00%**	
Verizon	**1**	**1750**	**140**	**0.0321**	**2145**	**1.0000**	**3.21%**	
Verizon	**1**	**1050**	**140**	**0.0193**	**698**	**0.4653**	**4.14%**	
								49.95%
* 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.

176' Self-Support Tower

SBA Site Name: New Britain 2
SBA Site ID: CT04382-S-00
Verizon Site ID: 119626
Verizon Site Name: New Britain 2 CT

FDH Project Number 1422CK1400

Analysis Results

Tower Components	86.9%	Sufficient
Foundation	71.1%	Sufficient

Prepared By:

Jarel Duncan

Jarel Duncan, EI
Project Engineer

Reviewed By:

Bradley R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

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

February 10, 2014

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing self-supported tower located in New Britain, 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*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, and foundation dimensions was obtained from:

- Rohn Industries, Inc. (Eng. File No. 44545AE) Tower Assembly Drawings dated August 18, 2000
- Rohn Industries, Inc. (Eng. File No. 44545AE) Mat Foundation Detail dated July 26, 2000
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* 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 140 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Rohn Industries, Inc. Eng. File No. 44545AE), 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 Connecticut Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. Coax lines must be installed as shown in **Figure 1**.
2. The existing diplexers should be installed directly behind the existing/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	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
172	(9) Decibel DB844H90E-XY (3) Kathrein 840 10054 (4) Andrew VHLP2.5 Dishes (3) Dragonwave Horizon Duo ODUs (3) Samsung RRUs	(12) 1 1/4" (5) 1/2" (6) 5/16"[1]	Clearwire/Nextel	172	(3) T-Frames
162[2]	(6) Powerwave 7770 (6) KMW AM-X-CD-16-65-00T (6) Powerwave LGP21401 TMAs (6) Powerwave LGP13519 Diplexers (6) Ericsson RRH-11 RRUs	(12) 1 5/8" (1) 10mm Fiber (3) 12 Gage	AT&T	162	(3) T-Frames
152	(6) RFS APX16PV-16PVL (6) OneBase Twin Dual Duplex TMAs	(18) 1 5/8"	T-Mobile	152	(3) T-Frames
140	(2) Antel BXA-70063/6CF (1) Antel BXA-70040/6CF (3) Antel BXA-185090/8CF (3) Antel BXA-171063-12CF (3) Antel BXA-80080-4CF (6) RFS FD9R6004/2C-3L Diplexers (3) Alcatel Lucent RRH 2x40 AWS RRUs (1) GPS Antenna (1) RFS DB-T1-6Z-8AB-0Z Distribution Box	(12) 1 5/8" (1) 1/2" (1) 1 5/8" Hybriflex	Verizon	140	(3) T-Frames
130	(3) Kathrein 742 213	(6) 1 5/8"	Pocket Communications	130	Direct Mount

1. Clearwire/Nextel's existing (6) 5/16" coax are installed inside (2) 2" conduits.
2. AT&T's existing (1) 10mm fiber cable and (3) 12 gage coax are installed inside (1) 3" flex conduit.

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
140	(1) GPS Antenna (3) Kathrein 800 10735V01 (3) Antel BXA-185090-8CF (3) Antel BXA-171063-12CF (3) Antel BXA-80080-4CF (6) RFS FD9R6004/2C-3L Diplexers (3) Alcatel Lucent RRH 2x40 AWS RRUs (1) RFS DB-T1-6Z-8AB-0Z Distribution Box	(12) 1 5/8" (1) 1/2" (1) 1 5/8" Hybriflex	Verizon	140	(3) T-Frames

