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Also admitted in Massachusetts

June 16, 2014

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

Re: **Notice of Exempt Modification – Facility Modification
190 Colt Highway, Farmington, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains ten (10) wireless telecommunications antennas, eight (8) at the 120-foot level and two (2) at the 106-foot level, on an existing 1,339-foot guyed-lattice tower at 190 Colt Highway, Farmington, Connecticut (the “Property”). The tower and underlying property are owned by Communications Site Management LLC. Cellco’s use of the tower was approved by the Council in 1988. Cellco now intends to modify its facility by removing four (4) 850 MHz antennas, replacing them with two (2) model SWCP 2X5516, 850 MHz antennas, and two (2) model HBX-6517DS, 2100 MHz antennas, at the 120-foot level on the tower. Cellco also intends to install two (2) remote radio heads (“RRHs”) behind its 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for Cellco’s replacement antenna, RRHs 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 Kathleen A. Eagen, Town Manager of the Town of Farmington.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).



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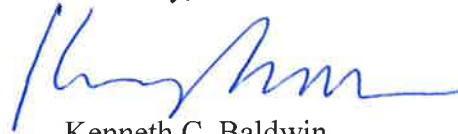
ROBINSON & COLE_{LLP}

Melanie A. Bachman
June 16, 2014
Page 2

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new antennas and RRHs will be installed at the 120-foot level on the existing 1,339-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 for 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 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:

Kathleen A. Eagen, Farmington Town Manager
Sandy M. Carter



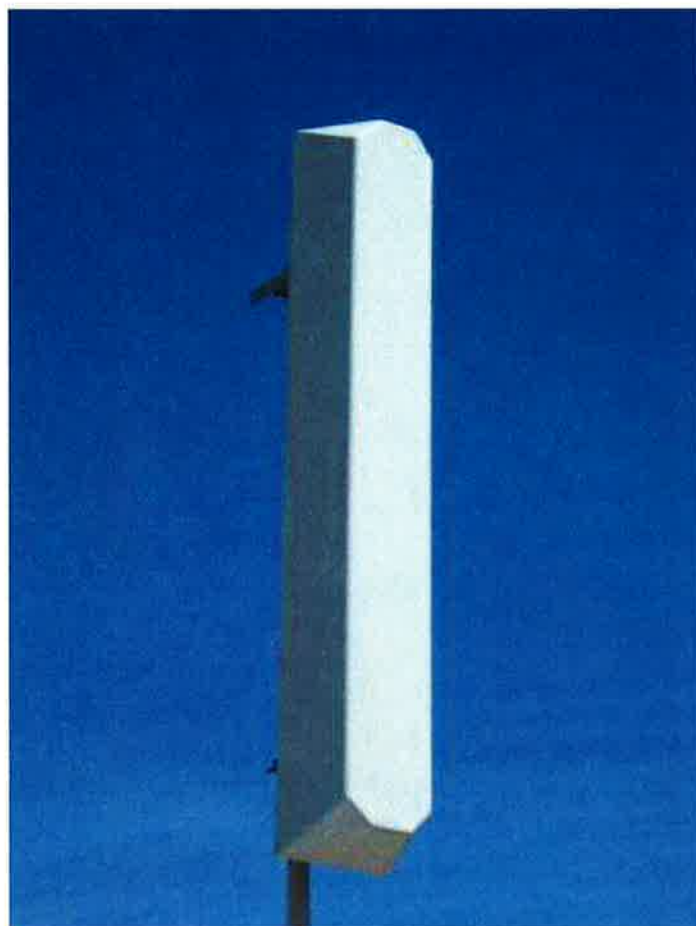
ATTACHMENT 1

SWCP 2x5516

698 - 896 MHz Dual (2x) CP log-periodic antenna

Features

- Transmit Diversity Gain
- Can be configured to combine space & polarization diversity
- Outstanding performance over the entire band (698 - 896 MHz)
- Excellent Axial Ratio
- Optimized for 4G & 3G systems
- Low intermodulation
- Improved Side-to-side rejection
- Fading reduction
- Excellent isolation between ports



Electrical specifications

Frequency range:	698 - 896 MHz	
Impedance:	50 ohm	
Connector type:	7/16 Din	
Return loss:	18 dB	
Polarization:	Circular	
Gain ea. port [Circular]:	2x16 dBdC	
Gain ea. port [Linear]:	2x13 dBdL	
Axial Ratio:	2 dB	
Isolation between ports (TX band):	30 dB	
Front-to-back ratio:	30 dB	
Intermodulation (2x20W):	IM3	150 dB
	IM5	160 dB
	IM7/9	170 dB
Power rating:	2x 500 W	
H-plane (-3 dB point):	2x 55°	
V-plane (-3 dB point):	2x 8°	
Lightning protection:	DC grounded	

Mechanical specifications

Overall height:	96 in	[2438 mm]
Width:	14 in	[356 mm]
Depth:	11 in	[279 mm]
Weight (excluding brackets):	40 lbs	[18 Kg]
Wind load measured up to:	150 mph	[240 Km/h]
Wind area (front of antenna):	9.33 sq. ft.	[0.87 sq.m]
Lateral thrust at 113 mph/ 180 Km/h (worst case):	477 lbs	[2121 N]

Materials

Radiating Elements:	Aluminum
Transformer (Power distribution)	Ceramic PCB
Chassis:	Aluminum
Radome:	Gray PVC/TPO
Mounting bolts:	Stainless steel

The SWCP 2x5516 is made in the U.S.A.

