

# ***ANALYSIS***

*For:*

***Mount Assembly  
60m Tower***

**February 7, 2011**

*Prepared By:*

**Karl Tashjian, RCE**

***Site Location: India***



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Job No	Sheet No <b>1</b>	Rev
Part		
Ref		
By	Date 07-Feb-11	Chd
Client WindTronics	File TEST WIND Tronics.std	Date/Time 07-Feb-2011 16:53

## Job Information

	Engineer	Checked	Approved
Name:			
Date:	07-Feb-11		

Structure Type	SPACE FRAME
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Number of Nodes	14	Highest Node	34
Number of Elements	31	Highest Beam	85

Number of Basic Load Cases	1
Number of Combination Load Cases	0

Included in this printout are data for:

All	The Whole Structure
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Included in this printout are results for load cases:

Type	L/C	Name
Primary	1	LOAD CASE 1

## Beams

Beam	Node A	Node B	Length (in)	Property	$\beta$ (degrees)
23	1	30	51.867	1	0
27	13	33	64.026	2	0
28	1	31	71.042	2	0
29	1	32	71.042	2	0
39	19	27	64.026	2	0
44	22	34	46.767	1	0
45	22	28	46.200	3	0
55	19	29	46.200	3	0
56	19	18	130.321	3	0
61	27	13	64.026	2	0
63	26	28	103.362	4	0
64	26	22	65.337	5	0
66	26	29	103.362	4	0
68	26	30	80.719	5	0
69	30	22	51.867	1	0
70	31	18	71.042	2	0
71	22	31	67.840	3	0
72	31	30	46.200	3	0
73	32	19	71.042	2	0
74	30	32	46.200	3	0
75	32	22	67.840	3	0
76	33	18	64.026	2	0



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Job No	Sheet No <b>2</b>	Rev
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## Beams Cont...

Beam	Node A	Node B	Length (in)	Property	$\beta$ (degrees)
77	22	33	67.409	3	0
78	34	13	46.767	1	0
79	33	34	46.200	3	0
80	34	27	46.200	3	0
81	22	27	67.409	3	0
82	33	27	65.160	3	0
83	31	32	65.160	3	0
84	28	18	46.200	3	0
85	29	22	46.200	3	0

## Section Properties

Prop	Section	Area (in <sup>2</sup> )	$I_{yy}$ (in <sup>4</sup> )	$I_{zz}$ (in <sup>4</sup> )	J (in <sup>4</sup> )	Material
1	ISA150X150X12	5.394	28.645	7.400	0.407	STEEL
2	ISA75X75X5	1.127	1.526	0.388	0.015	STEEL
3	ISA70X70X5	1.049	1.231	0.314	0.014	STEEL
4	PIPS20	1.070	0.666	0.666	1.331	STEEL
5	TUB30304	2.590	3.200	3.200	5.199	STEEL

## Materials

Mat	Name	E (kip/in <sup>2</sup> )	$\nu$	Density (kip/in <sup>3</sup> )	$\alpha$ (/°F)
1	STEEL	29E+3	0.300	0.000	6E-6
2	STAINLESSSTEEL	28E+3	0.300	0.000	10E-6
3	ALUMINUM	10E+3	0.330	0.000	13E-6
4	CONCRETE	3.15E+3	0.170	0.000	5E-6

## Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip*ft/deg)	rY (kip*ft/deg)	rZ (kip*ft/deg)
1	Fixed	Fixed	Fixed	-	-	-
13	Fixed	-	Fixed	Fixed	-	Fixed
18	Fixed	-	Fixed	Fixed	-	Fixed
19	Fixed	-	Fixed	Fixed	-	Fixed



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### Node Loads : 1 LOAD CASE 1

Node	FX (kip)	FY (kip)	FZ (kip)	MX (kip'in)	MY (kip'in)	MZ (kip'in)
13	-	-110.000	-	-	-	-
26	-	-0.250	0.600	-	-	-

### Beam Maximum Forces by Section Property

Section		Axial	Shear		Torsion	Bending	
		Max Fx (kip)	Max Fy (kip)	Max Fz (kip)	Max Mx (kip'in)	Max My (kip'in)	Max Mz (kip'in)
ISA150X150X12	Max +ve	95.067	0.408	0.010	0.081	0.292	9.567
	Max -ve		-0.380	-0.038	-0.036	-1.543	-9.526
ISA75X75X5	Max +ve	10.850	0.014	0.033	0.004	1.525	0.408
	Max -ve		-0.014	-0.024	-0.004	-1.072	-0.509
ISA70X70X5	Max +ve	0.485	0.015	0.119	0.002	4.408	0.427
	Max -ve	-0.730	-0.016	-0.168	-0.002	-4.726	-0.396
PIPS20	Max +ve	0.584	0.002	0.013	0.035	0.946	0.181
	Max -ve	-0.667			-0.008	-0.374	-0.071
TUB30304	Max +ve	0.387	0.026	0.017	0.126	1.321	1.737
	Max -ve		-0.042	-0.010	-0.205	-0.058	-1.616

### Beam Combined Axial and Bending Stresses

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
23	1:LOAD CASE	0.000	17.6E+3	17.6E+3	17.7E+3	17.6E+3	0.000	17.7E+3
		5.187	17.4E+3	17.4E+3	17.9E+3	17.6E+3	0.000	17.9E+3
		10.373	17.2E+3	17.2E+3	18.2E+3	17.6E+3	0.000	18.2E+3
		15.560	17E+3	16.9E+3	18.5E+3	17.6E+3	0.000	18.5E+3
		20.747	16.8E+3	16.7E+3	18.7E+3	17.6E+3	0.000	18.7E+3
		25.934	16.6E+3	16.5E+3	19E+3	17.6E+3	0.000	19E+3
		31.120	16.4E+3	16.3E+3	19.3E+3	17.6E+3	0.000	19.3E+3
		36.307	16.2E+3	16.1E+3	19.5E+3	17.6E+3	0.000	19.5E+3
		41.494	16E+3	15.9E+3	19.8E+3	17.6E+3	0.000	19.8E+3
		46.680	15.7E+3	15.7E+3	20.1E+3	17.6E+3	0.000	20.1E+3
51.867	15.5E+3	15.5E+3	20.3E+3	17.6E+3	0.000	20.3E+3		
27	1:LOAD CASE	0.000	7.16E+3	9.7E+3	11.1E+3	9.61E+3	0.000	11.1E+3
		6.403	7.66E+3	9.63E+3	10.8E+3	9.61E+3	0.000	10.8E+3
		12.805	8.17E+3	9.56E+3	10.5E+3	9.61E+3	0.000	10.5E+3
		19.208	8.68E+3	9.48E+3	10.3E+3	9.61E+3	0.000	10.3E+3
		25.610	9.18E+3	9.41E+3	10E+3	9.61E+3	0.000	10E+3
		32.013	9.69E+3	9.33E+3	9.74E+3	9.61E+3	0.000	9.74E+3
		38.415	10.2E+3	9.26E+3	9.47E+3	9.61E+3	0.000	10.2E+3
		44.818	10.7E+3	9.18E+3	9.21E+3	9.61E+3	0.000	10.7E+3
		51.220	11.2E+3	9.11E+3	8.95E+3	9.61E+3	0.000	11.2E+3
		57.623	11.7E+3	9.04E+3	8.68E+3	9.61E+3	0.000	11.7E+3