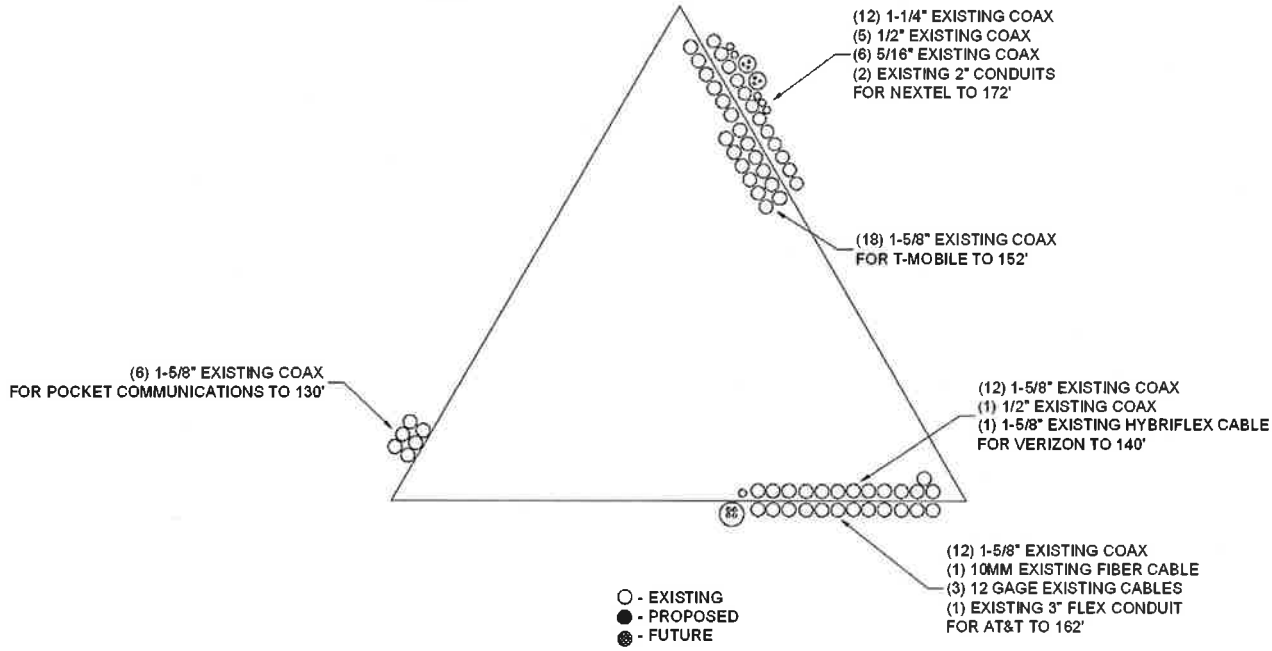


Figure 1 – Coax Layout

RESULTS

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

Table 2 - Material Strength

Member Type	Yield Strength
Legs	50 ksi
Bracing	36 ksi & 50 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. **Table 5** displays the maximum antennas rotations at service wind speeds.

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
T1	176 - 160	Leg	ROHN 3 EH	13.0	Pass
		Diagonal	L2x2x1/4	18.3 36.8 (b)	Pass
		Top Girt	L2x2x1/4	3.4 4.5 (b)	Pass
T2	160 - 140	Leg	ROHN 4 EH	31.2	Pass
		Diagonal	L2x2x3/16	35.5 62.6 (b)	Pass
T3	140 - 120	Leg	ROHN 5 EH	39.7	Pass
		Diagonal	L2x2x3/16	72.9 85.2 (b)	Pass
T4	120 - 100	Leg	ROHN 6 EHS	49.7	Pass
		Diagonal	L2 1/2x2 1/2x3/16	64.9 81.3 (b)	Pass
T5	100 - 80	Leg	ROHN 6 EH	49.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	86.9	Pass
T6	80 - 60	Leg	ROHN 6 EH	58.5	Pass
		Diagonal	L3x3x1/4	51.3	Pass
T7	60 - 40	Leg	ROHN 8 EHS	58.7	Pass
		Diagonal	L3 1/2x3 1/2x1/4	54.7 56.9 (b)	Pass
T8	40 - 20	Leg	ROHN 8 X-STR	50.5 50.9 (b)	Pass
		Diagonal	L3 1/2x3 1/2x1/4	68.1	Pass
T9	20 - 0	Leg	ROHN 8 EH	55.8	Pass
		Diagonal	L4x4x1/4	57.5 63.4 (b)	Pass