Product Specifications



HBX-6517DS-VTM

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

- Superior azimuth tracking and pattern symmetry to minimize any sector overlap
- Rugged, reliable design with excellent passive intermodulation suppression
- 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	18.5	18.6	18.9
Gain by all Beam Tilts Tolerance, dB	±0.2	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0° 18.3 3° 18.6 6° 18.4	0° 18.4 3° 18.7 6° 18.6	0° 18.8 3° 19.1 6° 18.7
Beamwidth, Horizontal, degrees	67	66	64
Beamwidth, Horizontal Tolerance, degrees	±1.8	±0.9	±2.8
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beamwidth, Vertical Tolerance, degrees	±0.2	±0.2	±0.3
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	19	19	18
Front-to-Back Total Power at 180° ± 30°, dB	26	26	26
CPR at Boresight, dB	22	22	22
CPR at Sector, dB	11	11	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®
Band	Single band
Brand	DualPol® Teletilt®
Operating Frequency Band	1710 – 2180 MHz
Number of Ports, all types	2

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
RF Connector Location	Bottom

Product Specifications

COMMScope®

HBX-6517DS-VTM



RF Connector Quantity, total	2
Wind Loading, maximum	393.0 N @ 150 km/h 88.3 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h 149.8 mph

Dimensions

Depth	83.0 mm 3.3 in
Length	1902.0 mm 74.9 in
Width	166.0 mm 6.5 in
Net Weight	6.2 kg 13.7 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator HBX-6517DS-R2M

Model with Factory Installed AISG 2.0 Actuator HBX-6517DS-A1M

RET System Teletilt®

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU

China RoHS SJ/T 11364-2006

ISO 9001:2008

Classification

Compliant by Exemption

Above Maximum Concentration Value (MCV)

Designed, manufactured and/or distributed under this quality management system



Included Products

DB390 — Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Use for narrow panel antennas. Includes two pipe mounts.

DB5098E — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.



A distributed eNodeB expands deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-AWS is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

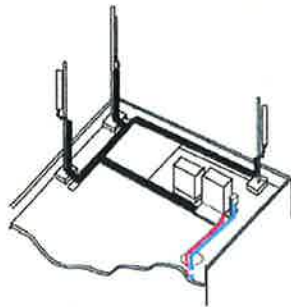
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-AWS is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-AWS is compact and weighs less than 20 kg (44 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

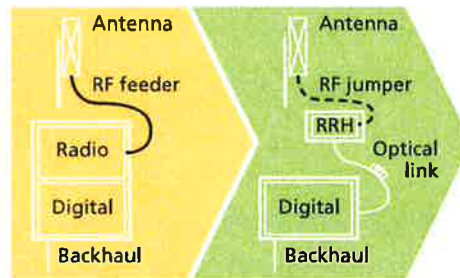
Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-AWS provides more RF power while at the same time consuming less electricity.



Macro

Features

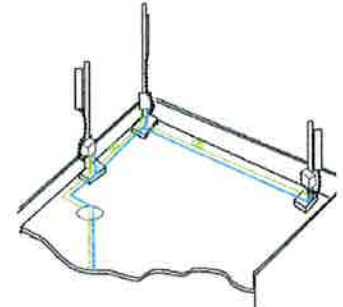
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless)
- Noise-free
- Best-in-class power efficiency, with significantly reduced energy consumption



RRH for space-constrained cell sites

Benefits

- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning



Distributed

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170 mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

Operating environment

- Outdoor temperature range:
 - With solar load: -40°C to +50°C (-40°F to +122°F)
 - Without solar load: -40°C to +55°C (-40°F to +131°F)

- Passive convection cooling (no fans)
- Enclosure protection
 - IP65 (International Protection rating)

RF characteristics

- Frequency band: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port: 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Digital Ports and Alarms

- Two optical ports to support daisy-chaining
- Six external alarms

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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.