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Job Title Mount Assembly
Client WindTronics

### Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		64.026	12.2E+3	8.96E+3	8.42E+3	9.61E+3	0.000	12.2E+3
28	1:LOAD CASE	0.000	9.84E+3	9.69E+3	8.87E+3	9.36E+3	0.000	9.84E+3
		7.104	9.86E+3	9.43E+3	9.01E+3	9.36E+3	0.000	9.86E+3
		14.208	9.88E+3	9.17E+3	9.16E+3	9.36E+3	0.000	9.88E+3
		21.313	9.91E+3	8.9E+3	9.31E+3	9.36E+3	0.000	9.91E+3
		28.417	9.93E+3	8.64E+3	9.45E+3	9.36E+3	0.000	9.93E+3
		35.521	9.95E+3	8.38E+3	9.6E+3	9.36E+3	0.000	9.95E+3
		42.625	9.98E+3	8.11E+3	9.75E+3	9.36E+3	0.000	9.98E+3
		49.730	10E+3	7.85E+3	9.89E+3	9.36E+3	0.000	10E+3
		56.834	10E+3	7.59E+3	10E+3	9.36E+3	0.000	10E+3
		63.938	10E+3	7.32E+3	10.2E+3	9.36E+3	0.000	10.2E+3
		71.042	10.1E+3	7.06E+3	10.3E+3	9.36E+3	0.000	10.3E+3
29	1:LOAD CASE	0.000	9.67E+3	9.78E+3	8.91E+3	9.36E+3	0.000	9.78E+3
		7.104	9.55E+3	9.69E+3	9.04E+3	9.36E+3	0.000	9.69E+3
		14.208	9.43E+3	9.6E+3	9.17E+3	9.36E+3	0.000	9.6E+3
		21.313	9.31E+3	9.51E+3	9.3E+3	9.36E+3	0.000	9.51E+3
		28.417	9.19E+3	9.42E+3	9.43E+3	9.36E+3	0.000	9.43E+3
		35.521	9.06E+3	9.34E+3	9.55E+3	9.36E+3	0.000	9.55E+3
		42.625	8.94E+3	9.25E+3	9.68E+3	9.36E+3	0.000	9.68E+3
		49.730	8.82E+3	9.16E+3	9.81E+3	9.36E+3	0.000	9.81E+3
		56.834	8.7E+3	9.07E+3	9.94E+3	9.36E+3	0.000	9.94E+3
		63.938	8.58E+3	8.98E+3	10.1E+3	9.36E+3	0.000	10.1E+3
		71.042	8.46E+3	8.89E+3	10.2E+3	9.36E+3	0.000	10.2E+3
39	1:LOAD CASE	0.000	7.59E+3	10.5E+3	9.46E+3	9.24E+3	0.000	10.5E+3
		6.403	7.76E+3	10.5E+3	9.39E+3	9.24E+3	0.000	10.5E+3
		12.805	7.94E+3	10.4E+3	9.31E+3	9.24E+3	0.000	10.4E+3
		19.208	8.12E+3	10.3E+3	9.24E+3	9.24E+3	0.000	10.3E+3
		25.610	8.3E+3	10.3E+3	9.16E+3	9.24E+3	0.000	10.3E+3
		32.013	8.48E+3	10.2E+3	9.09E+3	9.24E+3	0.000	10.2E+3
		38.415	8.66E+3	10.2E+3	9.01E+3	9.24E+3	0.000	10.2E+3
		44.818	8.84E+3	10.1E+3	8.94E+3	9.24E+3	0.000	10.1E+3
		51.220	9.02E+3	10.1E+3	8.86E+3	9.24E+3	0.000	10.1E+3
		57.623	9.2E+3	10E+3	8.79E+3	9.24E+3	0.000	10E+3
		64.026	9.38E+3	9.95E+3	8.71E+3	9.24E+3	0.000	9.95E+3
44	1:LOAD CASE	0.000	19.8E+3	19.9E+3	14.5E+3	17.5E+3	0.000	19.9E+3
		4.677	19.4E+3	19.4E+3	15.1E+3	17.5E+3	0.000	19.4E+3
		9.353	18.9E+3	18.9E+3	15.7E+3	17.5E+3	0.000	18.9E+3
		14.030	18.4E+3	18.5E+3	16.3E+3	17.5E+3	0.000	18.5E+3
		18.707	18E+3	18E+3	16.9E+3	17.5E+3	0.000	18E+3
		23.384	17.5E+3	17.5E+3	17.5E+3	17.5E+3	0.000	17.5E+3
		28.060	17E+3	17E+3	18.1E+3	17.5E+3	0.000	18.1E+3
		32.737	16.6E+3	16.5E+3	18.7E+3	17.5E+3	0.000	18.7E+3
		37.414	16.1E+3	16.1E+3	19.3E+3	17.5E+3	0.000	19.3E+3
		42.091	15.6E+3	15.6E+3	19.9E+3	17.5E+3	0.000	19.9E+3
		46.767	15.2E+3	15.1E+3	20.5E+3	17.5E+3	0.000	20.5E+3



