Robinson+Cole

KENNETH C. BALDWIN

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Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
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Also admitted in Massachusetts

April 10, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
623 Pine Street, Bridgeport, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains fifteen (15) wireless telecommunications antennas at the 110-foot level on an existing 250-foot tower at 623 Pine Street in Bridgeport (the "Property"). The tower and underlying property are owned Radio Communications Corp. Cellco's use of the tower was approved by the Council in 2000. Cellco now intends to modify its facility by replacing nine (9) of its existing antennas with three (3) model 800 10734V01, 700 MHz antennas; three (3) model HBXX-6516DS-VTM, 1900 MHz antennas; and three (3) model HBXX-6516DS-VTM, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install three (3) remote radio heads ("RRHs") behind its 1900 MHz antennas; six (6) coaxial cable diplexers; and one (1) HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs, diplexers and HYBRIFLEX™ cable.

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 William Finch, Mayor of the City of Bridgeport. A copy of this letter is also being sent to Radio Communications Corp., 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 replacement antennas, RRHs and diplexers will be installed at the 110-foot level of the 250-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 General Power Density table with Cellco's 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:
William Finch, Bridgeport Mayor
Radio Communications Corp.
Tim Parks

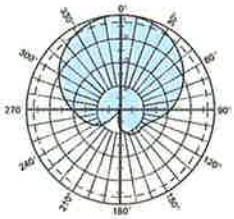
ATTACHMENT 1

KATHREIN
SCALA DIVISION

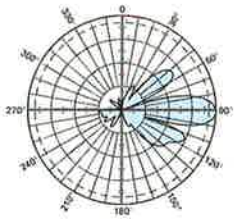
800 10734V01
700 MHz Single Band 4', 65 Degree Antenna RET

Kathrein's X-polarized antennas are designed for use in digital polarization diversity systems.

- X-polarized (+45° and -45°).
- UV resistant fiberglass radomes.
- Wideband vector dipole technology.
- DC Grounded metallic parts for impulse suppression.
- RET motor housed inside the radome and field replaceable.



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization
0°–16° electrical downtilt

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	0–16 degrees (continuously adjustable)
See reverse for order information.	

Specifications:	**698–806 MHz**	**824–894 MHz**
Gain	14.2 dBi	14.8 dBi
Front-to-back ratio	>30 dB (co-polar) 32 dB (average)	>30 dB (co-polar) 33 dB (average)
+45° and -45° polarization horizontal beamwidth	68° (half-power)	65° (half-power)
+45° and -45° polarization vertical beamwidth	16° (half-power)	14.8° (half-power)
Min. sidelobe suppression for first sidelobe above main beam average	0° 8° 16° T 16 17 17 dB 16 19 20 dB	0° 8° 16° T 18 17 16 dB 20 20 20 dB
Cross polar ratio Main direction 0° Sector ±60°	24 dB (typical) >10 dB, Average: 15 dB	23 dB (typical) >10 dB, Average: 16 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!

TÜV
11385-A
936.4272

RoHS
Lead-Free
Oct 6, 2011

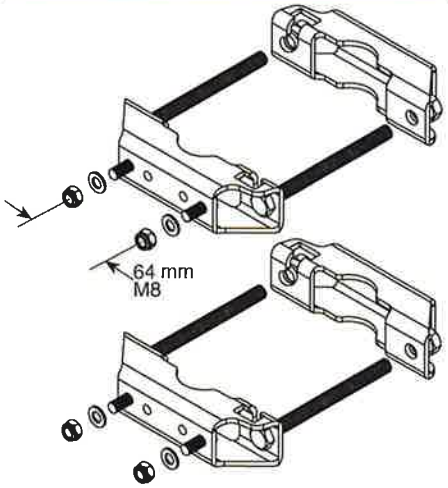
AISG
Antenna Interface Standards Group

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 10734V01

700 MHz Single Band 4', 65 Degree Antenna RET

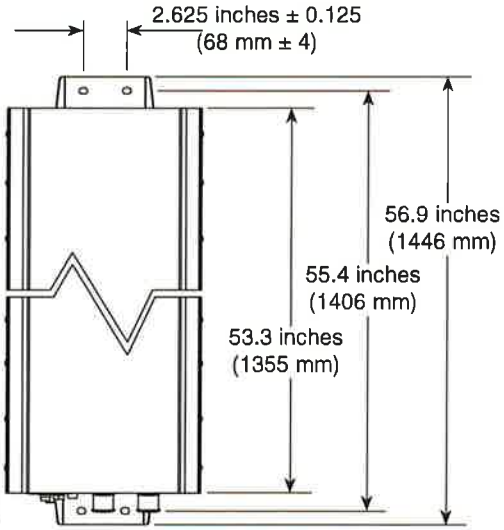


Mounting Brackets
for use with 2-point mount antennas
Mast dia. 2–4.5 inches (50–115 mm)
Weight: 4.4 lb (2 kg)

Mechanical Tilt Brackets
for use with 2-point mount antennas
Weight: 7.4 lb (3.7 kg)
(Model 850 10013)

Mechanical specifications:

Weight	24.3 lb (11 kg)	28.7 lb (13 kg) clamps included
Dimensions H x W x D	53.3 x 11.9 x 3.9 inches (1355 x 303 x 99 mm)	
Wind load Front/Side/Rear Mounting category	at 93 mph (150kph) 140 lbf / 45 lbf / 160 lbf (620 N) / (200 N) / (710 N) M (Medium)	
Wind survival rating*	150 mph (240 kph)	
Shipping dimensions	56.3 x 12.4 x 4.5 inches (1430 x 315 x 115 mm)	
Shipping weight	33.1 lb (15 kg)	
Mounting bracket	2-point hot-dip galvanized with stainless steel hardware for 2 to 4.5 inch (50 to 115 mm) OD masts.	