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

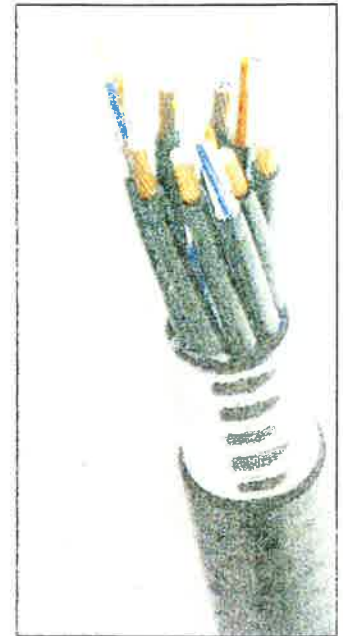


Figure 1: HYBRIFLEX Series

Technical Specifications

Dimensions			
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 (0.265)
DC-Resistance Power Cable: 8 4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Other 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)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (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
Temperature			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

* This data is provisional and subject to change

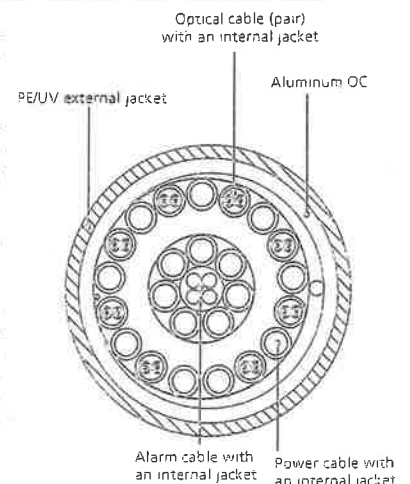


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering

ATTACHMENT 2

Site Name: Farmington Tower Height: 1339Ft		General		Power		Density							
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	GALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total					
*MetroPCS CDMA	3	727	140	0.0400	2135	1.0000	4.00%						
*MetroPCS LTE	1	1200	140	0.0220	2130	1.0000	2.20%						
*CNG	3	3971	750	0.0076	153.42	0.2000	3.81%						
*MediaFLO			1132		719		0.04%						
*Sirius XM Radio	1	4898	460	0.0083	2300	1.0000	0.83%						
*Clearwire	2	153	190	0.0030	2493	1.0000	0.30%						
*Clearwire	1	211	190	0.0021	11 GHz	1.0000	0.21%						
*Sprint	11	433	160	0.0669	1962.5	1.0000	6.69%						
Verizon	11	438	120	0.1203	1970	1.0000	12.03%						
Verizon	9	403	120	0.0906	869	0.5793	15.63%						
Verizon	1	1750	120	0.0437	2145	1.0000	4.37%						
Verizon	1	1050	120	0.0262	698	0.4973	5.27%						55.39%
* Source: Siting Council													

ATTACHMENT 3



PROJECT:
STRUCTURAL ANALYSIS
of
Existing 1339ft
LRM3700 Guyed Mast

CUSTOMER:
VitalSite Services, Inc

SITE:
Rattlesnake
(aka Farmington), CT

TURRIS FILE:
14-0332
May 23, 2014



Turrig Project: 14-0332

May 23, 2014

**STRUCTURAL ANALYSIS OF
Existing 1339 Ft. LRM3700 Guyed Mast
at Rattlesnake (aka Farmington), CT**

FOR:

HPC Wireless Services

Attention: Stephen Schadler
VitalSite Services, Inc.
Real Estate Consultant / Verizon Wireless
99 East River Drive, 9th Floor
East Hartford, CT 06810

CC: Joe Legere
Communications Site Management LLC.
Goodwin Square
225 Asylum Street, 29th Floor
Hartford, CT 06103

Issued by: Simon Pong, P.Eng, P.E.
TURRIS CORP.
70 Todd Road, Georgetown, ON, Canada L7G 4R7
Phone: (905) 877-8885 Fax: (905) 877-8835

Reviewed By: Tony Fonseca, P.E.
Turrig Engineering Inc.
540 Sail Point Way, Columbia, SC 29212
Phone: (803) 781-5437 Fax: (803) 749-3128 Mob: (803) 873-1562

Introduction

We have completed the structural analysis of the existing 1339ft LRM3700 guyed mast at Rattlesnake (aka Farmington), CT, and are pleased to submit our report for your attention.

The purpose of this analysis is to evaluate the tower for compliance with ANSI/TIA-222-G-2005 with modifications to existing antenna and feedline loading on the tower based on information provided by VitalSite Services, Inc on May 15, 2014 and subsequent updates on May 22, 2014. Table 1 tabulates the latest list of existing and proposed antennas and feedlines updates

Table 1 – Existing and Proposed Equipment Updates

ID	Pos	Description	Qty	Elev (ft)	Tx Line	Qty	AZ	Comments	Status
81a		Swedcom SWCP 2x5516	1	120	(12) 1-5/8" Coax	13	0		P
81b		Swedcom SP-E5017T4	2	120			0		E
81c		Swedcom SWCP 2x5514	1	120			0		P
81d		Andrew HBX-6517DS-VTM	1	120			0	Add (1) Alcatel Lucent RRH 2x40AWS	
82		Swedcom SACP 2x5516	1	106	+		120	Add (1) RFS DB-T1-6Z-8AB-0Z Dist. Box	P
83a		Swedcom SWCP-2x5516	1	120	(1) 1-5/8" Hybriflex	13	270		E
83b		Swedcom SWCP 2x5514	1	120			270		P
83c		Swedcom SACP 2x5516	1	120			270		P
83d		Andrew HBX-6517DS-VTM	1				270	Add (1) Alcatel Lucent RRH 2x40AWS	
84		Andrew CBC721-DF	2	120					P

We trust the analysis and recommendations presented in the report will meet your requirements. However, please do not hesitate to contact us if you have any questions, or require any further information regarding this study.

