

**ARECIBO RADIO OBSERVATORY FEED PLATFORM MEMBER CAPACITY AND LOAD TABLE**

												Bottom Chord Flanges:				Fy = 46 ksi		U = 0.85		Other:		Fy = 50 ksi		k = 1.00							
												(-) Compression				Fu = 67 ksi						Fu = 70 ksi		4.71v(E/Fy)		113.43					
												(+) Tension				Tension Limited Members								Compression Limited Members							
Member	Original Member	Area	1992 Reinforcement	Area	1963 Force Table	1992 Operational	1992 Survival	2010 STAAD Forces (20000)	Length	Gross Area	0.6FyAg	Anet	0.5FuAe	1963 Ratio	1992 Ratio	1992 Ratio	2010 Ratio	I	r	kL/r	Fcr	Pn/Q	1963 Ratio	1992 Ratio	1992 Ratio	2010 Ratio					
		[in <sup>2</sup> ]		[in <sup>2</sup> ]	[kip]	[kip]	[kip]	[kip]	[ft]	[in <sup>2</sup> ]	[kip]	[in <sup>2</sup> ]	[kip]	Operational	Operational	Survival	(20000 ft-k)	[in <sup>4</sup> ]	[in]		[ksi]	[kip]	Operational	Operational	Survival	(20000 ft-k)					
<b>MAIN TRUSS</b>																															
<b>Top Chords</b>																															
Uo-Uo			4-L5x3x3/8	11.44		-185	-62		33	11.44								1606	10.55	37.54	45.11	308.99		59.87%	20.07%						
Uo-U1	4-L3.5x3.5x5/16	8.36			20	-104	-30	-34.5	72	8.36								1011	11	78.55	31.85	159.42		65.23%	18.82%	21.64%					
U1-U2	2-C18x42.7	25.2			-376	-395	-401	-443.5	72	25.2								3146.5	11.17	77.35	32.28	487.15		81.08%	82.31%	91.04%					
U2-U3	2-C18x51.9	30.6			-557	-592	-611	-688.1	72	30.6								3831.6	11.19	77.21	32.33	592.47		94.01%	99.92%	103.13%					
U3-U4	2-C18x58	34.2	4-L3.5x3x3/8	9.2	-663	-778	-735	-859.6	72	43.4								5793	11.55	74.81	33.21	863.08		76.82%	90.14%	85.16%					
U4-U5	2-C18x58	34.2	4-L3.5x3x3/8	9.2	-654	-770	-722	-831.1	72	43.4								5793	11.55	74.81	33.21	863.08		75.78%	89.22%	83.65%					
<b>Bottom Chords</b>																															
Lo-L1	2-18x1 1/16 + 21 7/8x1/2	49.1875			1362	1301	1274	1398.4	24	49.1875	1357.58	52.19	1486.04	100.33%	95.83%	93.84%	103.01%														
L1-L2	2-18x1 1/16 + 21 7/8x1/2	49.1875			1362	1301	1274	1400.6	24	49.1875	1357.58	44.49	1490.42	100.33%	95.83%	93.84%	103.17%														
L2-L23	2-18x1 1/4 + 21 1/2x1/2	55.75			1553	1430	1469	1548.6	24	55.75	1538.70			100.93%	92.94%	95.47%	100.64%														
L23-L3	2-18x1 1/4 + 21 1/2x1/2	55.75			1553	1430	1469	972.9	24	55.75	1538.70			100.93%	92.94%	95.47%	63.23%														
L3-L4	2-18x1 7/16 + 21 1/8x1/2	62.3125			1736	1689	1645	1191.6	24	62.3125	1719.83			100.94%	98.21%	95.65%	69.29%														
L4-L5	2-18x1 1/2 + 21x9/16	65.8125			1825	1510	1548	1339.5	24	65.8125	1816.43	56.94	1907.41	100.47%	83.13%	85.22%	73.74%														
<b>Verticals</b>																															
Uo-Lo	4-L5x5x3/8	14.44	4-L5x5x1/2	19	-44	-302	-96	-95.2	30	19								2204	10.77	33.43	46.08	524.24		8.39%	57.61%	18.31%	18.16%				
U1-L1	2-L5x3x5/16	4.8			0	0	0	6.4	30	4.8	103.68			0.00%			6.17%														
U2-L2	2-C12x25	14.68			-238	-252	-267	-313.7	30	14.68								288	4.43	81.26	30.85	271.19		87.76%	92.92%	98.45%	115.67%				
U2L3-L23			2-C8x13.75	8.08		-104	-105	-117.2	12	8.08								72.2	2.99	48.16	42.20	204.18		50.94%	51.43%	57.40%					
U3-L3	2-C12x25	14.68	4-L3.5x2.5x5/16	7.12	-221	85/-307	-282	-354.3	30	21.8	654.00				13.00%			438.7	4.48	80.36	31.18	407.06		54.29%	75.42%	69.28%					