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

Table 4 - Maximum Base Reactions

Load Type	Direction	Current Analysis *(TIA/EIA-222-F)*	Original Design *(TIA/EIA-222-F)*
Individual Foundation	Horizontal	25 k	34 k
	Uplift	211 k	312 k
	Compression	249 k	365 k
Overturning Moment	---	4,244 k-ft	5,964 k-ft

Table 5 – Maximum Antenna Rotations at Service Wind Speeds

Centerline Elevation (ft)	Antenna	Tilt (deg)*	Twist (deg)*
172	(4) Andrew VHLP2.5 Dishes	0.2576	0.0439

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

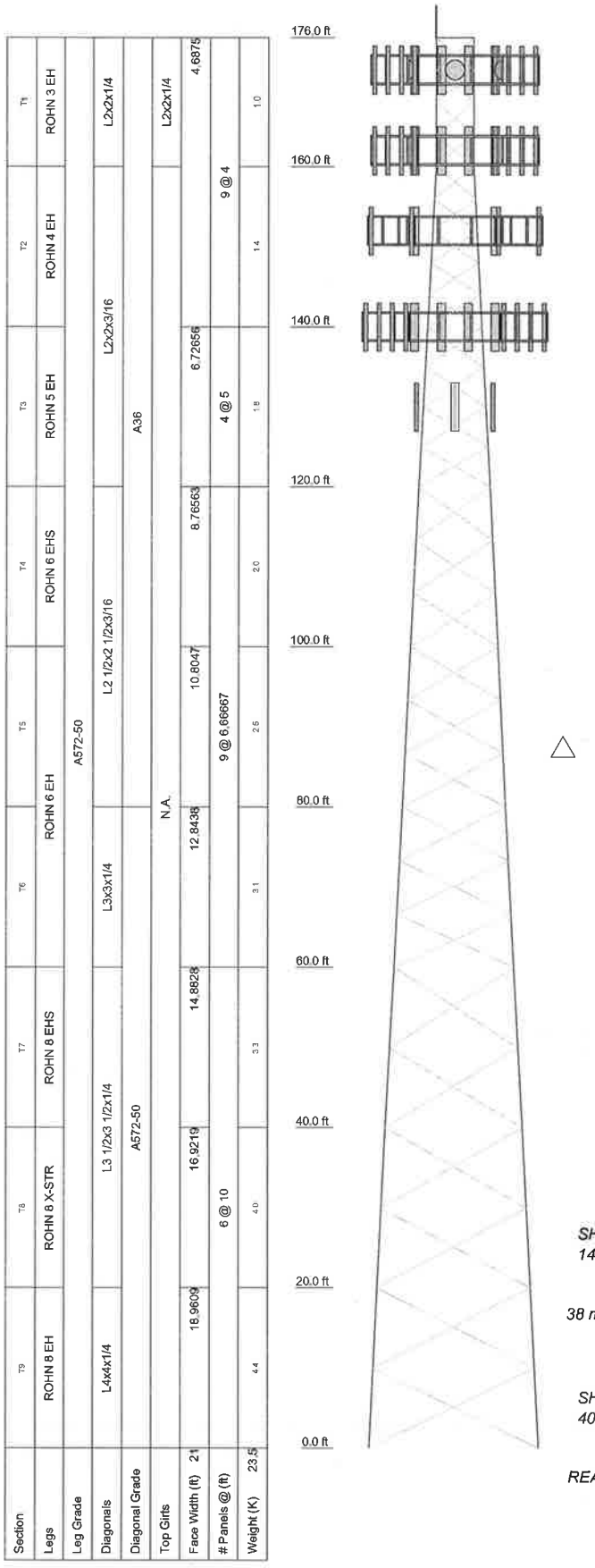
GENERAL COMMENTS

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



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	176	(2) OneBase Twin Dual Duplex TMAs	152
HORIZON DUO	172	(2) OneBase Twin Dual Duplex TMAs	152
HORIZON DUO	172	(2) OneBase Twin Dual Duplex TMAs	152
HORIZON DUO	172	(3) T-Frames	152
Samsung RRU	172	(2) RFS APX16PV-16PVL w/ Mount Pipe	152
Samsung RRU	172		
Samsung RRU	172	(2) RFS APX16PV-16PVL w/ Mount Pipe	152
(3) DB844H90E-XY w/Mount Pipe	172	(2) RFS APX16PV-16PVL w/ Mount Pipe	152
(3) DB844H90E-XY w/Mount Pipe	172		
(3) DB844H90E-XY w/Mount Pipe	172	(3) T-Frames	140
840 10054 w/Mount Pipe	172	800 10735V01 w/ Mount Pipe	140
840 10054 w/Mount Pipe	172	800 10735V01 w/ Mount Pipe	140
840 10054 w/Mount Pipe	172	800 10735V01 w/ Mount Pipe	140
(3) T-Frames	172	GPS Antenna	140
(2) Andrew VHLP2.5	172	BXA-185090-8CF w/Mount Pipe	140
Andrew VHLP2.5	172	BXA-185090-8CF w/Mount Pipe	140
Andrew VHLP2.5	172	BXA-185090-8CF w/Mount Pipe	140