1.0 Terms of Reference

The following documents and drawings were examined:

- Tower Profile: Radian dwg. No. 37-1030-E01-01 Rev. 2 dated Jan/10/2005.
- Tower Foundations: LeBlanc dwg. No. 3.7A1001-FE10 Issue 2 dated Aug/31/84.
- LeBlanc dwg. No. 3.7A1001-FE1 Issue 1 dated May/7/84.
- LeBlanc dwg. No. 3.7A1001-FE2 Issue 1 dated May/1/84.
- LeBlanc dwg. No. 3.7A1001-FE3 Issue 1 dated Apr/30/84.
- LeBlanc dwg. No. 3.7A1001-FE4 Issue 1 dated Apr/30/84.
- LeBlanc dwg. No. 3.7A1001-FE5 Issue 1 dated May/1/84.
- LeBlanc dwg. No. 3.7A1001-FE6 Issue 1 dated Apr/30/84.
- Radian dwg. No. 37-1030-F01-01 Rev. 0 dated Oct/4/2004.
- Radian dwg. No. 37-1030-F02-01 Rev. 0 dated Oct/5/2004.
- Radian dwg. No. 37-1030-F03-01 Rev. 0 dated Oct/5/2004.

1.0 Terms of Reference (cont'd)

Antenna Inventory: Refer to Appendix A.
Soil Report: Dr. Clarence Welti, Geotechnical Engineering
Report dated January 30, 2004

A tower inspection was not performed in conjunction with this analysis. The tower and loading data used in this analysis are based on and is as accurate as the data furnished/obtained.

2.0 Analysis Parameters

- Standard: ANSI/TIA-222-G-2005
- County: Hartford, CT
- Basic Wind Speed: 100.00(mph)
- Basic Wind Speed With Ice: 50.00(mph)
- Design Ice Thickness: 1.00(in)
- Structure Class: II
- Exposure Category: C
- Topographic Category: 1

3.0 Assumptions

1. The tower is in good, non-corroded conditions.
2. This analysis assumes that all previous reinforcing recommendations and antenna rearrangement have been implemented.
3. All existing/future tx lines less than 3" in diameter are considered grouped together in blocks based on an assumed arrangement for this analysis.
4. This analysis assumes that the back-to-back diagonals at sections 6, 7, 12, 13, 19, 20, 21, and 33 had been upgraded with (1) 5/8" stitch bolt on each side of the existing middle stitch bolt.
5. This analysis assumes that the antenna mount at elevation 120' has the structural capacities to support the equipment at elev. 120'.

4.0 Analysis Results

Appendix A shows the tower profile, along with the antennas, transmission lines and ancillary loading considered in this analysis. The existing structure was analysed using the comprehensive computer program "TSTower". Graphical and tabular results are presented in Appendix B.

5.0 Conclusions & Recommendations

The existing 1339 ft LRM3700 guyed tower at Rattlesnake (aka Farmington), CT, was examined for compliance with American standard ANSI/TIA-222-G-2005. A summary of member stresses are listed below:

Summary of member stress ratios

Member Type	Section	Panel	Member size	Ratio	Comment
Leg	15	4	SR 6	0.97	Acceptable
Diagonal	6	4	2L3x2x1/4	0.71	Acceptable

Summary of original base reactions as per Rev. F*

Axial (Kips)	Shear (Kips)
3087.9	10.4

* values increased by 1.35 for comparison

Summary of base reactions as per Rev. G**

Axial (Kips)	Shear (Kips)
3756.9	76.6

** foundation is acceptable after re-checking the original design.

Summary of original anchor design reactions as per Rev. F*

Anchor #	Azimuth (deg)	Radius (ft)	Elevation (ft)	Horizontal Load (Kips)	Vertical Load (Kips)	Axial Load (Kips)
1C	39.0	685.00	-25.0	579.29	378.41	692.01
2C	159.0	645.00	-30.0	582.39	409.32	711.86
3C	279.0	729.00	-120.0	575.51	422.15	713.61
1B	39.0	845.00	-140.0	143.51	166.46	219.78
2B	159.0	735.00	-38.0	151.47	184.95	239.09
3B	279.0	827.00	-130.0	149.45	175.91	230.85
1A	39.0	875.00	-150.0	284.31	386.24	479.12
2A	159.0	765.00	-33.0	295.79	423.77	515.97
3A	279.0	857.00	-129.0	289.04	395.82	489.78

