

August 27, 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 on the existing 1,339-foot guyed-lattice tower at 190 Colt Highway, Farmington, Connecticut (the “Property”). Eight (8) of Cellco’s antennas are located at the 120-foot level and two (2) of Cellco’s antennas are located at the 106-foot level on the tower. 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 remove its two (2) existing antennas at the 106-foot level and utilize the existing eight (8) antennas to provide 700 MHz, 850 MHz and 2100 MHz wireless services. No new antennas will be installed.

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).

13105626-v1

# Robinson+Cole

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1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's antennas will be located 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 Cellco's 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 1.
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 2*).

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**

Site Name: Farmington Tower Height: 1339Ft		General		Power		Density							
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. 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	0	0	120	0.0000	1970	1.0000	0.00%						
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%						43.36%
* Source: Siting Council													

# **ATTACHMENT 2**



PROJECT:  
**STRUCTURAL ANALYSIS**  
of  
**Existing 1339ft**  
**LRM3700 Guyed Mast**

CUSTOMER:  
**VitalSite Services, Inc**

SITE:  
**Rattlesnake**  
**(aka Farmington), CT**

TURRIS FILE:  
**14-0519**  
**August 1, 2014**



Turriss Project: 14-0519  
August 1, 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, 9<sup>th</sup> Floor  
East Hartford, CT 06810

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

Issued by: Meimei Lam  
TURRIS CORP.  
70 Todd Road, Georgetown, ON, Canada L7G 4R7  
Phone: (905) 877-8885 Fax: (905) 877-8835

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



Turriss Project: 14-0519  
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**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 proposed antenna on the tower based on information provided by VitalSite Services, Inc on July 14, 2014 and subsequent updates on July 29, 2014. Table 1 tabulates the proposed antennas and feedlines and Table 2 tabulates the removed equipment from the tower.

Table 1 –Proposed Equipment

ID	Pos	Description	Qty	Elev (ft)	Tx Line	Qty	AZ	Comments	Status
81a		Swedcom SCE-6016 Rev 2	1	120	1 5/8"	12	0		P
81b		Swedcom SACP 2x5516	1	120			0		P
81c		Swedcom SWCP 2X5514	1	120			0		P
81d		Swedcom SCE-6016 Rev 2	1	120			0		P
83a		Swedcom SCE-6016 Rev 2	1	120			270	2 existing Andrew CB721-DF	P
83b		Swedcom SWCP 2x5514	1	120			270		P
83c		Swedcom SACP 2x5516	1	120			270		P
83d		Swedcom SCE-6016 Rev 2	1	120			270		P

Table 2 – Removed Equipment

ID	Pos	Description	Qty	Elev (ft)	Tx Line	Qty	AZ	Comments	Status
76		Kathrein 742-213	3	140	1-5/8"	6	30,150,270	Leg flush mounted	E
82		Swedcom SPE-5017 T4	2	120					E
87		12' lightweight T-frame	1	106			120		E

Antenna ID 28 (1) BCD87010N25-6 (Az.39) at elev. 440ft has been updated to (1) BA80-67 (Az. 39) and fed by (1) 1-5/8" line.

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.
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)
3744.53	72.3

\*\*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

**5.0 Conclusions & Recommendations (cont'd)***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	497.08	352.37	609.30
2C	159.0	645.00	-30.0	497.37	373.81	622.18
3C	279.0	729.00	-120.0	488.26	387.11	623.10
1B	39.0	845.00	-140.0	124.56	157.50	200.80
2B	159.0	735.00	-38.0	130.27	171.37	215.26
3B	279.0	827.00	-130.0	128.19	164.09	208.23
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

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 EngineerJohn Wahba, Ph.D, P.E., P.Eng.  
Principal Engineer

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

All engineering services performed by Turris Corp. (Turris) 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 Turris Corporation, or acquired from field inspections.

It is the responsibility of the client to ensure that the information provided to Turris, 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. Turris is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Furthermore, Turris 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 Turris 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 Turris Corp., if any, pursuant to this Report shall be limited to the total funds actually received by Turris Corp. for preparation of this Report.

**TURRIS**

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**APPENDIX A  
Tower Profile**



### 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	BA80-67	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	48	None	None	39		E
74	73	Ice Guards	1	35	None	None	39		E
75	74	PL6	1	30	EW63	1	39		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	WJMJ Radio and TV	E
80		Scala PR-950U	1	50	7/8"	1	279	WJMJ Radio and TV	E



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81a	Swedcom SCE-6016 Rev 2	1	120			0		P
81b	Swedcom SACP 2x5516	1	120			0		P
81c	Swedcom SWCP 2X5514	1	120			0		P
81d	Swedcom SCE-6016 Rev 2	1	120			0		P
83a	Swedcom SCE-6016 Rev 2	1	120	1 5/8"	12	270	2 existing Andrew CB721-DF	P
83b	Swedcom SWCP 2x5514	1	120			270		P
83c	Swedcom SACP 2x5516	1	120			270		P
83d	Swedcom SCE-6016 Rev 2	1	120			270		P
84	Andrew CBC721-DF	2	120					P
86	12' lightweight T-frame	1	120			0		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	E
94	Prodelin VSAT #1183 (1.8m dish)	1	35	RG6-QS	1	Leg 8 of WG Bridge	.298" dia. coax cable	E
95	Trimble GPS Unit #57860-30	1	34	RG6-QS	1	Leg 7 of WG Bridge	.298" dia. coax cable	E