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Job No

Sheet No

5

Rev

Part

Job Title Mount Assembly

Ref

By

Date 07-Feb-11

Chd

Client WindTronics

File TEST WIND Tronics.std

Date/Time 07-Feb-2011 16:53

**Beam Combined Axial and Bending Stresses Cont...**

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
45	1:LOAD CASE	0.000	-3E+3	2.05E+3	58.536	-236.579	-3E+3	2.05E+3
		4.620	-2.15E+3	1.28E+3	11.179	-236.579	-2.15E+3	1.28E+3
		9.240	-1.3E+3	502.713	-36.179	-236.579	-1.3E+3	502.713
		13.860	-450.156	-270.506	-83.537	-236.579	-450.156	0.000
		18.480	399.651	-1.04E+3	-130.894	-236.579	-1.04E+3	399.651
		23.100	1.25E+3	-1.82E+3	-178.252	-236.579	-1.82E+3	1.25E+3
		27.720	2.1E+3	-2.59E+3	-225.610	-236.579	-2.59E+3	2.1E+3
		32.340	2.95E+3	-3.36E+3	-272.967	-236.579	-3.36E+3	2.95E+3
		36.960	3.8E+3	-4.14E+3	-320.325	-236.579	-4.14E+3	3.8E+3
		41.580	4.65E+3	-4.91E+3	-367.683	-236.579	-4.91E+3	4.65E+3
46.200	5.5E+3	-5.68E+3	-415.040	-236.579	-5.68E+3	5.5E+3		
55	1:LOAD CASE	0.000	4.02E+3	-5.52E+3	-625.759	-695.718	-5.52E+3	4.02E+3
		4.620	2.8E+3	-4.29E+3	-638.030	-695.718	-4.29E+3	2.8E+3
		9.240	1.59E+3	-3.05E+3	-650.300	-695.718	-3.05E+3	1.59E+3
		13.860	374.404	-1.82E+3	-662.571	-695.718	-1.82E+3	374.404
		18.480	-840.823	-584.373	-674.842	-695.718	-840.823	0.000
		23.100	-2.06E+3	650.699	-687.113	-695.718	-2.06E+3	650.699
		27.720	-3.27E+3	1.89E+3	-699.383	-695.718	-3.27E+3	1.89E+3
		32.340	-4.49E+3	3.12E+3	-711.654	-695.718	-4.49E+3	3.12E+3
		36.960	-5.7E+3	4.36E+3	-723.925	-695.718	-5.7E+3	4.36E+3
		41.580	-6.92E+3	5.59E+3	-736.196	-695.718	-6.92E+3	5.59E+3
46.200	-8.13E+3	6.83E+3	-748.466	-695.718	-8.13E+3	6.83E+3		
56	1:LOAD CASE	0.000	-2.99E+3	2.99E+3	-0.400	0.000	-2.99E+3	2.99E+3
		13.032	-2.36E+3	2.36E+3	-0.320	0.000	-2.36E+3	2.36E+3
		26.064	-1.73E+3	1.73E+3	-0.240	0.000	-1.73E+3	1.73E+3
		39.096	-1.1E+3	1.1E+3	-0.160	0.000	-1.1E+3	1.1E+3
		52.128	-474.268	474.397	-0.080	0.000	-474.268	474.397
		65.160	154.540	-154.540	-0.000	0.000	-154.540	154.540
		78.192	783.348	-783.478	0.080	0.000	-783.478	783.348
		91.224	1.41E+3	-1.41E+3	0.160	0.000	-1.41E+3	1.41E+3
		104.257	2.04E+3	-2.04E+3	0.240	0.000	-2.04E+3	2.04E+3
		117.289	2.67E+3	-2.67E+3	0.320	0.000	-2.67E+3	2.67E+3
130.321	3.3E+3	-3.3E+3	0.400	0.000	-3.3E+3	3.3E+3		
61	1:LOAD CASE	0.000	11.3E+3	9.9E+3	8.42E+3	9.63E+3	0.000	11.3E+3
		6.403	10.9E+3	9.85E+3	8.69E+3	9.63E+3	0.000	10.9E+3
		12.805	10.5E+3	9.81E+3	8.96E+3	9.63E+3	0.000	10.5E+3
		19.208	10.1E+3	9.76E+3	9.24E+3	9.63E+3	0.000	10.1E+3
		25.610	9.74E+3	9.72E+3	9.51E+3	9.63E+3	0.000	9.74E+3
		32.013	9.34E+3	9.67E+3	9.78E+3	9.63E+3	0.000	9.78E+3
		38.415	8.94E+3	9.63E+3	10E+3	9.63E+3	0.000	10E+3
		44.818	8.54E+3	9.58E+3	10.3E+3	9.63E+3	0.000	10.3E+3
		51.220	8.15E+3	9.54E+3	10.6E+3	9.63E+3	0.000	10.6E+3
		57.623	7.75E+3	9.49E+3	10.9E+3	9.63E+3	0.000	10.9E+3
64.026	7.35E+3	9.45E+3	11.1E+3	9.63E+3	0.000	11.1E+3		
63	1:LOAD CASE	0.000	309.646	-57.150	781.548	1.15E+3	-57.150	1.15E+3



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### Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		10.336	345.839	159.195	745.355	931.999	0.000	931.999
		20.672	382.032	375.540	709.162	715.654	0.000	715.654
		31.009	418.225	591.885	672.969	499.309	0.000	672.969
		41.345	454.418	808.230	636.777	282.964	0.000	808.230
		51.681	490.611	1.02E+3	600.584	66.619	0.000	1.02E+3
		62.017	526.804	1.24E+3	564.391	-149.725	-149.725	1.24E+3
		72.354	562.997	1.46E+3	528.198	-366.071	-366.071	1.46E+3
		82.690	599.189	1.67E+3	492.005	-582.415	-582.415	1.67E+3
		93.026	635.382	1.89E+3	455.812	-798.760	-798.760	1.89E+3
		103.362	671.575	2.11E+3	419.619	-1.02E+3	-1.02E+3	2.11E+3
64	1:LOAD CASE	0.000	-800.067	-243.772	979.809	423.514	-800.067	979.809
		6.534	-688.824	-193.611	868.566	373.352	-688.824	868.566
		13.067	-577.580	-143.449	757.322	323.191	-577.580	757.322
		19.601	-466.337	-93.287	646.079	273.029	-466.337	646.079
		26.135	-355.093	-43.126	534.835	222.867	-355.093	534.835
		32.668	-243.850	7.036	423.592	172.706	-243.850	423.592
		39.202	-132.606	57.198	312.348	122.544	-132.606	312.348
		45.736	-21.363	107.360	201.105	72.382	-21.363	201.105
		52.269	89.881	157.521	89.861	22.221	0.000	157.521
		58.803	201.124	207.683	-21.382	-27.941	-27.941	207.683
		65.337	312.367	257.845	-132.626	-78.103	-132.626	312.367
66	1:LOAD CASE	0.000	-945.667	-1.29E+3	-301.983	42.457	-1.29E+3	42.457
		10.336	-910.200	-1.05E+3	-337.450	-192.838	-1.05E+3	0.000
		20.672	-874.733	-819.516	-372.917	-428.133	-874.733	0.000
		31.009	-839.266	-584.221	-408.383	-663.428	-839.266	0.000
		41.345	-803.799	-348.926	-443.850	-898.723	-898.723	0.000
		51.681	-768.332	-113.631	-479.317	-1.13E+3	-1.13E+3	0.000
		62.017	-732.865	121.663	-514.784	-1.37E+3	-1.37E+3	121.663
		72.354	-697.398	356.958	-550.251	-1.6E+3	-1.6E+3	356.958
		82.690	-661.931	592.253	-585.718	-1.84E+3	-1.84E+3	592.253
		93.026	-626.464	827.549	-621.185	-2.08E+3	-2.08E+3	827.549
		103.362	-590.997	1.06E+3	-656.652	-2.31E+3	-2.31E+3	1.06E+3
68	1:LOAD CASE	0.000	914.768	899.076	-615.657	-599.966	-615.657	914.768
		8.072	694.900	804.603	-395.789	-505.492	-505.492	804.603
		16.144	475.031	710.129	-175.921	-411.019	-411.019	710.129
		24.216	255.163	615.656	43.947	-316.545	-316.545	615.656
		32.288	35.295	521.183	263.815	-222.072	-222.072	521.183
		40.360	-184.573	426.709	483.684	-127.599	-184.573	483.684
		48.431	-404.441	332.236	703.552	-33.125	-404.441	703.552
		56.503	-624.309	237.762	923.420	61.348	-624.309	923.420
		64.575	-844.178	143.289	1.14E+3	155.822	-844.178	1.14E+3
		72.647	-1.06E+3	48.815	1.36E+3	250.295	-1.06E+3	1.36E+3
		80.719	-1.28E+3	-45.658	1.58E+3	344.769	-1.28E+3	1.58E+3
69	1:LOAD CASE	0.000	15.7E+3	15.8E+3	19.9E+3	17.6E+3	0.000	19.9E+3
		5.187	16.1E+3	16.2E+3	19.4E+3	17.6E+3	0.000	19.4E+3