* values increased by 1.35 for comparison

Summary of anchor reactions as per Rev. G

Anchor #	Azimuth (deg)	Radius (ft)	Elevation (ft)	Horizontal Load (Kips)	Vertical Load (Kips)	Axial Load (Kips)
1C	39.0	685.00	-25.0	499.43	353.30	611.76
2C	159.0	645.00	-30.0	498.83	374.38	623.70
3C	279.0	729.00	-120.0	490.56	388.30	625.64
1B	39.0	845.00	-140.0	124.53	157.46	200.75
2B	159.0	735.00	-38.0	130.24	171.33	215.22
3B	279.0	827.00	-130.0	128.15	164.04	208.16
1A	39.0	875.00	-150.0	239.91	363.07	435.17
2A	159.0	765.00	-33.0	247.11	390.07	461.75
3A	279.0	857.00	-129.0	242.10	368.14	440.61

5.0 Conclusions & Recommendations (cont'd)

A check to the base foundation shows that it is adequate for the base reactions as per Rev.G. A comparison of the reactions shows that the anchor reactions as per Rev.G are less than the original design allowable reactions increased by 1.35 for comparison.

The tower and waveguide bridge remains in compliance with ANSI/TIA-222-G-2005 in consideration with the assumptions and documentations as stated in this report. However, we highly recommend that a survey of the antennas and lines to be conducted on the tower to document the exact elevation and plan positions of the antennas and lines since there have been numerous changes to the tower throughout the years.

Issued by:

Reviewed by:



Simon Pong, P.Eng., P.E.
Senior Project Engineer
Turriss Corp.



May 27/14

John Wahba, Ph. D, P. E., P. Eng.
Principal Engineer
Turriss Corp.

**SCOPE & LIMITATIONS FOR THE PROVISION
OF PROFESSIONAL ENGINEERING SERVICES
FOR STRUCTURES**

All engineering services performed by Turriss Corp. (Turriss) in connection with the structural analysis of the tower is limited to the strength of the members and does not account for any variations due fabrication, including welding and connection capacities and installations, except as outlined in this Report.

This analysis report is based on assumptions that the information below, but is not necessarily limited to:

- information supplied by the client regarding the structure and its components, foundations, soil conditions, appurtenances loading on the structure, and other site-specific information.
- information from documents and/or drawings in the possession of Turriss Corporation, or acquired from field inspections.

It is the responsibility of the client to ensure that the information provided to Turriss, and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications provided, and are in non-corroded condition and have not deteriorated. Therefore, we assume that the member capacities have not changed from the “as new” condition.

All services will be performed to meet the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different than the minimum values recommended by the standards, the client shall specify the requirement.

All services are performed in accordance with generally accepted engineering principles and practices. Turriss is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Furthermore, Turriss assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulas are hereafter modified or revised. In addition, under no circumstances will Turriss have any obligations or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the report and the maximum liability of Turriss Corp., if any, pursuant to this Report shall be limited to the total funds actually received by Turriss Corp. for preparation of this Report.