U4-L4	2-C12x25	14.68			-103	-108	151/-173	103.1/-136	30	14.68	440.40					34.29%	23.41%	288	4.43	81.26	30.85	271.19		37.98%	39.82%	63.79%					
U5-L5	2-L6x3.5x5/16	5.74			-8	0	0	-11.7	30	5.74																					
<b>Diagonals</b>																															
U1-Lo	2-C15x33.9	20			-319	-232	-323	-362.1	38.4	20								630	5.62	81.99	30.58	366.27		87.09%	63.34%	88.19%	98.86%				
U1-L2	2-C8x18.75	11.02			305	285	302	336.4	38.4	11.02	330.60	15.04	447.56	92.26%	86.21%	91.35%	101.75%														
U2-U2L3	2-C8x18.75	11.02			291	316	332	391.4	17.2	11.02	330.60	8.95	313.25	88.02%	95.58%	100.42%	124.95%														
U2L3-L2			2-C8x11.5	6.74				71.7	17.2	6.74	202.20						35.46%														
U2L3-L3	2-C8x18.75	11.02	2-C8x18.75	11.02	291	410	381	460.1	17.2	22.04	661.20	17.90	532.53	44.01%	62.01%	57.62%	86.40%														
U3-L4	2-C10x20	11.74			196	312/-23	297/-36	300.3	38.4	11.74	352.20	10.13	301.34	55.65%	88.59%	84.33%	99.66%														
U4-L5	2-C12x25	14.68			106/-100	115/-102	138/-125	153.2/-123.8	38.4	14.68	440.40			24.07%	26.11%	31.34%	34.79%	182.4	3.52	130.91	14.65	128.76		77.67%	79.22%	97.08%	96.15%				
<b>BRACING TRUSS</b>																															
Member	Original Member	Area	1992 Reinforcement	Area	1963 Force Table	1992 Operational	1992 Survival	2010 STAAD Forces (20000)	Length	Gross Area	0.6FyAg	Anet	0.5FuAe	1963 Ratio	1992 Ratio	1992 Ratio	2010 Ratio	I	r	kL/r	Fcr	Pn/Q	1963 Ratio	1992 Ratio	1992 Ratio	2010 Ratio					
		[in <sup>2</sup> ]		[in <sup>2</sup> ]	[kip]	[kip]	[kip]	[kip]	[ft]	[in <sup>2</sup> ]	[kip]	[in <sup>2</sup> ]	[kip]	Operational	Operational	Survival	(20000 ft-k)	[in <sup>4</sup> ]	[in]		[ksi]	[kip]	Operational	Operational	Survival	(20000 ft-k)					
<b>Top Chords</b>																															
U20-U21	2-C10x15.3	8.96			-135	-151	-172	-153.2	72	8.96								1327	12.17	71.00	34.59	185.57		72.75%	81.37%	92.69%	82.56%				
U21-U22	2-C10x15.3	8.96			-121	-154	-165	-143.2	72	8.96								1327	12.17	71.00	34.59	185.57		65.20%	82.99%	88.92%	77.17%				
<b>Bottom Chords</b>																															
L20-L21	2-16x1/2 + 23x7/16	26.0625			12	41/-59	98/-49	15.1/-62.3	19.29	26.0625	719.33			1.67%	5.70%	13.62%	2.10%	2653	10.09	22.94	48.11	750.85		7.86%	6.53%	8.30%					
L21-L22	2-16x1/2 + 23x7/16	26.0625			119	7/-59	105/-45	196.5	16.71	26.0625	719.33			16.54%	0.97%	14.60%	27.32%	2654	10.09	19.87	48.58	758.11		7.78%	5.94%						
<b>Verticals</b>																															
U21-L21	2-C10x15.3	8.96			40/-50	36/-23	53/-66	48.5/-53	30	8.96	268.80			14.88%	13.39%	19.72%	18.04%	1327	12.17	29.58	46.90	251.64		19.87%	9.14%	26.23%	21.06%				
U22-L22	2-L6x3.5x5/16	5.74			-2	0	0	-1.7	30	5.74																					
<b>Diagonals</b>																															
U20-L21	2-C9x13.4	7.88	2-C9x20	11.74	222	304	271	314.9	35.67	11.74	352.20	11.44	340.38	63.03%	86.31%	76.94%	92.51%														
U21-L22	2-C10x15.3	8.96			55/-49	41/-29	74/-64	62/-54.2	34.34	8.96	268.80			20.46%	20.46%	27.53%	23.07%	1327	3.52	117.06	18.32	98.28		49.86%	29.51%	65.12%	55.15%				
												90%-100% Stressed Over 100% Stressed																			