(2) Powerwave 7770 w/ Mount Pipe	162	BXA-171063/12CF w/ Mount Pipe	140
(2) Powerwave 7770 w/ Mount Pipe	162	BXA-171063/12CF w/ Mount Pipe	140
(2) Powerwave 7770 w/ Mount Pipe	162	BXA-171063/12CF w/ Mount Pipe	140
(2) Powerwave LGP21401 TMA	162	BXA-80080/4CF w/ Mount Pipe	140
(2) Powerwave LGP21401 TMA	162	BXA-80080/4CF w/ Mount Pipe	140
(2) Powerwave LGP21401 TMA	162	BXA-80080/4CF w/ Mount Pipe	140
(2) Powerwave LGP13519 Diplexer	162	(2) FD9R6004/2C-3L Diplexer	140
(2) Powerwave LGP13519 Diplexer	162	(2) FD9R6004/2C-3L Diplexer	140
(2) Powerwave LGP13519 Diplexer	162	(2) FD9R6004/2C-3L Diplexer	140
(2) RRH-11	162	RRH2X40-AWS	140
(2) RRH-11	162	RRH2X40-AWS	140
(2) RRH-11	162	RRH2X40-AWS	140
(3) T-Frames	162	DB-T1-6Z-8AB-0Z Distribution Box	140
(2) KMW AM-X-CD-16-65-00T w/ Mount Pipe	162	742 213 w/ Mount Pipe	130
(2) KMW AM-X-CD-16-65-00T w/ Mount Pipe	162	742 213 w/ Mount Pipe	130
(2) KMW AM-X-CD-16-65-00T w/ Mount Pipe	162	742 213 w/ Mount Pipe	130

MATERIAL STRENGTH

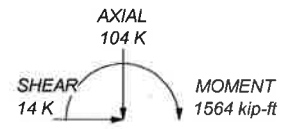
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

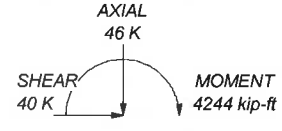
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 86.9%

MAX. CORNER REACTIONS AT BASE:
DOWN: 249 K
SHEAR: 25 K

UPLIFT: -211 K
SHEAR: 22 K



TORQUE 6 kip-ft
38 mph WIND - 1.0000 in ICE



TORQUE 24 kip-ft
REACTIONS - 80 mph WIND

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

Job: New Britain 2, CT04382-S-00			
Project: 1422CK1400			
Client: SBA Network Services, Inc.	Drawn by: Jarel Duncan	App'd:	
Code: TIA/EIA-222-F	Date: 02/10/14	Scale: NTS	
Path:		Dwg No. E-1	