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### Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		10.373	16.5E+3	16.6E+3	18.8E+3	17.6E+3	0.000	18.8E+3
		15.560	17E+3	17E+3	18.3E+3	17.6E+3	0.000	18.3E+3
		20.747	17.4E+3	17.4E+3	17.8E+3	17.6E+3	0.000	17.8E+3
		25.934	17.8E+3	17.9E+3	17.2E+3	17.6E+3	0.000	17.9E+3
		31.120	18.2E+3	18.3E+3	16.7E+3	17.6E+3	0.000	18.3E+3
		36.307	18.7E+3	18.7E+3	16.2E+3	17.6E+3	0.000	18.7E+3
		41.494	19.1E+3	19.1E+3	15.6E+3	17.6E+3	0.000	19.1E+3
		46.680	19.5E+3	19.5E+3	15.1E+3	17.6E+3	0.000	19.5E+3
		51.867	19.9E+3	19.9E+3	14.6E+3	17.6E+3	0.000	19.9E+3
70	1:LOAD CASE	0.000	10.8E+3	6.79E+3	9.78E+3	9.25E+3	0.000	10.8E+3
		7.104	10.7E+3	7.09E+3	9.69E+3	9.25E+3	0.000	10.7E+3
		14.208	10.5E+3	7.4E+3	9.59E+3	9.25E+3	0.000	10.5E+3
		21.313	10.4E+3	7.7E+3	9.5E+3	9.25E+3	0.000	10.4E+3
		28.417	10.2E+3	8.01E+3	9.41E+3	9.25E+3	0.000	10.2E+3
		35.521	10.1E+3	8.31E+3	9.32E+3	9.25E+3	0.000	10.1E+3
		42.625	9.9E+3	8.62E+3	9.23E+3	9.25E+3	0.000	9.9E+3
		49.730	9.75E+3	8.92E+3	9.14E+3	9.25E+3	0.000	9.75E+3
		56.834	9.59E+3	9.23E+3	9.05E+3	9.25E+3	0.000	9.59E+3
		63.938	9.44E+3	9.53E+3	8.96E+3	9.25E+3	0.000	9.53E+3
		71.042	9.28E+3	9.84E+3	8.86E+3	9.25E+3	0.000	9.84E+3
71	1:LOAD CASE	0.000	-222.257	-1.39E+3	1.3E+3	135.604	-1.39E+3	1.3E+3
		6.784	-110.071	-1.11E+3	1.06E+3	135.604	-1.11E+3	1.06E+3
		13.568	2.116	-830.265	815.385	135.604	-830.265	815.385
		20.352	114.302	-550.332	572.921	135.604	-550.332	572.921
		27.136	226.489	-270.400	330.457	135.604	-270.400	330.457
		33.920	338.675	9.532	87.993	135.604	0.000	338.675
		40.704	450.862	289.465	-154.471	135.604	-154.471	450.862
		47.488	563.048	569.397	-396.935	135.604	-396.935	569.397
		54.272	675.235	849.330	-639.399	135.604	-639.399	849.330
		61.056	787.421	1.13E+3	-881.863	135.604	-881.863	1.13E+3
		67.840	899.608	1.41E+3	-1.12E+3	135.604	-1.12E+3	1.41E+3
72	1:LOAD CASE	0.000	-775.852	-1.22E+3	959.311	-121.629	-1.22E+3	959.311
		4.620	-709.911	-872.054	706.152	-121.629	-872.054	706.152
		9.240	-643.970	-528.581	452.994	-121.629	-643.970	452.994
		13.860	-578.028	-185.109	199.836	-121.629	-578.028	199.836
		18.480	-512.087	158.363	-53.322	-121.629	-512.087	158.363
		23.100	-446.146	501.836	-306.480	-121.629	-446.146	501.836
		27.720	-380.204	845.308	-559.639	-121.629	-559.639	845.308
		32.340	-314.263	1.19E+3	-812.797	-121.629	-812.797	1.19E+3
		36.960	-248.322	1.53E+3	-1.07E+3	-121.629	-1.07E+3	1.53E+3
		41.580	-182.380	1.88E+3	-1.32E+3	-121.629	-1.32E+3	1.88E+3
		46.200	-116.439	2.22E+3	-1.57E+3	-121.629	-1.57E+3	2.22E+3
73	1:LOAD CASE	0.000	9.92E+3	7.98E+3	9.58E+3	9.24E+3	0.000	9.92E+3
		7.104	9.95E+3	8.04E+3	9.53E+3	9.24E+3	0.000	9.95E+3
		14.208	9.97E+3	8.11E+3	9.47E+3	9.24E+3	0.000	9.97E+3



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### Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		21.313	10E+3	8.17E+3	9.42E+3	9.24E+3	0.000	10E+3
		28.417	10E+3	8.23E+3	9.37E+3	9.24E+3	0.000	10E+3
		35.521	10E+3	8.3E+3	9.31E+3	9.24E+3	0.000	10E+3
		42.625	10.1E+3	8.36E+3	9.26E+3	9.24E+3	0.000	10.1E+3
		49.730	10.1E+3	8.42E+3	9.21E+3	9.24E+3	0.000	10.1E+3
		56.834	10.1E+3	8.49E+3	9.16E+3	9.24E+3	0.000	10.1E+3
		63.938	10.1E+3	8.55E+3	9.1E+3	9.24E+3	0.000	10.1E+3
		71.042	10.2E+3	8.61E+3	9.05E+3	9.24E+3	0.000	10.2E+3
74	1:LOAD CASE	0.000	1.78E+3	264.711	-1.62E+3	-160.141	-1.62E+3	1.78E+3
		4.620	1.58E+3	76.322	-1.38E+3	-160.141	-1.38E+3	1.58E+3
		9.240	1.38E+3	-112.067	-1.14E+3	-160.141	-1.14E+3	1.38E+3
		13.860	1.17E+3	-300.457	-897.608	-160.141	-897.608	1.17E+3
		18.480	969.447	-488.846	-655.362	-160.141	-655.362	969.447
		23.100	766.071	-677.235	-413.117	-160.141	-677.235	766.071
		27.720	562.694	-865.624	-170.871	-160.141	-865.624	562.694
		32.340	359.317	-1.05E+3	71.375	-160.141	-1.05E+3	359.317
		36.960	155.941	-1.24E+3	313.621	-160.141	-1.24E+3	313.621
		41.580	-47.436	-1.43E+3	555.867	-160.141	-1.43E+3	555.867
		46.200	-250.813	-1.62E+3	798.112	-160.141	-1.62E+3	798.112
75	1:LOAD CASE	0.000	2.56E+3	-188.525	-1.14E+3	148.465	-1.14E+3	2.56E+3
		6.784	1.97E+3	21.486	-898.909	148.465	-898.909	1.97E+3
		13.568	1.38E+3	231.496	-661.378	148.465	-661.378	1.38E+3
		20.352	780.979	441.507	-423.847	148.465	-423.847	780.979
		27.136	186.827	651.518	-186.316	148.465	-186.316	651.518
		33.920	-407.325	861.529	51.215	148.465	-407.325	861.529
		40.704	-1E+3	1.07E+3	288.746	148.465	-1E+3	1.07E+3
		47.488	-1.6E+3	1.28E+3	526.277	148.465	-1.6E+3	1.28E+3
		54.272	-2.19E+3	1.49E+3	763.808	148.465	-2.19E+3	1.49E+3
		61.056	-2.78E+3	1.7E+3	1E+3	148.465	-2.78E+3	1.7E+3
		67.840	-3.38E+3	1.91E+3	1.24E+3	148.465	-3.38E+3	1.91E+3
76	1:LOAD CASE	0.000	11.6E+3	7.41E+3	8.93E+3	9.24E+3	0.000	11.6E+3
		6.403	11.4E+3	7.58E+3	8.97E+3	9.24E+3	0.000	11.4E+3
		12.805	11.1E+3	7.75E+3	9E+3	9.24E+3	0.000	11.1E+3
		19.208	10.9E+3	7.92E+3	9.04E+3	9.24E+3	0.000	10.9E+3
		25.610	10.7E+3	8.08E+3	9.08E+3	9.24E+3	0.000	10.7E+3
		32.013	10.4E+3	8.25E+3	9.12E+3	9.24E+3	0.000	10.4E+3
		38.415	10.2E+3	8.42E+3	9.16E+3	9.24E+3	0.000	10.2E+3
		44.818	9.98E+3	8.59E+3	9.19E+3	9.24E+3	0.000	9.98E+3
		51.220	9.75E+3	8.75E+3	9.23E+3	9.24E+3	0.000	9.75E+3
		57.623	9.52E+3	8.92E+3	9.27E+3	9.24E+3	0.000	9.52E+3
		64.026	9.29E+3	9.09E+3	9.31E+3	9.24E+3	0.000	9.31E+3
77	1:LOAD CASE	0.000	2.58E+3	-206.730	-494.958	434.874	-494.958	2.58E+3
		6.741	2.22E+3	-196.273	-278.820	434.874	-278.820	2.22E+3
		13.482	1.86E+3	-185.816	-62.681	434.874	-185.816	1.86E+3
		20.223	1.5E+3	-175.359	153.457	434.874	-175.359	1.5E+3