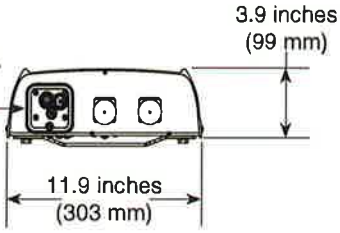


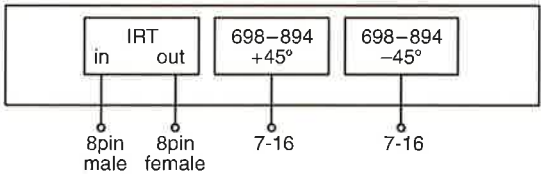
KATHREIN 860 10149

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 10734V01	Antenna with mounting bracket 0°–16° electrical downtilt
800 10734V01K	Antenna with Antenna with mounting bracket and mechanical tilt bracket 0°–16° 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

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

HBXX-6516DS-VTM

Andrew® Quad Port Teletilt® Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Each DualPol® array can be independently adjusted for greater flexibility
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site collocations and tough zoning restrictions
- Great solution to maximize network coverage and capacity
- The values presented on this datasheet have been calculated based on N-P-BASTA White Paper version 9.6 by the NGMN Alliance

Electrical Specifications

Frequency Band, MHz	**1710–1880**	**1850–1990**	**1920–2180**
Gain by all Beam Tilts, average, dBi	17.2	17.2	17.5
Gain by all Beam Tilts Tolerance, dB	±0.3	±0.3	±0.5
Gain by Beam Tilt, average, dBi	0 ° | 17.0 5 ° | 17.3 10 ° | 17.0	0 ° | 17.1 5 ° | 17.4 10 ° | 17.0	0 ° | 17.4 5 ° | 17.7 10 ° | 17.2
Beamwidth, Horizontal, degrees	67	66	64
Beamwidth, Horizontal Tolerance, degrees	±2.7	±2.3	±3.5
Beamwidth, Vertical, degrees	7.5	7.0	6.6
Beamwidth, Vertical Tolerance, degrees	±0.5	±0.4	±0.4
Beam Tilt, degrees	0–10	0–10	0–10
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	26	26	26
CPR at Boresight, dB	22	22	22
CPR at Sector, dB	9	9	9
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® single band, quad
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz
Number of Ports, all types	4

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female

PCS RF MODULES
RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

		RRH2x60
RF Output Power		2x60W
Instantaneous Bandwidth		20MHz
Transmitter		2 TX
Receiver	1900 HW version	2 Branch RX – LA6.0.1
	1900A HW version	4 Branch RX – LR13.3
Features		AISG 2.0 for RET/TMA
		Internal Smart Bias-T
Power		-48VDC
CPRI Ports		2 CPRI Rate 3 Ports
External Alarms		4 External User Alarms
Monitor Ports		TX
Environmental		GR487 Compliance
RF Connectors		7/16 DIN (top mounted)

** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW
RRH2X60 - HW CHARACTERISTICS

LR14.3

	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w)x 9.4" (d)**
Weight	55lb**

**- Includes solar shield but not mounting brackets (8 lbs.)

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

CBC78-DF

Crossband Coupler, 698–787 MHz/Cellular

Electrical Specifications

dc Pass-through	Band 1 | Band 2
3rd Order IMD Test Method	Two +43 dBm carriers
3rd Order IMD, maximum	-110 dBm
Isolation Between Paths, minimum	50.0 dB
Lightning Surge Current	10 kA
Lightning Surge Current Waveform	8/20 waveform
Return Loss, minimum	22.00 dB
Return Loss, typical	24.00 dB
Spurious Signals/2nd Order Harmonics, minimum	40 dB
Spurious Signals/3rd Order Harmonics, minimum	30 dB

Electrical Specifications (Branch 1)

Operating Frequency Band	698 – 787 MHz
Insertion Loss, maximum	0.25 dB
Output Power, maximum composite	500 W
Peak Power	5 kW
Total Group Delay, maximum	25 ns

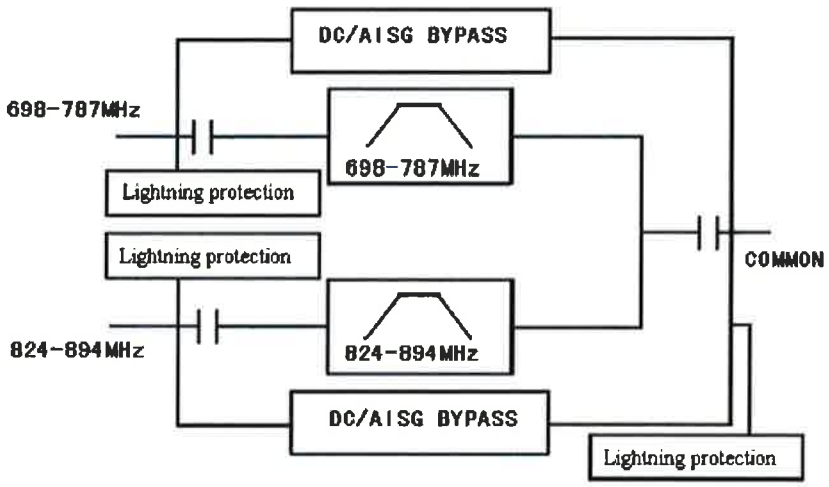
Electrical Specifications (Branch 2)

Operating Frequency Band	824 – 894 MHz
Insertion Loss, maximum	0.25 dB
Output Power, maximum composite	500 W
Peak Power	5 kW
Total Group Delay, maximum	25 ns

Product Specifications

CBC78-DF

Block Diagram



General Specifications

Product Type	Diplexer
Application	Indoor | Outdoor
Includes	Mounting hardware

Mechanical Specifications

Color	Gray
Connector Interface	7-16 DIN Female
Connector Interface Style	Long neck
Ground Screw Diameter	0.25 in

Environmental Specifications

Ingress Protection Test Method	IEC 60529:2001, IP67
Operating Temperature	-40 °C to +65 °C (-40 °F to +149 °F)
Relative Humidity	5%–100%

Dimensions

Depth	66.5 mm | 2.6 in
Height	200.0 mm | 7.9 in
Volume	2.0 L
Width	150.0 mm | 5.9 in
Weight, without mounting hardware	3.0 kg | 6.6 lb

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

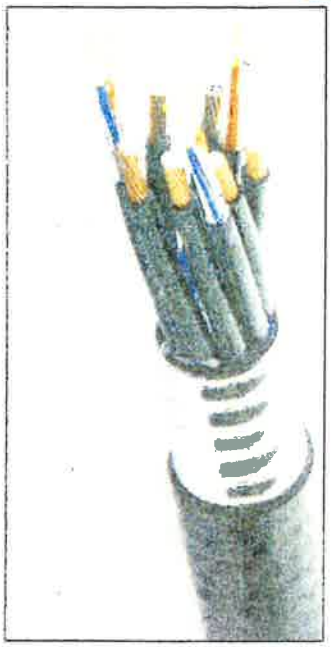


Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Fiber Optic Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Operating Data			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