Turris Project: 14-0332
May 23, 2014

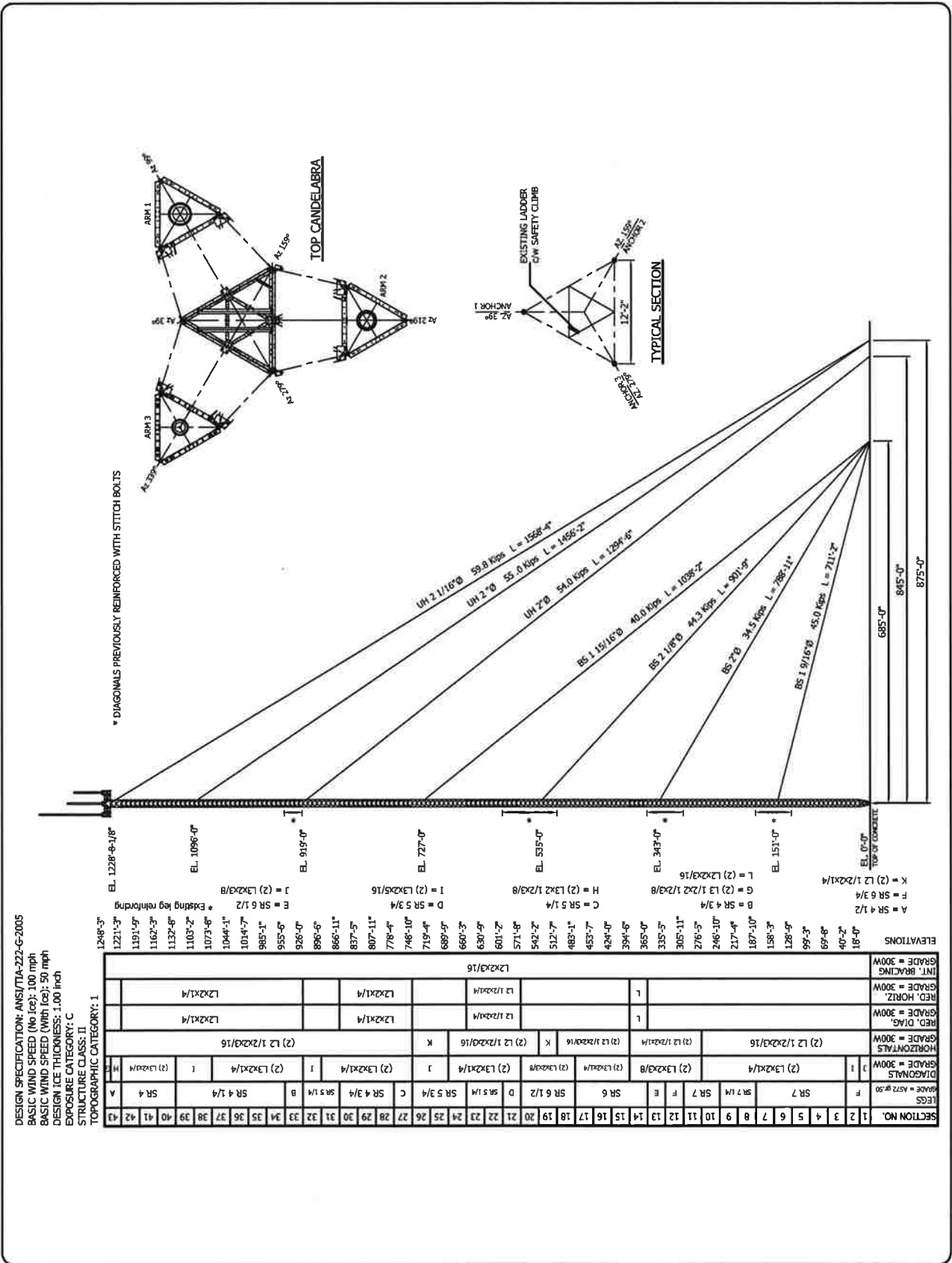
APPENDIX A
Tower Profile

REV.	DESCRIPTION	DWN	CHK	APP.

DWG REFERENCE	

PROJECT	EXISTING 1338FT UH32700
CUSTOMER	VERIZON WIRELESS
LOCATION	RA TLESNAKE (HARTFORD CITY), CT

TOWER PROFILE	
DATE	11/23/14
SCALE	1:4000
DRAWN BY	
CHECKED BY	
PROJECT NO.	14-0332-00-01



DESIGN SPECIFICATION: ANSI/TIA-222-G-2005
 BASIC WIND SPEED (No Ice): 100 mph
 BASIC WIND SPEED (With Ice): 50 mph
 DESIGN ICE THICKNESS: 1.00 inch
 EXPOSURE CATEGORY: C
 STRUCTURE CLASS: II
 TOPOGRAPHIC CATEGORY: 1

SECTION NO.	LESS	DIAGONALS	HORIZONTALS	RED. DIAG.	RED. HORIZ.	INT. BRACING	ELEVATIONS
1	F	(2) 13x21/4	(2) 12 1/2x23/16	(2) 13x23/8	(2) 12 1/2x23/16	(2) 12 1/2x23/16	EL. 1228'-6 1/8"
2	A	SR 4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 1096'-0"
3	B	SR 4 1/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 915'-0"
4	C	SR 4 3/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 727'-0"
5	D	SR 5 3/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 535'-0"
6	E	SR 6	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 343'-0"
7	F	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 151'-0"
8	G	SR 7 1/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
9	H	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
10	I	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
11	J	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
12	K	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
13	L	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
14	M	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
15	N	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
16	O	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
17	P	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
18	Q	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
19	R	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
20	S	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
21	T	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
22	U	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
23	V	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
24	W	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
25	X	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
26	Y	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
27	Z	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
28	AA	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
29	AB	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
30	AC	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
31	AD	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
32	AE	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
33	AF	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
34	AG	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
35	AH	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
36	AI	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
37	AJ	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
38	AK	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
39	AL	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
40	AM	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
41	AN	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
42	AO	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
43	AP	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
44	AQ	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"
45	AR	SR 7	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	(2) 13x21/4	EL. 0'-0"