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### Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		26.964	1.14E+3	-164.901	369.596	434.874	-164.901	1.14E+3
		33.705	780.219	-154.444	585.734	434.874	-154.444	780.219
		40.446	420.217	-143.987	801.872	434.874	-143.987	801.872
		47.186	60.216	-133.530	1.02E+3	434.874	-133.530	1.02E+3
		53.927	-299.786	-123.072	1.23E+3	434.874	-299.786	1.23E+3
		60.668	-659.788	-112.615	1.45E+3	434.874	-659.788	1.45E+3
		67.409	-1.02E+3	-102.158	1.67E+3	434.874	-1.02E+3	1.67E+3
78	1:LOAD CASE	0.000	15.3E+3	15.2E+3	20.4E+3	17.5E+3	0.000	20.4E+3
		4.677	15.7E+3	15.7E+3	19.8E+3	17.5E+3	0.000	19.8E+3
		9.353	16.1E+3	16.1E+3	19.3E+3	17.5E+3	0.000	19.3E+3
		14.030	16.5E+3	16.6E+3	18.7E+3	17.5E+3	0.000	18.7E+3
		18.707	16.9E+3	17.1E+3	18.2E+3	17.5E+3	0.000	18.2E+3
		23.384	17.4E+3	17.5E+3	17.6E+3	17.5E+3	0.000	17.6E+3
		28.060	17.8E+3	18E+3	17E+3	17.5E+3	0.000	18E+3
		32.737	18.2E+3	18.5E+3	16.5E+3	17.5E+3	0.000	18.5E+3
		37.414	18.6E+3	18.9E+3	15.9E+3	17.5E+3	0.000	18.9E+3
		42.091	19E+3	19.4E+3	15.3E+3	17.5E+3	0.000	19.4E+3
		46.767	19.4E+3	19.9E+3	14.8E+3	17.5E+3	0.000	19.9E+3
79	1:LOAD CASE	0.000	-222.937	83.364	-1.05E+3	-510.197	-1.05E+3	83.364
		4.620	-344.023	-36.455	-905.885	-510.197	-905.885	0.000
		9.240	-465.110	-156.274	-756.923	-510.197	-756.923	0.000
		13.860	-586.196	-276.092	-607.961	-510.197	-607.961	0.000
		18.480	-707.282	-395.911	-458.999	-510.197	-707.282	0.000
		23.100	-828.369	-515.730	-310.037	-510.197	-828.369	0.000
		27.720	-949.455	-635.549	-161.075	-510.197	-949.455	0.000
		32.340	-1.07E+3	-755.367	-12.113	-510.197	-1.07E+3	0.000
		36.960	-1.19E+3	-875.186	136.849	-510.197	-1.19E+3	136.849
		41.580	-1.31E+3	-995.005	285.811	-510.197	-1.31E+3	285.811
		46.200	-1.43E+3	-1.11E+3	434.773	-510.197	-1.43E+3	434.773
80	1:LOAD CASE	0.000	-1.31E+3	-1.24E+3	313.468	-565.331	-1.31E+3	313.468
		4.620	-1.12E+3	-1.22E+3	177.893	-565.331	-1.22E+3	177.893
		9.240	-924.014	-1.19E+3	42.318	-565.331	-1.19E+3	42.318
		13.860	-730.647	-1.16E+3	-93.257	-565.331	-1.16E+3	0.000
		18.480	-537.280	-1.14E+3	-228.832	-565.331	-1.14E+3	0.000
		23.100	-343.913	-1.11E+3	-364.407	-565.331	-1.11E+3	0.000
		27.720	-150.545	-1.09E+3	-499.983	-565.331	-1.09E+3	0.000
		32.340	42.822	-1.06E+3	-635.558	-565.331	-1.06E+3	42.822
		36.960	236.189	-1.03E+3	-771.133	-565.331	-1.03E+3	236.189
		41.580	429.556	-1.01E+3	-906.708	-565.331	-1.01E+3	429.556
		46.200	622.924	-982.245	-1.04E+3	-565.331	-1.04E+3	622.924
81	1:LOAD CASE	0.000	3.95E+3	-1.21E+3	-663.377	461.918	-1.21E+3	3.95E+3
		6.741	3.37E+3	-1.03E+3	-414.842	461.918	-1.03E+3	3.37E+3
		13.482	2.79E+3	-850.943	-166.306	461.918	-850.943	2.79E+3
		20.223	2.21E+3	-672.977	82.230	461.918	-672.977	2.21E+3
		26.964	1.63E+3	-495.011	330.766	461.918	-495.011	1.63E+3