* This data is provisional and subject to change

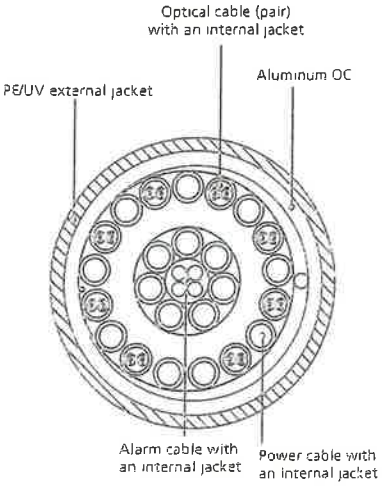


Figure 2: Construction Detail

ATTACHMENT 2

	General	Power	Density					
Site Name: Bridgeport SW								
Tower Height: 250Ft.								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Sprint iDEN	12	100	85	0.0597	851	0.5673	10.53%	
*Clearwire	2	153	118	0.0079	2496	1.0000	0.79%	
*Clearwire	1	211	123	0.0050	18 GHz	1.0000	0.50%	
*Sprint WiMAX	3	562	85	0.0839	2657	1.0000	8.39%	
*Microwave	2	1096	240	0.0137	22500	1.0000	1.37%	
*T-Mobile LTE	2	24	180	0.0005	2100	1.0000	0.05%	
*T-Mobile GSM/UMTS	2	12	180	0.0003	1950	1.0000	0.03%	
*T-Mobile UMTS	2	12	180	0.0003	2100	1.0000	0.03%	
*Unknown	1	500	272	0.0024	162	0.2000	1.22%	
*Unknown	3	3500	267	0.0530	930	0.6200	8.54%	
*Unknown	6	500	260	0.0160	450	0.3000	5.32%	
*MetroPCS	7	734	126	0.1164	2310	1.0000	11.64%	
Verizon PCS	**1**	**1191**	**110**	**0.0354**	**1970**	**1.0000**	**3.54%**	
Verizon Cellular	**9**	**20**	**110**	**0.0053**	**869**	**0.5793**	**0.92%**	
Verizon AWS	**1**	**1750**	**110**	**0.0520**	**2145**	**1.0000**	**5.20%**	
Verizon 700	**1**	**510**	**110**	**0.0152**	**746**	**0.4973**	**3.05%**	
								61.11%
* Source: Siting Council								

ATTACHMENT 3

STRUCTURAL ANALYSIS REPORT

for

verizonwireless

Vital Site Services, Inc.
37 Columbus Avenue
Somerville, MA 02143

Bridgeport
KM No. 121101.03

250 ft. Self-Support Tower
623 Pine Street
Bridgeport, CT 06605

Prepared By:

KM CONSULTING ENGINEERS, INC.
32 West Upper Ferry Rd, Ewing, NJ 08628
Ph: (609) 538-0400 www.kmengr.com

February 6, 2015

Prepared to TIA/EIA-222-F June 1996
Structural Standards for Steel Antenna Towers
and Antenna Supporting Structures

Verizon Wireless
Bridgeport

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4.0 ANALYSIS PROCEDURE	6
5.0 TOWER ANALYSIS RESULT	7
6.0 RECOMMENDATION	8
6.0 APPENDIX	9

Load Case No. 1: Existing tower superstructure with existing inventory and proposed Verizon Wireless installation.

1.0 EXECUTIVE SUMMARY

Structure

Owner: Radio Communications Tower

Location: 623 Pine Street
Bridgeport, CT 06605

Manufacturer: Rohn

Equipment

Existing tower inventory plus the proposed installation are detailed in Section 2.0 "Tower Inventory."

Synopsis

Load Case No. 1: The existing tower superstructure with the current inventory and proposed Verizon Wireless installation.

The tower superstructure has sufficient capacity, and therefore meets the current TIA standards. The tower superstructure is rated at 88.6%.

Information on the existing foundations has been reviewed. Utilizing the proposed loading reactions of the tower, a foundation analysis indicates that the existing capacity of the foundation will meet the TIA/EIA-222-F and IBC standards.

2.0 TOWER INVENTORY

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
yaggi in radom	256
Beacon	256
Omni antenna	256
Omni antenna	256
Omni antenna	256
Omni antenna	256 - 239
Top Platform	256
Omni antenna	248 - 238
(2) Ericsson AIR21 Panel Antenna (T-Mobile)	180
mounting frames w/stable bar (T-Mobile)	180
mounting frames w/stable bar (T-Mobile)	180
mounting frames w/stable bar (T-Mobile)	180
(2) Ericsson AIR21 Panel Antenna (T-Mobile)	180
(2) Ericsson AIR21 Panel Antenna (T-Mobile)	180
APX16PV_PVL (T-Mobile)	180
APX16PV_PVL (T-Mobile)	180
APX16PV_PVL (T-Mobile)	180
TMA (T-Mobile)	180
TMA (T-Mobile)	180
TMA (T-Mobile)	180
(2) MetroPCS Antenna (MetroPCS)	138
(2) MetroPCS Antenna (MetroPCS)	138
(2) MetroPCS Antenna (MetroPCS)	138
mounting frames w/stable bar (MetroPCS)	138
mounting frames w/stable bar (MetroPCS)	138
mounting frames w/stable bar (MetroPCS)	138
VHLP1-23-2WH (Clearwire)	121
VHLP1-23-2WH (Clearwire)	121
VHLP2.5-11-4WH (Clearwire)	121
Panel Antenna w/mount pipe (Clearwire)	118

TYPE	ELEVATION
Panel Antenna w/mount pipe (Clearwire)	118
Panel Antenna w/mount pipe (Clearwire)	118
(2) APL-866513-42T6 (Verizon)	110
(2) APL-866513-42T9 (Verizon)	110
Rohn 6'x15' Boom Gate (Verizon)	110
(2) APL-866513-42T9 (Verizon)	110
RRH AWS (Verizon)	110
RRH AWS (Verizon)	110
RRH AWS (Verizon)	110
Distribution Box (Verizon)	110
RRH 700 (Verizon)	110
RRH 700 (Verizon)	110
RRH 700 (Verizon)	110
GPS antenna (Verizon)	110
(2) HBXX-6516DS-A2M (Verizon)	110
(2) HBXX-6516DS-A2M (Verizon)	110
(2) HBXX-6516DS-A2M (Verizon)	110
DB-T1-6Z-8AB-0Z (Verizon)	110
RRH_2X60-PCS (Verizon)	110
RRH_2X60-PCS (Verizon)	110
RRH_2X60-PCS (Verizon)	110
800 10734V01 (Verizon)	110
800 10734V01 (Verizon)	110
800 10734V01 (Verizon)	110
CBC78-DF diplexers (Verizon)	110
CBC78-DF diplexers (Verizon)	110
CBC78-DF diplexers (Verizon)	110
CBC78-DF diplexers (Verizon)	110
CBC78-DF diplexers (Verizon)	110
CBC78-DF diplexers (Verizon)	110
Rohn 6'x15' Boom Gate (Verizon)	110
Rohn 6'x15' Boom Gate (Verizon)	110
4' Side Arm	100
TV 65 antenna	100
TV 65 antenna	100