APPENDIX A Antenna Loading Chart

ID	Pos	Description	Qty	Elev (ft)	Tx Line	Qty	AZ	Comments	Status
Top Candelabra loading									
1	2b	TFU-16DSC-R C170	1	1273.00	7 3/16" **	** Shared		East Arm Bottom Up	E
1	3a	TFU-18JTH/VP-R-04	1	1315.55	7 3/16" *	* Shared		NW Arm Top Up	E
1	3b	TFU-18DSC/VP-R C170	1	1266.70	7 3/16" *	* Shared		NW Arm Bottom Up	E
				1248.25	6-1/8"	Spare			F
Miscellaneous loading on tower mast									
4	4	Radio Waves PR09-DRB-2C	1	1209	1 5/8" + 1"	1 Each	39	ProscanIII	E
6		TLP24A	1	1100	4 1/16"	1	39	Leg mounted	E
9	7	FM ERI-1183-1CP	1	845	3 5/8" + 1 5/8"	1	1 Bay Each Face		E
10		DB809-H	1	800	3 1/8"	1	39		E
11	9	DB413	2	778	1 5/8"	1	39, S Face		E
12	10	DB413	2	755	1 5/8"	1	39, S Face		E
13				750	1 1/4"	1			
14	13	ANT150D6-9	1	747	1 5/8"	1	159		E
15		DB809-H	1	726	1 5/8"	1	39		E
16	14	DB254C	2	715	None	None	S Face		E
17	15	DB8983P	1	715	None	None	159		E
18	16	DB420B	1	708	None	None	39		E
19		DB809K	1	688	1 5/8"	1	39		E
20		DB224	1	671	1 5/8"	1	39		E
25	25	Scala OGB9-900K	1	514	1 5/8"	1	39		E
26	26	Dish Mounts & I/G	3	512	None	None	39, 159, 279		E
28	30	BCD87010N25-6	1	440	1 5/8"	1	39		E
29	32	DB Dipole	1	416	7/8"	1	39		E
30	33	SHPX-2AE	1	405	3 1/8"	1	159	WRCH	P
35	51	Scala OGB9-900N	1	320	7/8"	1	279		E
36	52	I/G	3	310	None	None	1 Each Face		E
39	55	Scala 450	1	300	7/8"	1	279		E
42		PXL8	1	283	EW 63	2	279		E
43		MF900B	1	270	1 1/4"	1	279		E
52	64	BMR 10A	1	165	1 5/8"	1	39		E
53		DB950F65T4E-M	2	160	2 1/4"	2	279		E
54		DB950F65T4E-M	1	160	2 1/4"	1	39		F
64	66	PD400	1	121	7/8"	1	159		E
66		PD1110	1	110	1 1/4"	1	159		E
67	70	Ice Guards	1	96	None	None	39	RELOCATED	E
70		A-18A24	1	70	2 1/4"	1	39		E
71		Dish Mount	1	64	None	None	39		E
72		Dish Mount	1	57	None	None	39		E
73		Dish Mount	1	46	None	None	39		E
74	73	Ice Guards	1	35	None	None	39		E
75	74	PL6	1	30	EW63	1	39		E
76		Kathrein 742 213	3	140	1 5/8"	6	30, 150, 270	Leg flush mounted	E
77		Hyperlink 3ft dish w/ radome	1	210	Cat 5 cable^	1	39	Computer hospital	E
78		Proxim 5054R-LR Base panels	2	210	Cat 5 cable^	3	159	Computer hospital	E
79		Scala PR-950U	1	328	1 5/8"	1	159	WJM Radio and TV	E



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80	Scala PR-950U	1	50	7/8"	1	279	WJMJ Radio and TV	E
81a	Swedcom SWCP 2x5516	1	120	(12) 1-5/8" Coax + (1) 1-5/8" Hybriflex	13	0		P
81b	Swedcom SP-E5017T4	2	120			0		E
81c	Swedcom SWCP 2x5514	1	120			0		P
81d	Andrew HBX-6517DS-VTM	1	120			0	Add (1) Alcatel Lucent RRH 2x40AWS	
82	Swedcom SACP 2x5516	1	106			120	Add (1) RFS DB-T1-6Z-8AB-0Z Dist. Box	P
83a	Swedcom SWCP-2x5516	1	120			270		E
83b	Swedcom SWCP 2x5514	1	120			270		P
83c	Swedcom SACP 2x5516	1	120			270		P
83d	Andrew HBX-6517DS-VTM	1				270	Add (1) Alcatel Lucent RRH 2x40AWS	
84	Andrew CBC721-DF	2	120					
86	12' lightweight T-frame	1	120			0		E
87	12' lightweight T-frame	1	106			120		E
88	12' lightweight T-frame	1	120			270		E
90	Andrew VHLP 2.5 (30")	6	195	7/8"	9	39, 159, 279	Two Dishes on Each Leg	E
91	Ice Shield (2'6"x 2'6")	1	37	None	None	159		E
92	Camera Sony SNC-RZ50N	1	36	Cat 5 cable + RG 6	1+2	159		E
93	TA-2355-DAB-M-T2	1	460	EW20	1	39	REUSE EXISTING EW20	P
94	Prodelin VSAT #1183 (1.8m dish)	1	35	RG6-QS	1	Leg 8 of WG Bridge	.298" dia. coax cable	P
95	Trimble GPS Unit #57860-30	1	34	RG6-QS	1	Leg 7 of WG Bridge	.298" dia. coax cable	P

^Cat 5 cables are bundled together to 210'

**APPENDIX B
Results of Analysis**

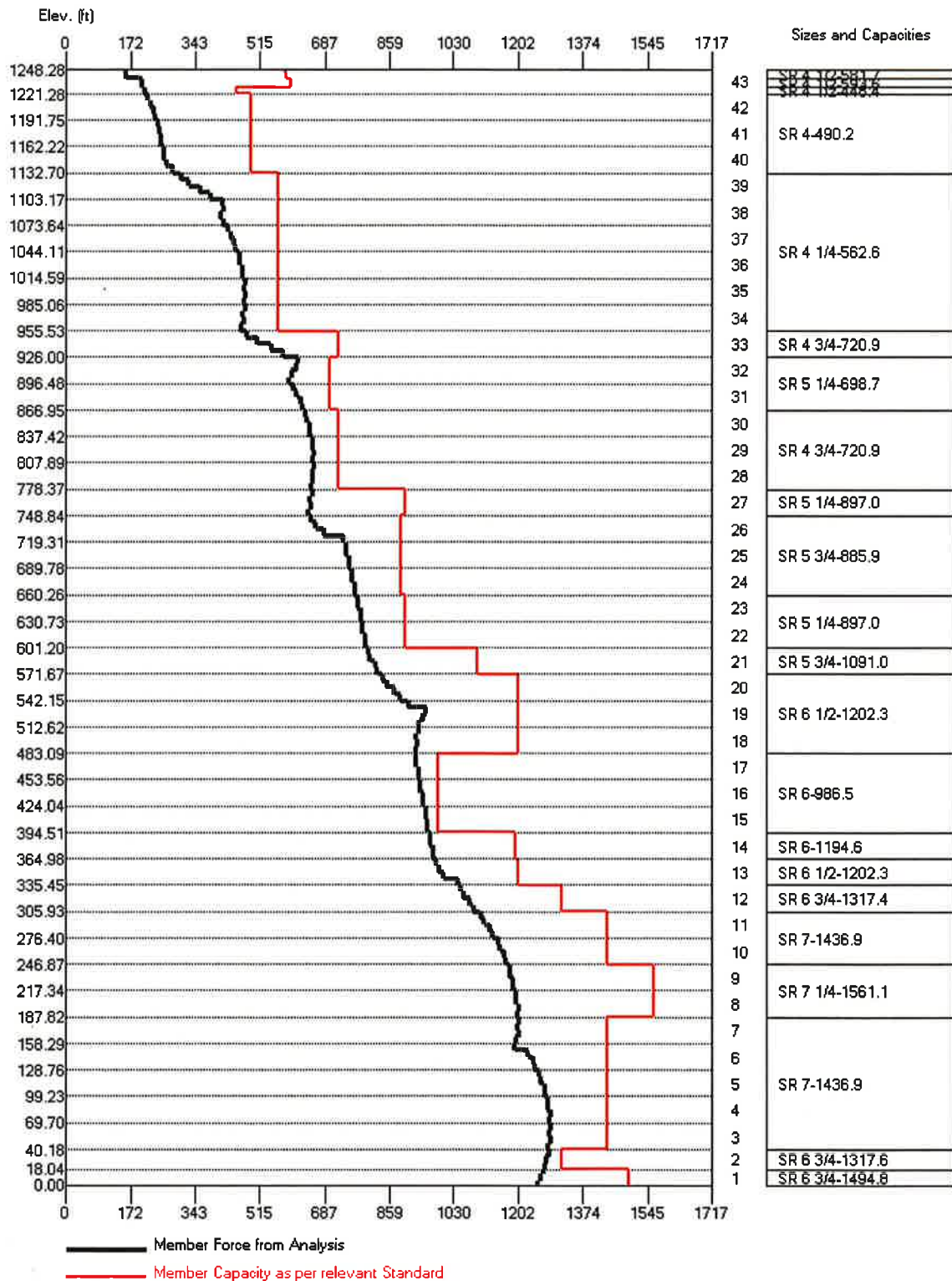
Guy Elevation (ft)	Guy Maximum Stress Levels (% of Rated Capacity)
1228.68	71
1096.00	68
919.00	66
727.00	68
535.00	61
343.00	53
151.00	63

Elevation (ft)	Maximum Beam Rotation (Degrees) for Serviceability Conditions
1209.00	0.94
800.00	0.77
747.00	0.78
726.00	0.78
688.00	0.79
671.00	0.80
440.00	0.77
328.00	0.71
283.00	0.68
210.00	0.57
195.00	0.53
140.00	0.42
120.00	0.38
110.00	0.36
106.00	0.34
50.00	0.24
30.00	0.21



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MAXIMUM LEG COMPRESSION (Kips)



MAXIMUM DIAGONALS CAPACITIES (COMPRESSION) (Kips)