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### Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		33.705	1.05E+3	-317.045	579.302	461.918	-317.045	1.05E+3
		40.446	471.142	-139.079	827.837	461.918	-139.079	827.837
		47.186	-108.762	38.886	1.08E+3	461.918	-108.762	1.08E+3
		53.927	-688.666	216.852	1.32E+3	461.918	-688.666	1.32E+3
		60.668	-1.27E+3	394.818	1.57E+3	461.918	-1.27E+3	1.57E+3
		67.409	-1.85E+3	572.784	1.82E+3	461.918	-1.85E+3	1.82E+3
82	1:LOAD CASE	0.000	-897.091	193.145	294.163	-63.092	-897.091	294.163
		6.516	-738.234	69.415	272.444	-63.092	-738.234	272.444
		13.032	-579.378	-54.316	250.724	-63.092	-579.378	250.724
		19.548	-420.521	-178.047	229.004	-63.092	-420.521	229.004
		26.064	-261.665	-301.778	207.284	-63.092	-301.778	207.284
		32.580	-102.808	-425.509	185.565	-63.092	-425.509	185.565
		39.096	56.048	-549.240	163.845	-63.092	-549.240	163.845
		45.612	214.905	-672.971	142.125	-63.092	-672.971	214.905
		52.128	373.762	-796.702	120.405	-63.092	-796.702	373.762
		58.644	532.618	-920.432	98.686	-63.092	-920.432	532.618
		65.160	691.475	-1.04E+3	76.966	-63.092	-1.04E+3	691.475
83	1:LOAD CASE	0.000	-369.629	1.22E+3	-603.873	-34.276	-603.873	1.22E+3
		6.516	-220.330	982.929	-548.212	-34.276	-548.212	982.929
		13.032	-71.031	743.614	-492.551	-34.276	-492.551	743.614
		19.548	78.268	504.299	-436.890	-34.276	-436.890	504.299
		26.064	227.567	264.985	-381.230	-34.276	-381.230	264.985
		32.580	376.866	25.670	-325.569	-34.276	-325.569	376.866
		39.096	526.164	-213.645	-269.908	-34.276	-269.908	526.164
		45.612	675.464	-452.960	-214.247	-34.276	-452.960	675.464
		52.128	824.762	-692.275	-158.587	-34.276	-692.275	824.762
		58.644	974.062	-931.590	-102.926	-34.276	-931.590	974.062
		65.160	1.12E+3	-1.17E+3	-47.265	-34.276	-1.17E+3	1.12E+3
84	1:LOAD CASE	0.000	7.17E+3	-6.78E+3	359.332	266.411	-6.78E+3	7.17E+3
		4.620	6.17E+3	-5.76E+3	343.119	266.411	-5.76E+3	6.17E+3
		9.240	5.16E+3	-4.73E+3	326.905	266.411	-4.73E+3	5.16E+3
		13.860	4.16E+3	-3.7E+3	310.691	266.411	-3.7E+3	4.16E+3
		18.480	3.16E+3	-2.67E+3	294.478	266.411	-2.67E+3	3.16E+3
		23.100	2.16E+3	-1.65E+3	278.264	266.411	-1.65E+3	2.16E+3
		27.720	1.16E+3	-620.011	262.051	266.411	-620.011	1.16E+3
		32.340	158.655	407.441	245.837	266.411	0.000	407.441
		36.960	-842.576	1.43E+3	229.623	266.411	-842.576	1.43E+3
		41.580	-1.84E+3	2.46E+3	213.410	266.411	-1.84E+3	2.46E+3
		46.200	-2.85E+3	3.49E+3	197.196	266.411	-2.85E+3	3.49E+3
85	1:LOAD CASE	0.000	-6E+3	5.96E+3	-242.315	-120.887	-6E+3	5.96E+3
		4.620	-5.15E+3	5.08E+3	-224.066	-120.887	-5.15E+3	5.08E+3
		9.240	-4.3E+3	4.2E+3	-205.817	-120.887	-4.3E+3	4.2E+3
		13.860	-3.45E+3	3.31E+3	-187.568	-120.887	-3.45E+3	3.31E+3
		18.480	-2.6E+3	2.43E+3	-169.320	-120.887	-2.6E+3	2.43E+3
		23.100	-1.74E+3	1.55E+3	-151.071	-120.887	-1.74E+3	1.55E+3



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## Beam Combined Axial and Bending Stresses Cont...

Beam	L/C	d	Corner 1 (psi)	Corner 2 (psi)	Corner 3 (psi)	Corner 4 (psi)	Max Tens (psi)	Max Comp (psi)
		27.720	-892.648	670.175	-132.822	-120.887	-892.648	670.175
		32.340	-40.624	-211.361	-114.574	-120.887	-211.361	0.000
		36.960	811.399	-1.09E+3	-96.325	-120.887	-1.09E+3	811.399
		41.580	1.66E+3	-1.97E+3	-78.076	-120.887	-1.97E+3	1.66E+3
		46.200	2.52E+3	-2.86E+3	-59.828	-120.887	-2.86E+3	2.52E+3

## Reactions

Node	L/C	Horizontal	Vertical	Horizontal	Moment		
		FX (kip)	FY (kip)	FZ (kip)	MX (kip'in)	MY (kip'in)	MZ (kip'in)
1	1:LOAD CASE	11.852	110.250	11.874	0.000	0.000	0.000
13	1:LOAD CASE	1.851	0.000	1.904	6.075	0.000	-8.386
18	1:LOAD CASE	-0.164	0.000	-14.514	0.121	0.000	-0.209
19	1:LOAD CASE	-13.538	0.000	0.137	-0.361	0.000	0.095

## Utilization Ratio

Beam	Analysis Property	Design Property	Actual Allowable		Ratio (Act./Allow.)	Clause	L/C	Ax (in <sup>2</sup> )	Iz (in <sup>4</sup> )	Iy (in <sup>4</sup> )	Ix (in <sup>4</sup> )
			Ratio	Ratio							
23	ISA150X150	ISA150X150	0.511	1.000	0.511	LRFD-H1-1A-	1	5.394	7.325	28.720	0.401
27	ISA75X75X5	ISA75X75X5	0.574	1.000	0.574	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
28	ISA75X75X5	ISA75X75X5	0.657	1.000	0.657	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
29	ISA75X75X5	ISA75X75X5	0.631	1.000	0.631	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
39	ISA75X75X5	ISA75X75X5	0.539	1.000	0.539	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
44	ISA150X150	ISA150X150	0.597	1.000	0.597	LRFD-H1-1A-	1	5.394	7.325	28.720	0.401
45	ISA70X70X5	ISA70X70X5	0.108	1.000	0.108	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
55	ISA70X70X5	ISA70X70X5	0.146	1.000	0.146	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
56	ISA70X70X5	ISA70X70X5	0.101	1.000	0.101	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
61	ISA75X75X5	ISA75X75X5	0.570	1.000	0.570	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
63	PIPS20	PIPS20	0.048	1.000	0.048	LRFD-H1-1B-	1	1.070	0.666	0.666	1.332
64	TUB30304	TUB30304	0.017	1.000	0.017	LRFD-H1-1B-	1	2.590	3.200	3.200	5.400
66	PIPS20	PIPS20	0.035	1.000	0.035	LRFD-H1-1B-	1	1.070	0.666	0.666	1.332
68	TUB30304	TUB30304	0.027	1.000	0.027	LRFD-H1-1B-	1	2.590	3.200	3.200	5.400
69	ISA150X150	ISA150X150	0.505	1.000	0.505	LRFD-H1-1A-	1	5.394	7.325	28.720	0.401
70	ISA75X75X5	ISA75X75X5	0.654	1.000	0.654	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
71	ISA70X70X5	ISA70X70X5	0.034	1.000	0.034	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
72	ISA70X70X5	ISA70X70X5	0.041	1.000	0.041	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
73	ISA75X75X5	ISA75X75X5	0.631	1.000	0.631	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
74	ISA70X70X5	ISA70X70X5	0.034	1.000	0.034	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
75	ISA70X70X5	ISA70X70X5	0.077	1.000	0.077	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
76	ISA75X75X5	ISA75X75X5	0.551	1.000	0.551	LRFD-H1-1A-	1	1.127	0.383	1.531	0.015
77	ISA70X70X5	ISA70X70X5	0.056	1.000	0.056	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
78	ISA150X150	ISA150X150	0.595	1.000	0.595	LRFD-H1-1A-	1	5.394	7.325	28.720	0.401