Proposed Verizon Wireless Inventory

*(3) Kathrein 800 10734V01 panel antennas @ 110' AGL
*(6) HBXX-6516DS-A2M panel antennas @ 110' AGL
*(6) APL-866513-72T6 panel antennas @ 110' AGL
*(9) RRHs @ 110' AGL
*(2) Distribution Boxes @ 110' AGL
*(18) 1-5/8" coax lines up to 110' AGL
*(2) Fiber coax lines up to 110' AGL
*(1) GPS antenna
*(6) CBC78-DF diplexers @ 110' AGL

3.0 COMMENTARY

Our scope of work is to determine if the existing structure is capable of withstanding the additional stresses/forces imposed by the installation of the proposed Verizon Wireless equipment noted in the tower inventory. The tower is a 250' tall Rohn self-support tower with a triangular platform located at the top.

Tower member sizes, layout and foundation information was taken from previous structural analysis by KM Consulting Engineers, Inc. (KMCE) dated July 1, 2014. Antenna inventory and coax cable layout was also taken from the above mentioned analysis and updated from correspondence with the tower owner.

The following report will provide analytical calculations and commentary regarding the capacity of the proposed tower and subsequent recommendations.

4.0 ANALYSIS PROCEDURE

KM Consulting Engineers, Inc. carried out their structural analysis by correlating field inspection and tower member data into proprietary software designed specifically for communication tower analysis.

These programs run in conjunction with the guidelines set down in the TIA/EIA-222-F June 1996 Standard entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures."

The existing tower is analyzed by placing wind forces on the structure in 30° positional increments around the tower (ie. wind pressure directly onto the tower corners, faces and parallel to the faces). This enables the user to "create" a three-dimensional representation, yielding results for worst case scenarios. In effect, the production of these results allows the user to study the structural integrity of the tower when influenced by wind forces from any direction.

The proceeding report includes analysis for the tower with the addition of antennas in the scenarios stated. For clarity, the analysis shall include worst case loadings and a typical elevation view with maximum foundation loads- tabulated.

Should the client require to be furnished with a full copy of our analysis, we will gladly do so (approximately 80 pages).

Codes and Standards

ACI - American Concrete Institute - *Building Code Requirements for Structural Concrete (ACI 318-05)*, 2005

AISC - American Institute of Steel Construction - *Manual of Steel Construction, Allowable Stress Design*, 14th edition, 2010

TIA - Telecommunications Industry Association – *TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, 1996*

IBC 2003- International Building Code

5.0 TOWER ANALYSIS RESULTS

The tower was analyzed for the inventory detailed in Section 2.0 "Tower Inventory".

Structural wind speed is in accordance with TIA/EIA-222-F listing applicable to Fairfield County, CT: 85 MPH (fastest mile), no ice and 74 MPH (fastest mile), ½" radial ice.

All allowable capacities have been calculated to comply with the permitted TIA allowable increases (for wind).

Load Case No. 1: Proposed inventory of (3) Kathrein 800 10734V0 panel antennas, (6) HBXX-6516DS-A2M panel antennas, (6) APL-866513-72T6 panel antennas, (9) RRHs, (2) distribution boxes, (18) 1-5/8" coax lines, (2) fiber coax lines, and (6) Andrews CBC78-DF diplexers

The tower superstructure has sufficient capacity, and therefore meets the current TIA standards. The tower superstructure is rated at 88.6%. Information on the existing foundations has been reviewed. Utilizing the proposed loading reactions of the tower, a foundation analysis indicates that the existing capacity of the foundation will meet the TIA/EIA-222-F and IBC standards.

6.0 RECOMMENDATIONS

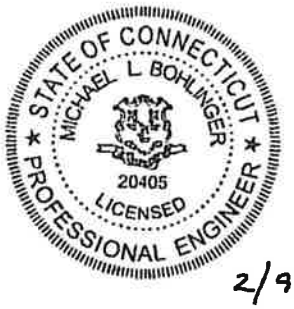
Further to our calculations, we conclude that the tower superstructure and base foundation have adequate capacity and therefore meet the current TIA/EIA-222-F design standards. The tower has sufficient capacity to support the proposed Verizon Wireless installation.

Please do not hesitate to contact our office with any questions or concerns regarding this report.

Sincerely,
KM CONSULTING ENGINEERS, INC.

Prepared By:

Domenic Aversa, EIT
Project Manager



2/9/15

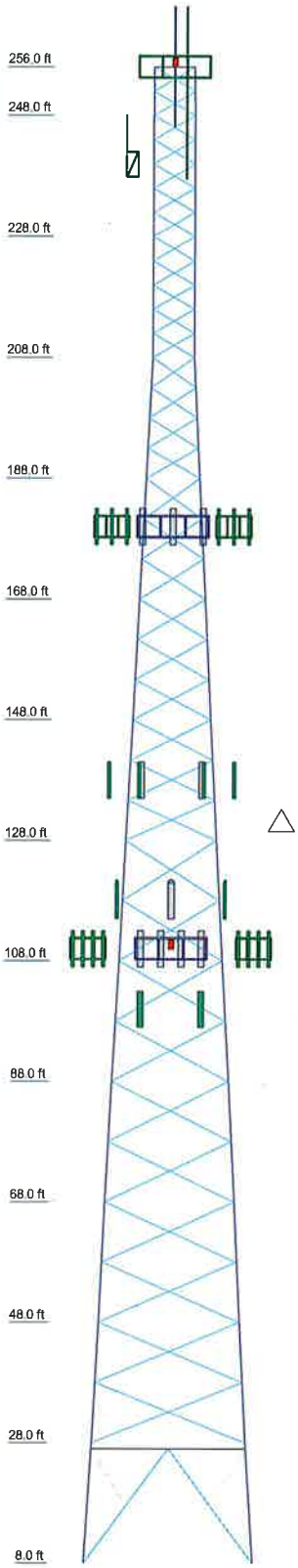
Reviewed and Approved by:

Michael L. Bohlinger, PE
Principal
CT License No. 20405

7.0 APPENDIX

LOAD CASE 1

Section	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		P10x 5			ROHN 8 EH	ROHN 8 EHS		ROHN 6 EH		ROHN 5 EH	ROHN 4 EH	ROHN 3 EH	A
Leg Grade						A572-50							
Diagonals	ROHN 3 STD		L5x5x3/8		L4x4x0.31	L4x4x3/8	L3x3x1/4		L2 1/2x2 1/2x1/4		L2x2x1/4		B
Diagonal Grade						A572-50							
Top Girts	ROHN 3 STD					N.A.							C
Red. Diagonals	ROHN 3 STD						N.A.						
Red. Hips	ROHN 1.5 STD						N.A.						
Inner Bracing	ROHN 3 STD						N.A.						
Face Width (ft)	27.8333	25.333	23.229	21.25	19.25	17.0833	14.989	12.916	10.916	8.916	6.833	6.9	6.604
# Panels @ (ft)		1 @ 19		10 @ 10			9 @ 6.66667			4 @ 5		12 @ 4	
Weight (lb)	49432.4	3952.3	7164.6	6887.4	6522.3	4829.8	4195.6	3083.2	2623.5	2590.2	1965.2	1660.8	1379.5	478.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
yaggi in radom	256	Panel Antenna w/mount pipe (Clearwire)	118
Beacon	256	Panel Antenna w/mount pipe (Clearwire)	118
Omni antenna	256	(2) APL-866513-42T6 (Verizon)	110
Omni antenna	256	(2) APL-866513-42T9 (Verizon)	110
Omni antenna	256	Rohn 6'x15' Boom Gate (Verizon)	110
Omni antenna	256 - 239	(2) APL-866513-42T9 (Verizon)	110
Top Platform	256	RRH AWS (Verizon)	110
Omni antenna	248 - 238	RRH AWS (Verizon)	110
(2) Ericsson AIR21 Panel Antenna (T-Mobile)	180	RRH AWS (Verizon)	110
mounting frames w/stable bar (T-Mobile)	180	Distribution Box (Verizon)	110
mounting frames w/stable bar (T-Mobile)	180	RRH 700 (Verizon)	110
mounting frames w/stable bar (T-Mobile)	180	RRH 700 (Verizon)	110
(2) Ericsson AIR21 Panel Antenna (T-Mobile)	180	RRH 700 (Verizon)	110
(2) Ericsson AIR21 Panel Antenna (T-Mobile)	180	GPS antenna (Verizon)	110
APX16PV_PVL (T-Mobile)	180	(2) HBXX-6516DS-A2M (Verizon)	110
APX16PV_PVL (T-Mobile)	180	(2) HBXX-6516DS-A2M (Verizon)	110
APX16PV_PVL (T-Mobile)	180	(2) HBXX-6516DS-A2M (Verizon)	110
TMA (T-Mobile)	180	DB-T1-6Z-8AB-0Z (Verizon)	110
TMA (T-Mobile)	180	RRH_2X60-PCS (Verizon)	110
TMA (T-Mobile)	180	RRH_2X60-PCS (Verizon)	110
(2) MetroPCS Antenna (MetroPCS)	138	RRH_2X60-PCS (Verizon)	110
(2) MetroPCS Antenna (MetroPCS)	138	800 10734V01 (Verizon)	110
(2) MetroPCS Antenna (MetroPCS)	138	800 10734V01 (Verizon)	110
mounting frames w/stable bar (MetroPCS)	138	800 10734V01 (Verizon)	110
mounting frames w/stable bar (MetroPCS)	138	CBC78-DF diplexers (Verizon)	110
mounting frames w/stable bar (MetroPCS)	138	CBC78-DF diplexers (Verizon)	110
VHLP1-23-2WH (Clearwire)	121	CBC78-DF diplexers (Verizon)	110
VHLP1-23-2WH (Clearwire)	121	CBC78-DF diplexers (Verizon)	110
VHLP2.5-11-4WH (Clearwire)	121	CBC78-DF diplexers (Verizon)	110
Panel Antenna w/mount pipe (Clearwire)	118	Rohn 6'x15' Boom Gate (Verizon)	110
		Rohn 6'x15' Boom Gate (Verizon)	110
		4' Side Arm	100
		TV 65 antenna	100
		TV 65 antenna	100

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 3 STD	C	L3x3x1/4
B	L1 3/4x1 3/4x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 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 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.

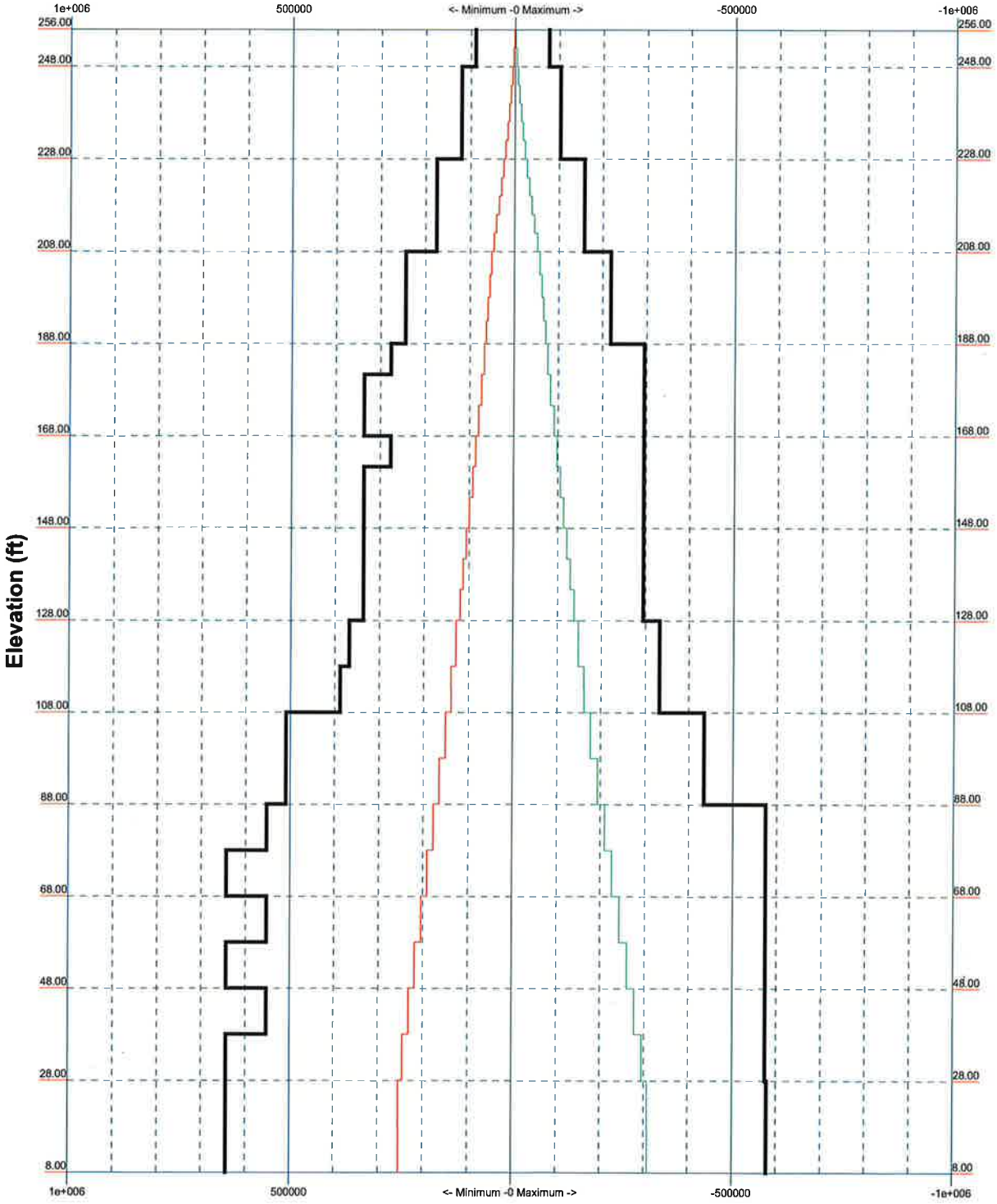
ABC Consulting Engineers

ABC Engineering
1234 W. Jones St.
Smallville, PA 12345
Phone: (555) 555-1234
FAX: (555) 555-1235

Job: ***Bridgeport LC1***			
Project: ***250' Rohn Self Support Tower***			
Client: Verizon Wireless	Drawn by: Mike	App'd:	
Code: TIA/EIA-222-F	Date: 02/06/15	Scale: NTS	
Path: K:\VSS Inc\Bridgeport\Engineering\Bridgeport LC1.eri		Dwg No. E-1	

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Leg Capacity ——— **Leg Compression (lb)**



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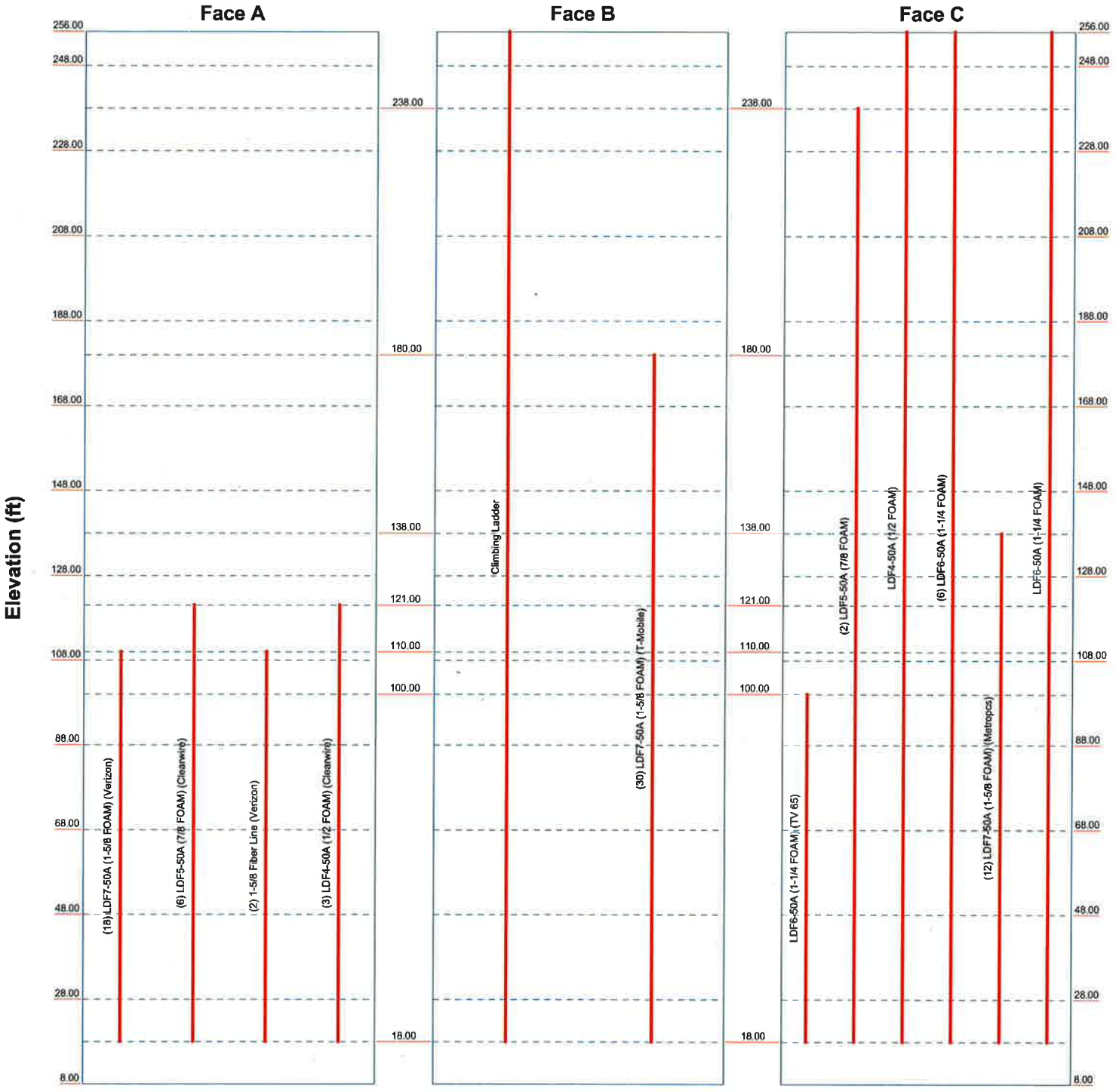
Project: ***250' Rohn Self Support Tower***			
Client: Verizon Wireless	Drawn by: Mike	App'd:	
Code: TIA/EIA-222-F	Date: 02/06/15	Scale: NTS	
Path: K:\VSS Inc\Bridgeport\Engineering\Bridgeport LC1.er		Dwg No. E-3	

Feed Line Distribution Chart
8' - 256'

Round | Flat | App In Face | App Out Face | Truss Leg



ABC Consulting Engineers

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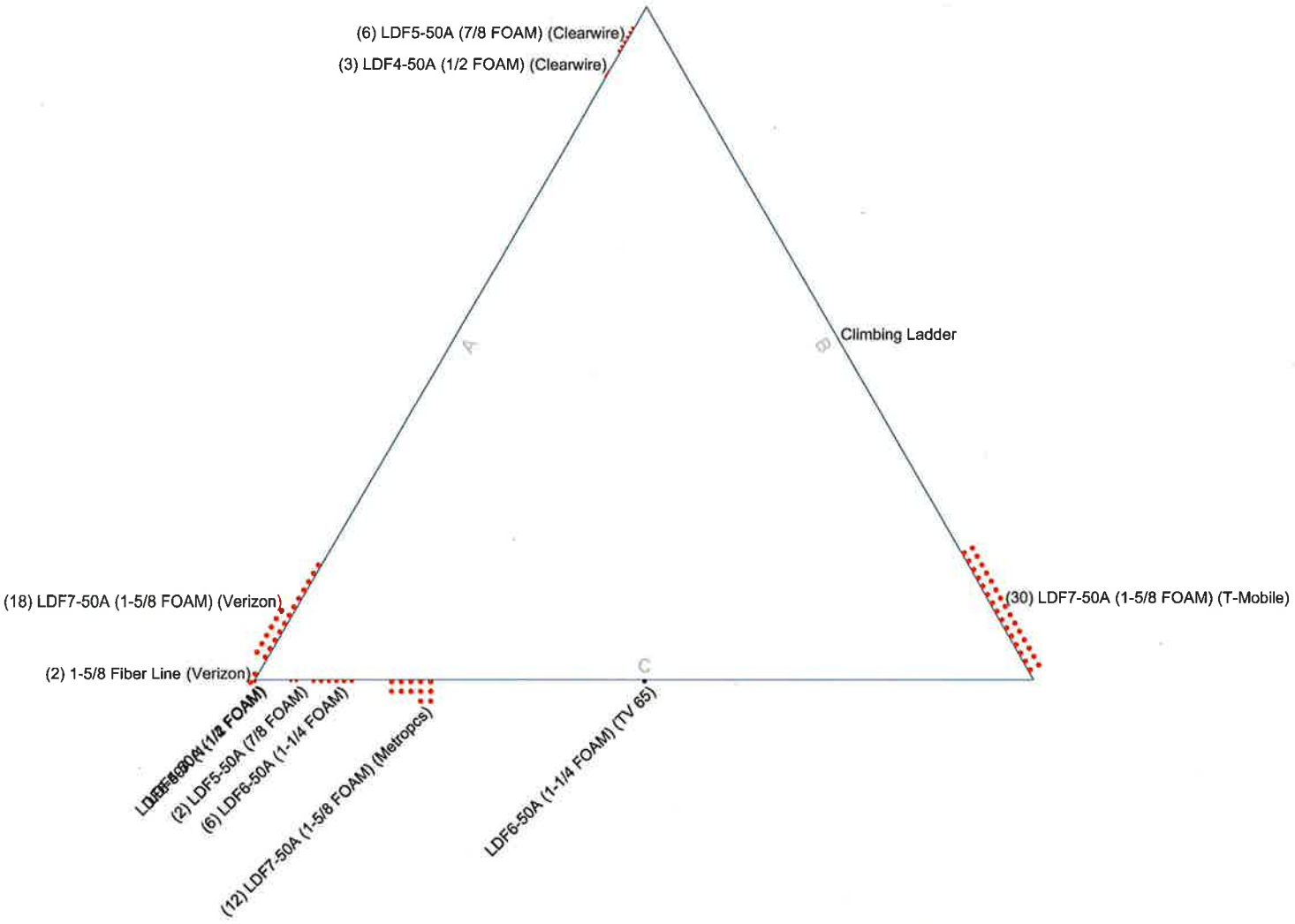
FAX: (555) 555-1235

Job: ***Bridgeport LC1***			
Project: ***250' Rohn Self Support Tower***			
Client: Verizon Wireless	Drawn by: Mike		App'd:
Code: TIA/EIA-222-F	Date: 02/06/15		Scale: NTS
Path: K:\VSS Inc\Bridgeport\Engineering\Bridgeport LC1.er			Dwg No. E-7

Feed Line Plan

Round Flat App In Face App Out Face

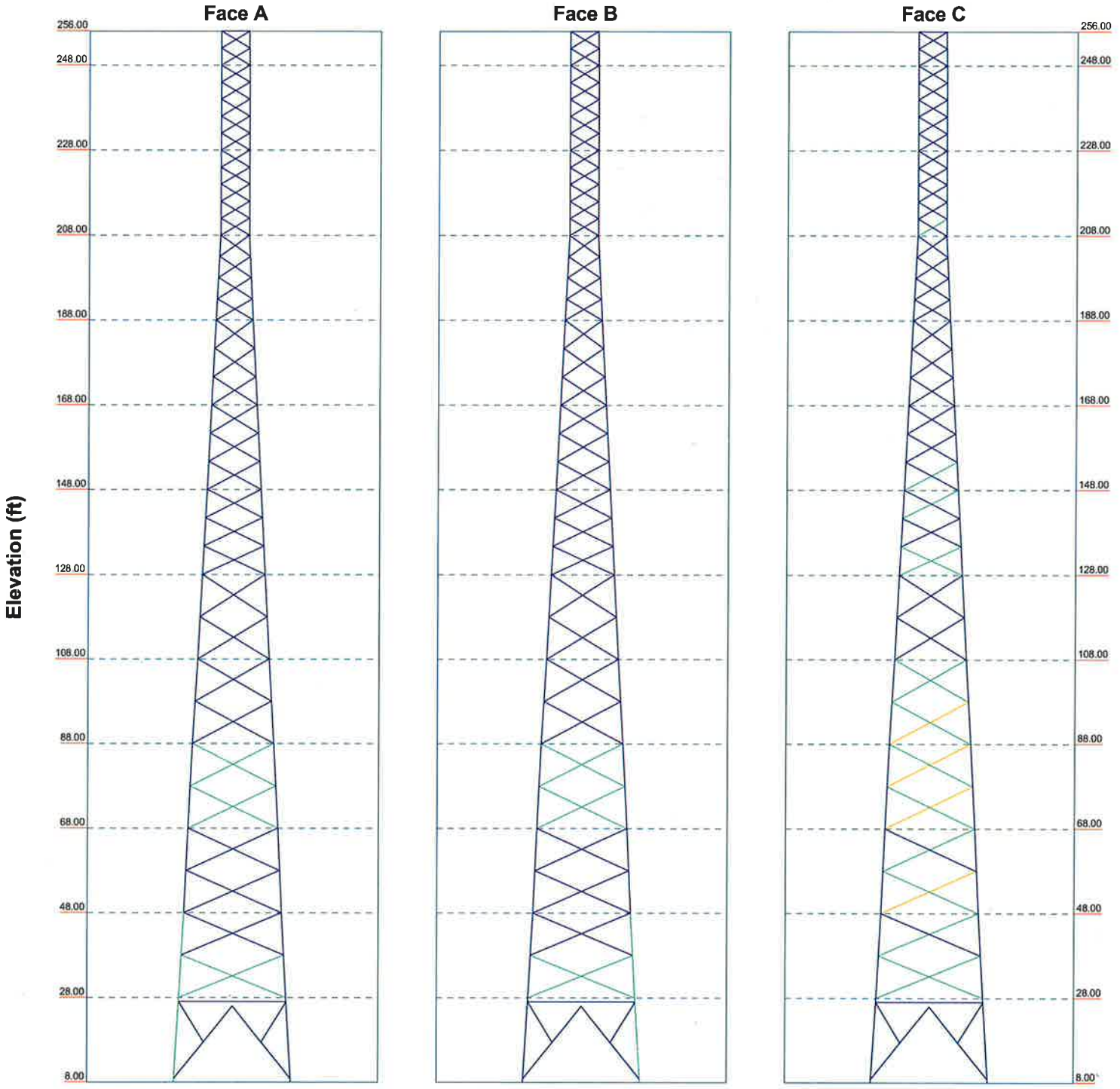


KM Consulting Engineers, Inc.
9 Forest Lane
Ewing, NJ 08628
Phone: (609) 538-0400
FAX:
Consulting Engineers

Job: Bridgeport LC1			
Project: 250' Rohn Self Support Tower			
Client: Verizon Wireless	Drawn by: Domenic Aversa	App'd:	
Code: TIA/EIA-222-F	Date: 01/08/15	Scale: NTS	
Path: K:\VSS Inc\Bridgeport\Engineering\Bridgeport LC1.eri		Dwg No. E-7	

Stress Distribution Chart
8' - 256'

> 100% | 90%-100% | 75%-90% | 50%-75% | < 50% Overstress



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ABC Engineering
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Phone: (555) 555-1234
FAX: (555) 555-1235

Job: *Bridgeport LC1*			
Project: *250' Rohn Self Support Tower*			
Client: Verizon Wireless	Drawn by: Mike	App'd:	
Code: TIA/EIA-222-F	Date: 02/06/15	Scale: NTS	
Path: K:\VSS Inc\Bridgeport\Engineering\Bridgeport LC1.eri		Dwg No. E-8	

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	256 - 248	Leg	ROHN 3 STD	3	-3997.63	76206.01	5.2	Pass
		Diagonal	L1 3/4x1 3/4x3/16	8	-1541.83	6904.95	22.3	Pass
		Top Girt	L3x3x1/4	4	-574.51	17508.29	3.3	Pass
T2	248 - 228	Leg	ROHN 3 EH	21	-22880.90	102570.88	22.3	Pass
		Diagonal	L2x2x1/4	23	-2809.22	13590.20	20.7	Pass
							32.7 (b)	
T3	228 - 208	Leg	ROHN 4 EH	54	-51353.90	157673.90	32.6	Pass
		Diagonal	L2x2x1/4	59	-4010.24	14108.47	28.4	Pass
							46.7 (b)	
T4	208 - 188	Leg	ROHN 5 EH	87	-70676.00	218465.36	32.4	Pass
		Diagonal	L2x2x1/4	89	-2719.75	8319.80	32.7	Pass
T5	188 - 168	Leg	ROHN 6 EH	114	-90396.60	294794.27	30.7	Pass
		Diagonal	L2 1/2x2 1/2x1/4	116	-4251.29	10570.13	40.2	Pass
T6	168 - 148	Leg	ROHN 6 EH	135	-113558.00	294794.27	38.5	Pass
		Diagonal	L3x3x1/4	137	-5066.21	14250.70	35.6	Pass
							41.3 (b)	
T7	148 - 128	Leg	ROHN 6 EH	156	-137893.00	294787.61	46.8	Pass
		Diagonal	L3x3x1/4	158	-6016.46	11088.25	54.3	Pass
T8	128 - 108	Leg	ROHN 8 EHS	177	-162616.00	332528.83	48.9	Pass
		Diagonal	L4x4x3/8	179	-7987.79	26862.75	29.7	Pass
							45.2 (b)	
T9	108 - 88	Leg	ROHN 8 EH	192	-193592.00	435191.16	44.5	Pass
		Diagonal	L4x4x0.31	194	-9687.72	18685.06	51.8	Pass
							57.6 (b)	
T10	88 - 68	Leg	P10x.5	207	-226797.00	574275.04	39.5	Pass
		Diagonal	L5x5x3/8	209	-11273.80	38315.75	29.4	Pass
							67.0 (b)	
T11	68 - 48	Leg	P10x.5	222	-261224.00	574277.70	45.5	Pass
		Diagonal	L5x5x3/8	224	-12435.60	32860.98	37.8	Pass
							57.6 (b)	
T12	48 - 28	Leg	P10x.5	237	-295075.00	574259.04	51.4	Pass
		Diagonal	L5x5x3/8	239	-15342.90	28177.62	54.5	Pass
							70.9 (b)	
T13	28 - 8	Leg	P10x.5	252	-308241.00	578731.26	53.3	Pass
		Diagonal	ROHN 3 STD	258	-16348.00	33932.05	48.2	Pass
		Top Girt	ROHN 3 STD	253	-9929.79	27653.08	35.9	Pass
		Redund Diag 1 Bracing	ROHN 3 STD	263	-4673.38	39609.96	11.8	Pass
		Redund Hip 1 Bracing	ROHN 1.5 STD	272	-150.12	10575.57	1.4	Pass
		Redund Hip Diagonal Bracing	ROHN 1.5 STD	265	-318.30	1948.97	16.3	Pass
		Inner Bracing	ROHN 3 STD	276	-179.80	25741.16	14.1	Pass
							Summary	
						Leg (T13)	53.3	Pass
						Diagonal (T12)	70.9	Pass
						Top Girt (T13)	35.9	Pass
						Redund Diag 1 Bracing (T13)	11.8	Pass
						Redund Hip 1 Bracing (T13)	1.4	Pass
						Redund Hip Diagonal	16.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						Bracing (T13) Inner	14.1	Pass
						Bracing (T13) Bolt Checks	88.6	Pass
						RATING =	**88.6**	**Pass**