^Cat 5 cables are bundled together to 210'



**APPENDIX B**  
**Results of Analysis**

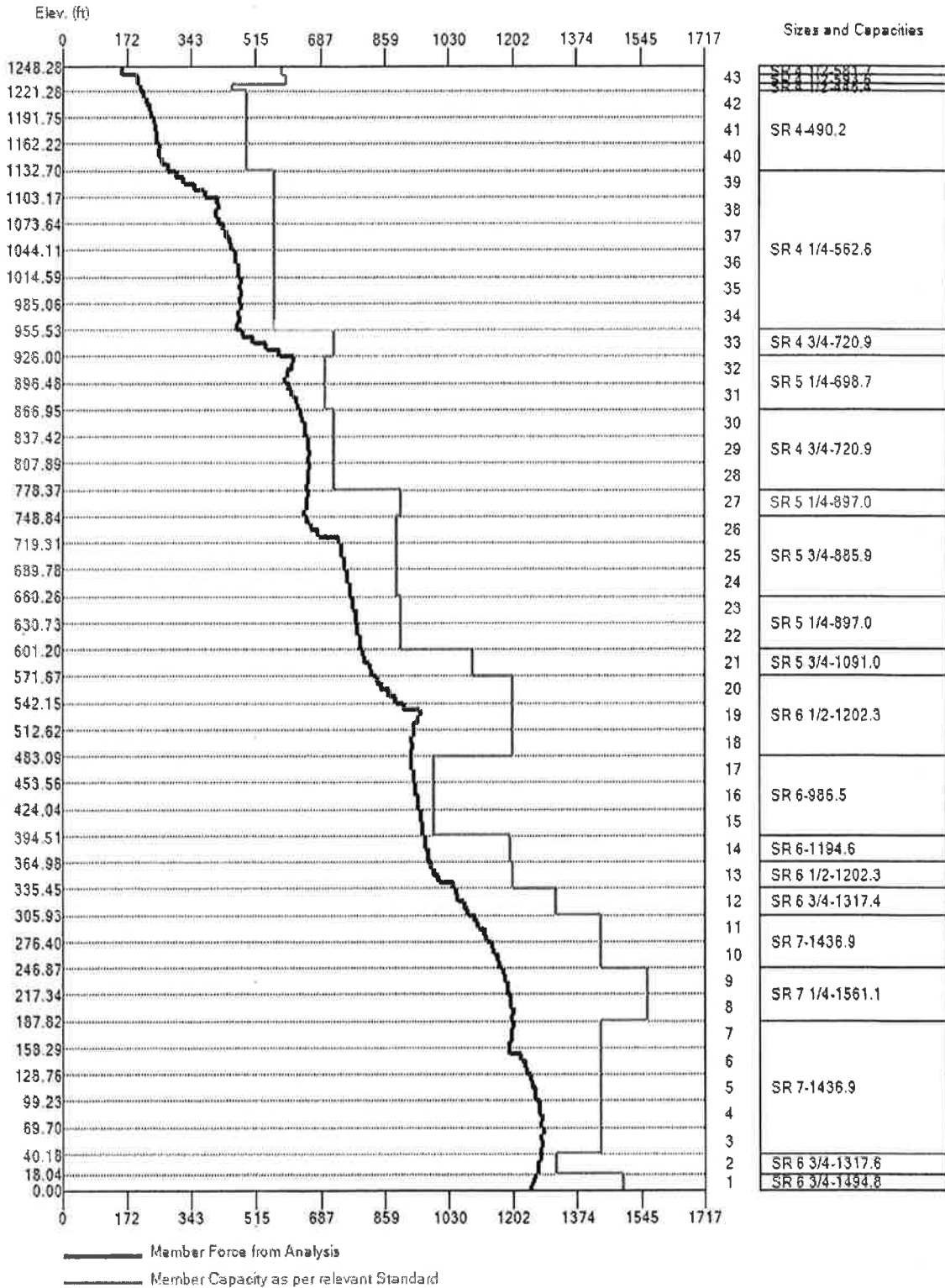
Guy Elevation (ft)	Guy Maximum Stress Levels (% of Rated Capacity)
1228.68	71
1096.00	68
919.00	66
727.00	68
535.00	61
343.00	53
151.00	63

Elevation (ft)	Maximum Beam Rotation (Degrees) for Serviceability Conditions
1209.00	0.94
800.00	0.78
747.00	0.78
726.00	0.79
688.00	0.80
671.00	0.80
440.00	0.78
328.00	0.72
283.00	0.69
210.00	0.58
195.00	0.55
120.00	0.38
110.00	0.37
50.00	0.24
30.00	0.21



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**MAXIMUM LEG COMPRESSION (Kips)**



## MAXIMUM DIAGONALS CAPACITIES (COMPRESSION) (Kips)