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### Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Allowable		Ratio (Act./Allow.)	Clause	L/C	Ax (in <sup>2</sup> )	Iz (in <sup>4</sup> )	Iy (in <sup>4</sup> )	Ix (in <sup>4</sup> )
			Ratio	Ratio							
79	ISA70X70X5	ISA70X70X5	0.023	1.000	0.023	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
80	ISA70X70X5	ISA70X70X5	0.027	1.000	0.027	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
81	ISA70X70X5	ISA70X70X5	0.084	1.000	0.084	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
82	ISA70X70X5	ISA70X70X5	0.021	1.000	0.021	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
83	ISA70X70X5	ISA70X70X5	0.024	1.000	0.024	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
84	ISA70X70X5	ISA70X70X5	0.135	1.000	0.135	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014
85	ISA70X70X5	ISA70X70X5	0.113	1.000	0.113	LRFD-H1-1B-	1	1.049	0.310	1.236	0.014

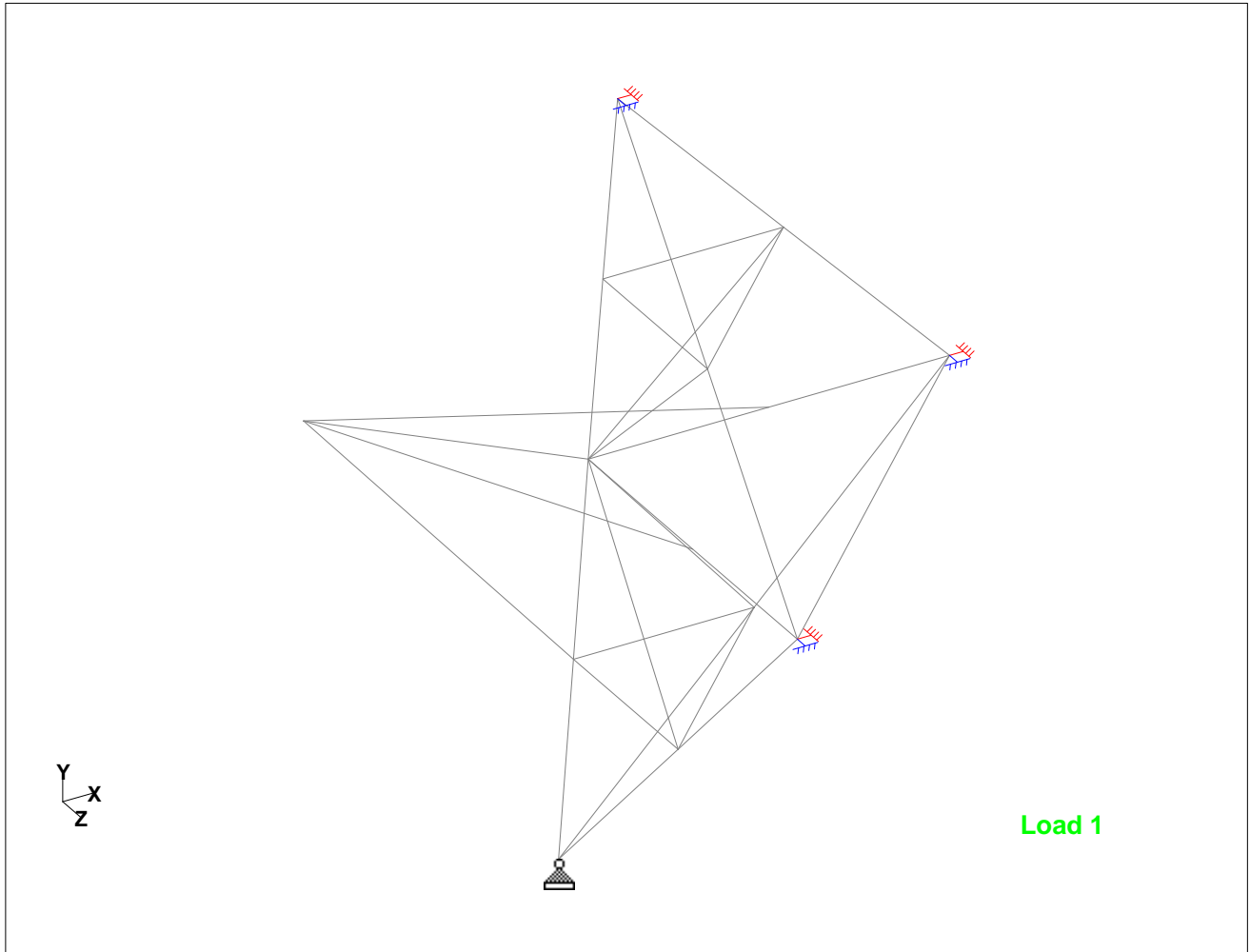
### Failed Members

*There is no data of this type.*



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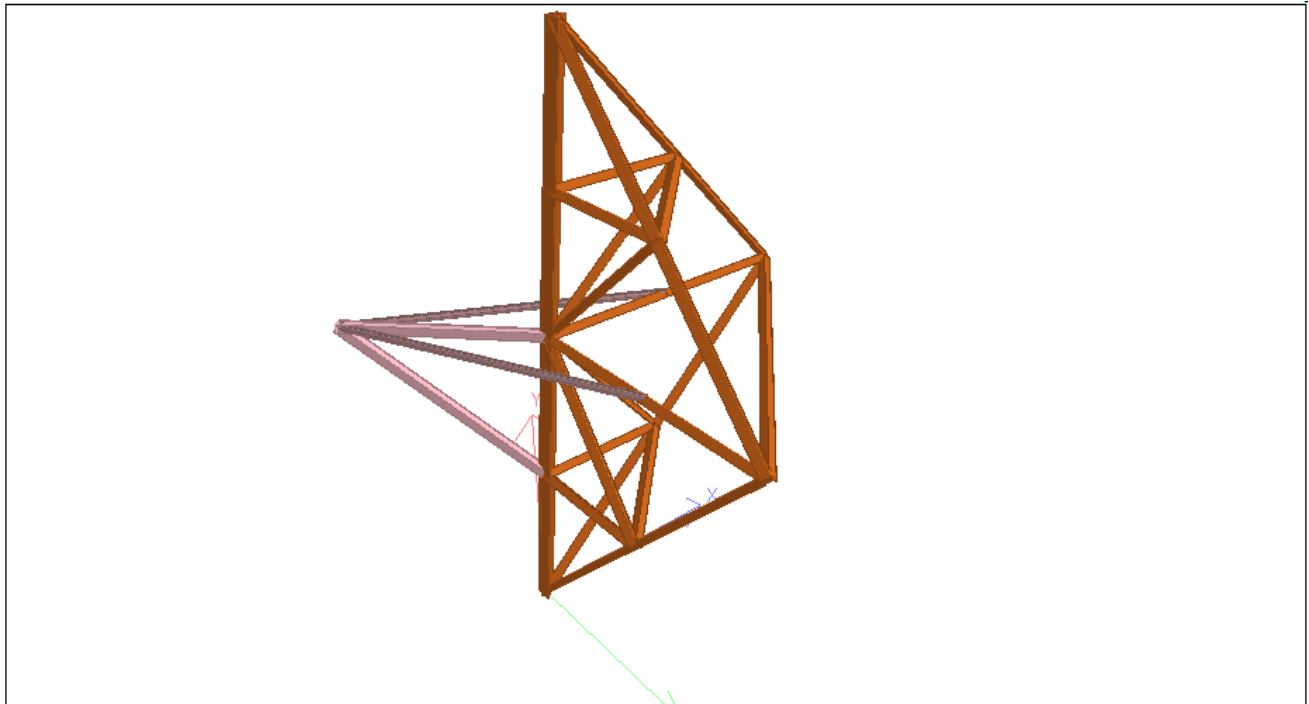


Whole Structure



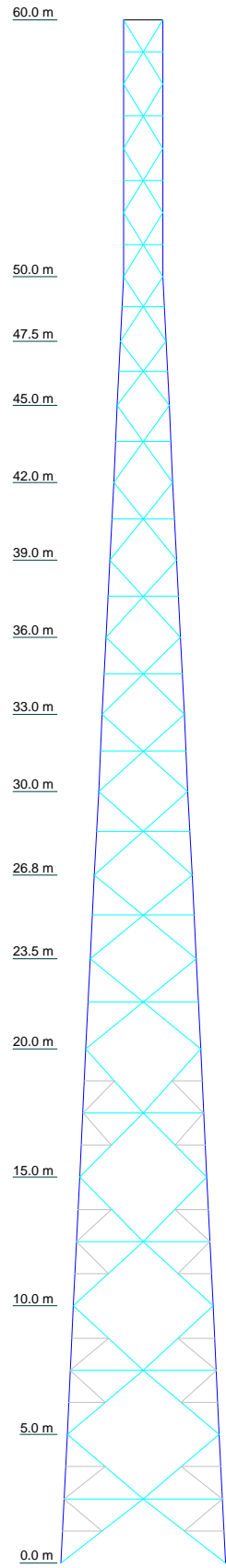
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3D Rendered View

Section	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	
Legs	150x150x12H	75x75x5H	130x130x12H	70x70x5H	130x130x10H	70x70x5H	110x110x10H	100x100x6H	90x90x6H	75x75x6H	60x60x5	45x45x5	45x45x5	45x45x5	70x70x5H	
Leg Grade																
Diagonals																
Diagonal Grade																
Top Girts																
Horizontals	70x70x5H		L25x25x3												L3x3x1/4	
Sec. Horizontals			N.A.													
Sec. Horizontals			70x70x5H													
Red. Horizontals			L25x25x3													
Red. Diagonals			70x70x5H													
Red. Hips																
Inner Bracing																
Face Width (m)	6.4008	5.91312	5.42544	4.93776	4.45008	4.1087	3.79171	3.47472	3.18211	2.8695	2.5969	2.30429	2.01168	1.76784	1.524	
# Panels @		8 @ 2.5				1 @ 3.5	2 @ 3.25			5 @ 3					6 @ 2.5	
Weight (N)	94361.5	15466.9	13861.9	12400.9	10887.7	9726.8	5150.9	4690.2	3966.4	3852.7	2875.9	2780.6	2657.2	1733.7	1064.8	636.7



**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	248211 kPa	399896 kPa			

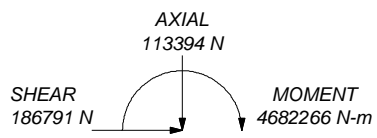
**TOWER DESIGN NOTES**

1. Tower is located in Sonoma County, California.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 160 kph basic wind in accordance with the TIA-222-G Standard.
4. Tower Structure Class II.
5. Topographic Category 1 with Crest Height of 0.0000 m



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:  
 DOWN: 545606 N  
 UPLIFT: -495996 N  
 SHEAR: 70370 N



REACTIONS - 160 kph WIND

Job: <b>60M Tower</b>			
Project: <b>WindTronics</b>			
1775 Park St. Bldg 84 Selma, Ca 93662 Phone: (559) 891-8782 FAX: (559) 891-8702	Client: <b>Beckman Tower Service</b>	Drawn by: <b>Jun</b>	App'd:
	Code: <b>TIA-222-G</b>	Date: <b>02/07/11</b>	Scale: <b>NTS</b>
	Path: \\Server2\user folders\Karl\ERI\Beckman\Windtronics.eri		Dwg No. <b>E-1</b>

<b>RISATower</b>	<b>Job</b>	60M Tower	<b>Page</b>	8 of 19
	<b>Project</b>	`WindTronics	<b>Date</b>	16:47:49 02/07/11
	<b>Client</b>	Beckman Tower Service	<b>Designed by</b>	Juan

## Compression Checks

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	196.85 - 164.042	70x70x5H	32.808	4.101	90.1 K=1.00	1.046	-7.965	22.108	0.360 <sup>1</sup> ✓
T2	164.042 - 155.84	75x75x6H	8.222	4.415	90.8 K=1.00	1.339	-11.844	28.116	0.421 <sup>1</sup> ✓
T3	155.84 - 147.638	75x75x6H	8.222	4.376	90.0 K=1.00	1.339	-16.299	28.333	0.575 <sup>1</sup> ✓
T4	147.638 - 137.795	90x90x6H	9.866	5.267	89.9 K=1.00	1.618	-19.881	34.269	0.580 <sup>1</sup> ✓
T5	137.795 - 127.953	100x100x6H	9.866	5.227	80.1 K=1.00	1.804	-25.385	39.780	0.638 <sup>1</sup> ✓
T6	127.953 - 118.11	100x100x6H	9.866	5.196	79.6 K=1.00	1.804	-30.238	39.930	0.757 <sup>1</sup> ✓
T7	118.11 - 108.268	110x110x10H	9.866	5.171	72.7 K=1.00	3.255	-36.258	79.839	0.454 <sup>1</sup> ✓
T8	108.268 - 98.4252	110x110x10H	9.866	5.150	72.4 K=1.00	3.255	-41.863	80.018	0.523 <sup>1</sup> ✓
T9	98.4252 - 87.7625	130x130x10H	10.688	5.577	66.1 K=1.00	3.875	-48.447	99.755	0.486 <sup>1</sup> ✓
T10	87.7625 - 77.0997	130x130x10H	10.688	5.558	65.9 K=1.00	3.875	-55.329	99.909	0.554 <sup>1</sup> ✓
T11	77.0997 - 65.6168	130x130x10H	11.510	5.985	70.9 K=1.00	3.875	-62.947	96.340	0.653 <sup>1</sup> ✓
T12	65.6168 - 49.2126	130x130x10H	16.443	4.111	48.7 K=1.00	3.875	-72.895	110.803	0.658 <sup>1</sup> ✓
T13	49.2126 - 32.8084	130x130x12H	16.443	4.111	48.9 K=1.00	4.613	-85.935	131.755	0.652 <sup>1</sup> ✓
T14	32.8084 - 16.4042	150x150x12H	16.443	4.111	42.3 K=1.00	5.357	-100.317	157.985	0.635 <sup>1</sup> ✓
T15	16.4042 - 0	150x150x12H	16.443	4.111	42.3 K=1.00	5.357	-114.763	157.985	0.726 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls