

**Save the Stack**  
Structural Investigation of Asarco Stack



# STRUCTURAL REPORT

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## Introduction

At the request of the Save the Stack group, our office performed structural analysis and design checks of the 826-foot tall ASARCO stack to verify if the stack meets the minimum standard requirements of the International Building Code 2009 and the American Concrete Institute Code Requirements for Reinforced Concrete Chimneys ACI 307-08.

## Structural Description

The stack consists of two concrete annular columns built in 1967, the interior liner and the exterior shell. The liner is 826 feet tall with a tapered cross section that starts at the base with an outside diameter of 35 feet and 4 inches and 36-inch wall thickness. It tapers to the top to a cross section of 16 feet and one half inch with 10 inches of wall thickness. The shell is 818 feet tall with a tapered cross section. The outside diameter is 62 feet 6 inches at the base with 36 inches of wall thickness. The top cross section has an outside diameter of 31 feet 3 inches and wall thickness of 9 inches. The strength of concrete that was used for the analytical model was 4000 psi per the construction documents and as corroborated by the Schmidt Hammer testing results presented in the inspection report prepared by Industrial Access Inc. No reduction in strength was given due to structural degradation given the good condition of the shell and liner as stated by the chimney inspection report given that minimal cracking was documented.

## Seismic and Wind Loads

The structural analysis was performed utilizing the wind and seismic loads procedures in the ACI 307-08 and in accordance with the IBC design loads reference codes ASCE 7-02 and ASCE 7-05 where site specific information was required for the calculation of the design loads.

Seismic and wind loads are critical in the determination of the structural performance of any structure. For a free standing tall chimney, special consideration should be made to

the dynamic behavior of the structure in conformance with the IBC-09 and ACI 307-08 Codes.

The calculation of the wind loads was done for 90 miles per hour 3-second gust wind speed in conformance with requirement by the City of El Paso. The ACI 307-08 wind loads procedure was used to determine the along-wind direction only. It was determined that the shell was not sensitive to across-wind forces since the outside shell diameter at one third of the height is not less than 1.6 times the top outside diameter. Refer ACI 307-08 Section 4.2.3.2. The natural period of vibration of the shell was computed by dynamic analysis to be 3.9 seconds. The structure was classified as a structure that would represent a substantial hazard to human life in the event of failure, and the corresponding importance factor of 1.15 was used in the calculation of wind loads. Design wind pressures were calculated as the sum of the fluctuating and mean wind loads over the entire length of the shell producing a total unfactored wind base shear of 651 kips.

For the seismic load calculation the earthquake spectral response accelerations were obtained from the USGS Design Maps in conformance with the IBC 2009 for both ASCE 7-02 and ASCE 7-05. Geotechnical investigation of the site performed in 1971 by Dickinson Laboratories was used as reference to determine the site class. One of the borings closest to the stack extended to 72 feet in depth until refusal was met at a rock layer. The average of the field standard penetration resistance was calculated to be 40 blows per foot over a depth of 100 feet. It was assumed that the standard penetration values for the rock layers below 72 feet were at least 100 blows per foot as allowed by the ASCE 7 standards. Therefore, site class D was assigned to the site. A design response spectrum curve was then developed considering the mapped earthquake accelerations adjusted for the site and the natural period of vibration of the structures. Analytical models were developed representing 67 sections of 12-foot long segments with distinct mass and stiffness characteristics for the shell and 58 sections of 14-foot long segments for the liner. Fifty mode shapes and periods were computed to account for more than 90% of combined mass participation in conformance with the ACI 307-08. The resulting modal shears and moments were scaled by a factor of 0.8333 corresponding to the ratio of I/R as prescribed by the design codes. The occupancy importance factor, I with a value of 1.25 corresponding to a structure representing a significant hazard to human life in the event of structural failure was used. The response modification factor R being prescribed by the ACI 307-08 with a value of 1.5 was used. The IBC specifies this factor to be 3.0, but a more strict value of 1.5 is prescribed by the ACI 307-08 since no special seismic reinforcement detailing requirements are implemented by the chimney code to provided a higher degree of ductility and redundancy typical of structures with an R value of 3. The modal base shears were verified not to fall below 85% of the base shear calculated using the equivalent lateral force procedure. No adjustment to the modal moments was required based on this verification. The base shears and moments resulting from the design spectrum analysis and wind loads procedure are as follows:

Factored Forces	ACI-307 Wind	ASCE 7-02 Seismic	ASCE 7-05 Seismic
Shell Base Shear	1,041 kips	1,497 kips	1,375 kips
Shell Base Moment	512,750 k-ft	303,945 k-ft	291,633 k-ft
Liner Base Shear	---	685 kips	505 kips
Liner Base Moment	---	164,428 k-ft	134,599 k-ft

The modal moments were factored using the load combinations prescribed by the ACI 307-08 in section 5.3 along the length of the shell and liner for design strength verification of circular shells bending. Wind loading is not applicable to the liner since it is shielded from wind by the concrete shell.

## Design Strength of Circular Shells

The reinforcement in the annular concrete shell and liner was taken from the construction documents and the strength of the columns was calculated along the length of the columns at 12 to 14-foot intervals following the calculation procedure for moment strength of circular shells in section 5.5 of the ACI 307-08. The ratio of the demand over the capacity has been tabulated over the length of the shell and liner as follows:

### 818-foot Concrete Shell

height, ft	Wind $M_u/\phi M_n$ (ACI 307-08)	seismic $M_u/\phi M_n$ (ASCE 7-02)	seismic $M_u/\phi M_n$ (ASCE 7-05)
0.0	62%	37%	35%
12.3	66%	38%	37%
24.6	67%	38%	36%
36.9	67%	37%	36%
49.2	63%	34%	33%
61.5	66%	35%	34%
73.8	68%	35%	34%
86.0	70%	35%	34%
98.3	71%	35%	34%
110.6	71%	35%	34%
122.9	73%	35%	34%
135.2	73%	35%	34%
147.5	74%	35%	34%
159.8	75%	35%	34%
172.1	75%	35%	34%
184.4	75%	35%	34%
196.7	75%	34%	34%
209.0	75%	34%	33%
221.3	74%	34%	33%
233.5	74%	34%	33%
245.8	73%	34%	33%
258.1	71%	34%	33%
270.4	70%	33%	32%
282.7	71%	33%	31%
295.0	68%	32%	31%
307.3	66%	31%	30%
319.6	61%	29%	28%
331.9	57%	27%	26%
344.2	53%	26%	25%
356.5	50%	24%	24%

368.8	47%	24%	23%
381.0	46%	23%	22%
393.3	44%	22%	22%
405.6	43%	22%	22%
417.9	42%	22%	21%
430.2	40%	22%	21%
442.5	39%	22%	21%
454.8	38%	22%	21%
467.1	37%	22%	21%
479.4	42%	25%	24%
491.7	36%	22%	21%
504.0	35%	22%	22%
516.3	35%	23%	22%
528.5	35%	24%	23%
540.8	35%	25%	24%
553.1	35%	26%	25%
565.4	41%	32%	30%
577.7	35%	28%	27%
590.0	41%	34%	33%
602.3	35%	31%	29%
614.6	35%	32%	31%
626.9	35%	34%	32%
639.2	35%	36%	34%
651.5	31%	33%	31%
663.8	26%	29%	27%
676.0	18%	22%	20%
688.3	44%	54%	50%
700.6	35%	46%	42%
712.9	40%	54%	49%
725.2	39%	54%	50%
737.5	34%	49%	44%
749.8	29%	42%	38%
762.1	23%	34%	31%
774.4	18%	25%	23%
786.7	13%	17%	15%
799.0	8%	9%	8%
811.3	4%	2%	2%

### 826-foot Concrete Liner

height, ft	seismic $M_u/\phi M_n$ (ASCE 7-02)	seismic $M_u/\phi M_n$ (ASCE 7-05)
0.0	47%	38%
13.9	46%	40%
27.9	45%	39%
41.8	44%	38%

55.8	81%	69%
69.7	84%	72%
83.7	87%	74%
97.6	89%	76%
111.5	90%	77%
125.5	93%	79%
139.4	93%	79%
153.4	93%	80%
167.3	94%	80%
181.3	94%	80%
195.2	93%	80%
209.1	92%	79%
223.1	92%	79%
237.0	90%	77%
251.0	89%	77%
264.9	88%	76%
278.9	87%	74%
292.8	85%	73%
306.7	82%	71%
320.7	79%	68%
334.6	75%	65%
348.6	70%	60%
362.5	65%	57%
376.5	61%	53%
390.4	57%	50%
404.3	54%	47%
418.3	51%	45%
432.2	48%	42%
446.2	45%	39%
460.1	43%	37%
474.1	40%	35%
488.0	38%	33%
501.9	36%	32%
515.9	34%	30%
529.8	32%	28%
543.8	31%	27%
557.7	29%	26%
571.7	29%	26%
585.6	29%	26%
599.5	29%	26%
613.5	29%	26%
627.4	29%	26%
641.4	29%	26%
655.3	29%	26%
669.3	30%	27%
683.2	30%	27%
697.1	30%	28%

711.1	31%	29%
725.0	31%	30%
739.0	30%	30%
752.9	27%	29%
766.9	9%	10%
780.8	16%	21%
794.7	8%	14%
808.7	0%	10%

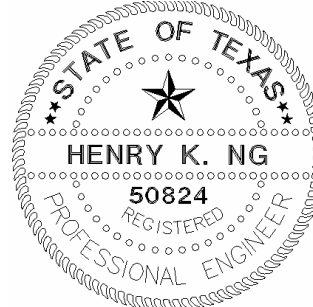
## Conclusion

The factored moments  $M_u$  represent the demand from either design wind or earthquake load combinations, and the design strength is represented by the  $\phi M_n$ . The design strength was found to be higher than the demand for both the shell and liner along the length of the structures for the wind and seismic load combinations where the ratio of demand over capacity was less than 100%. Therefore, it is demonstrated that the stack is adequate to resist the code requirements in accordance with ACI 307-08 and IBC 2009.



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Chimney Liner Strength ACI 307-08

MBR	$\beta$ , deg	$\beta$ , rad	$\alpha$ , deg	$\alpha$ , rad	$K_1 - P_{eff} / t f'_c$	$\epsilon_m$	$\mu$ , rad	$\mu$ , deg	$\psi$ , rad	$\psi$ , deg	$B_1$	$\tau$ , rad	$\tau$ , deg	$Q_1$	$\lambda_1$	$K_0$
1	4.8	0.08	37.225	0.65	0.000	0.003	0.36	20.48	0.86	49.02	0.85	0.60	34.23	0.04	-1.93	483
2	14.38	0.25	44.642	0.78	0.000	0.003	0.43	24.43	1.03	59.17	0.85	0.72	40.99	0.05	-1.68	483
3	14.38	0.25	43.985	0.77	0.000	0.003	0.42	24.08	1.02	58.26	0.85	0.71	40.40	0.05	-1.70	483
4	14.38	0.25	43.330	0.76	0.000	0.003	0.41	23.74	1.00	57.36	0.85	0.69	39.80	0.05	-1.73	483
5	0	0.00	25.205	0.44	0.000	0.003	0.24	13.96	0.58	32.95	0.85	0.41	23.21	0.03	-2.32	483
6	0	0.00	29.435	0.51	0.000	0.003	0.28	16.27	0.67	38.57	0.85	0.47	27.09	0.03	-2.18	483
7	0	0.00	31.065	0.54	0.000	0.003	0.30	17.16	0.71	40.74	0.85	0.50	28.59	0.04	-2.13	483
8	0	0.00	33.599	0.59	0.000	0.003	0.32	18.53	0.77	44.13	0.85	0.54	30.91	0.04	-2.05	483
9	0	0.00	35.000	0.61	0.000	0.003	0.34	19.29	0.80	46.02	0.85	0.56	32.19	0.04	-2.00	483
10	0	0.00	34.955	0.61	0.000	0.003	0.34	19.26	0.80	45.96	0.85	0.56	32.15	0.04	-2.00	483
11	0	0.00	34.715	0.61	0.000	0.003	0.33	19.13	0.80	45.63	0.85	0.56	31.93	0.04	-2.01	483
12	0	0.00	34.565	0.60	0.000	0.003	0.33	19.05	0.79	45.43	0.85	0.55	31.79	0.04	-2.02	483
13	0	0.00	34.300	0.60	0.000	0.003	0.33	18.91	0.79	45.08	0.85	0.55	31.55	0.04	-2.02	483
14	0	0.00	33.905	0.59	0.000	0.003	0.33	18.70	0.78	44.55	0.85	0.54	31.19	0.04	-2.04	483
15	0	0.00	33.502	0.58	0.000	0.003	0.32	18.48	0.77	44.00	0.85	0.54	30.82	0.04	-2.05	483
16	0	0.00	33.220	0.58	0.000	0.003	0.32	18.33	0.76	43.63	0.85	0.53	30.56	0.04	-2.06	483
17	0	0.00	33.059	0.58	0.000	0.003	0.32	18.24	0.76	43.41	0.85	0.53	30.41	0.04	-2.07	483
18	0	0.00	33.485	0.58	0.000	0.003	0.32	18.47	0.77	43.98	0.85	0.54	30.80	0.04	-2.05	483
19	0	0.00	33.705	0.59	0.000	0.003	0.32	18.59	0.77	44.28	0.85	0.54	31.01	0.04	-2.04	483
20	0	0.00	33.950	0.59	0.000	0.003	0.33	18.72	0.78	44.61	0.85	0.55	31.23	0.04	-2.04	483
21	0	0.00	34.205	0.60	0.000	0.003	0.33	18.86	0.78	44.95	0.85	0.55	31.46	0.04	-2.03	483
22	0	0.00	34.355	0.60	0.000	0.003	0.33	18.94	0.79	45.15	0.85	0.55	31.60	0.04	-2.02	483
23	0	0.00	34.645	0.60	0.000	0.003	0.33	19.10	0.79	45.54	0.85	0.56	31.87	0.04	-2.01	483
24	0	0.00	35.067	0.61	0.000	0.003	0.34	19.32	0.80	46.11	0.85	0.56	32.25	0.04	-2.00	483
25	0	0.00	35.955	0.63	0.000	0.003	0.35	19.80	0.83	47.31	0.85	0.58	33.06	0.04	-1.97	483
26	0	0.00	37.223	0.65	0.000	0.003	0.36	20.48	0.86	49.02	0.85	0.60	34.22	0.04	-1.93	483
27	0	0.00	38.428	0.67	0.000	0.003	0.37	21.13	0.88	50.65	0.85	0.62	35.33	0.04	-1.89	483
28	0	0.00	39.623	0.69	0.000	0.003	0.38	21.77	0.91	52.28	0.85	0.64	36.42	0.04	-1.85	483
29	0	0.00	40.747	0.71	0.000	0.003	0.39	22.37	0.94	53.81	0.85	0.65	37.44	0.04	-1.81	483
30	0	0.00	41.643	0.73	0.000	0.003	0.40	22.84	0.96	55.04	0.85	0.67	38.26	0.05	-1.78	483
31	0	0.00	42.552	0.74	0.000	0.003	0.41	23.32	0.98	56.29	0.85	0.68	39.09	0.05	-1.75	483
32	0	0.00	43.798	0.76	0.000	0.003	0.42	23.98	1.01	58.00	0.85	0.70	40.22	0.05	-1.71	483
33	0	0.00	44.585	0.78	0.000	0.003	0.43	24.40	1.03	59.09	0.85	0.71	40.94	0.05	-1.68	483
34	0	0.00	45.388	0.79	0.000	0.003	0.43	24.82	1.05	60.20	0.85	0.73	41.67	0.05	-1.66	483
35	0	0.00	46.515	0.81	0.000	0.003	0.44	25.41	1.08	61.76	0.85	0.75	42.70	0.05	-1.62	483
36	0	0.00	47.238	0.82	0.000	0.003	0.45	25.79	1.10	62.77	0.85	0.76	43.36	0.05	-1.60	483
37	0	0.00	47.645	0.83	0.000	0.003	0.45	26.01	1.11	63.34	0.85	0.76	43.73	0.05	-1.58	483
38	0	0.00	47.897	0.84	0.000	0.003	0.46	26.14	1.11	63.69	0.85	0.77	43.95	0.05	-1.57	483
39	0	0.00	48.155	0.84	0.000	0.003	0.46	26.27	1.12	64.05	0.85	0.77	44.19	0.05	-1.57	483
40	0	0.00	48.418	0.85	0.000	0.003	0.46	26.41	1.12	64.42	0.85	0.78	44.43	0.05	-1.56	483
41	0	0.00	48.315	0.84	0.000	0.003	0.46	26.36	1.12	64.28	0.85	0.77	44.33	0.05	-1.56	483
42	0	0.00	47.450	0.83	0.000	0.003	0.45	25.90	1.10	63.07	0.85	0.76	43.55	0.05	-1.59	483
43	0	0.00	46.130	0.81	0.000	0.003	0.44	25.21	1.07	61.23	0.85	0.74	42.35	0.05	-1.63	483
44	0	0.00	45.162	0.79	0.000	0.003	0.43	24.70	1.05	59.89	0.85	0.72	41.47	0.05	-1.67	483
45	0	0.00	43.674	0.76	0.000	0.003	0.42	23.92	1.01	57.83	0.85	0.70	40.11	0.05	-1.71	483
46	0	0.00	42.078	0.73	0.000	0.003	0.40	23.07	0.97	55.63	0.85	0.67	38.66	0.05	-1.77	483
47	0	0.00	40.903	0.71	0.000	0.003	0.39	22.45	0.94	54.03	0.85	0.66	37.59	0.04	-1.81	483
48	0	0.00	39.300	0.69	0.000	0.003	0.38	21.59	0.90	51.84	0.85	0.63	36.12	0.04	-1.86	483
49	0	0.00	37.193	0.65	0.000	0.003	0.36	20.47	0.85	48.98	0.85	0.60	34.20	0.04	-1.93	483
50	0	0.00	35.360	0.62	0.000	0.003	0.34	19.48	0.81	46.50	0.85	0.57	32.52	0.04	-1.99	483
51	0	0.00	33.340	0.58	0.000	0.003	0.32	18.39	0.76	43.79	0.85	0.54	30.67	0.04	-2.06	483
52	0	0.00	30.928	0.54	0.000	0.003	0.30	17.08	0.71	40.56	0.85	0.50	28.46	0.04	-2.14	483
53	0	0.00	28.050	0.49	0.000	0.003	0.27	15.52	0.64	36.72	0.85	0.45	25.82	0.03	-2.23	483
54	0	0.00	24.275	0.42	0.000	0.003	0.23	13.45	0.55	31.72	0.85	0.39	22.35	0.03	-2.35	483
55	0	0.00	21.780	0.38	0.000	0.003	0.17	9.73	0.51	29.35	0.85	0.35	20.06	0.04	-2.46	483
56	0	0.00	19.475	0.34	0.000	0.002	0.00	0.00	0.48	27.70	0.85	0.31	17.94	0.16	-2.66	483
57	0	0.00	18.120	0.32	0.000	0.002	0.00	0.00	0.47	26.78	0.85	0.29	16.70	0.13	-2.67	483
58	0	0.00	17.355	0.30	0.000	0.002	0.00	0.00	0.46	26.27	0.85	0.28	15.99	0.11	-2.68	483
59	0	0.00	17.000	0.30	-0.012	0.002	0.00	0.00	0.45	26.04	0.85	0.27	15.66	0.10	-2.69	483

Chimney Liner Strength ACI 307-08

MBR	nbars	Bar area	A <sub>br</sub> , in <sup>2</sup>	A <sub>br</sub> , in <sup>2</sup> /ft	perimeter, in	Total A <sub>br</sub> , in <sup>2</sup>	ρ <sub>t</sub>	ω <sub>t</sub>	λ	Q(α<5)	Q(5<α<10)	Q(10<α<17)	Q(17<α<25)	Q(25<α<35)	Q(α>35)	Q
1	198	1.56	308.88	3.04	1,220.90	308.88	0.007	0.11	0.51	240.37	10.65	(0.26)	13.94	0.89	0.89	0.89
2	198	1.56	308.88	3.04	1,220.90	308.88	0.007	0.11	0.46	362.72	17.15	(0.58)	20.32	0.98	0.89	0.89
3	198	1.56	308.88	3.04	1,220.90	308.88	0.007	0.11	0.45	350.86	16.51	(0.55)	19.70	0.98	0.89	0.89
4	198	1.56	308.88	3.04	1,220.90	308.88	0.007	0.11	0.44	339.24	15.88	(0.52)	19.09	0.97	0.89	0.89
5	134	0.60	80.40	0.78	1,231.50	80.40	0.002	0.03	0.41	74.52	3.24	0.49	6.41	0.77	0.89	0.77
6	120	0.60	72.00	0.69	1,246.43	72.00	0.003	0.04	0.47	72.76	4.21	0.82	8.55	0.84	0.89	0.84
7	110	0.60	66.00	0.64	1,242.11	66.00	0.003	0.04	0.50	71.50	4.59	0.96	9.41	0.86	0.89	0.86
8	140	0.44	61.60	0.60	1,237.79	61.60	0.003	0.05	0.54	72.39	5.26	1.16	10.80	0.88	0.89	0.88
9	132	0.44	58.08	0.57	1,230.33	58.08	0.003	0.05	0.56	71.72	5.62	1.28	11.58	0.88	0.89	0.89
10	124	0.44	54.56	0.54	1,212.65	54.56	0.003	0.05	0.56	71.19	5.60	1.28	11.55	0.88	0.89	0.88
11	120	0.44	52.80	0.52	1,207.55	52.80	0.003	0.05	0.56	68.89	5.47	1.28	11.41	0.88	0.89	0.88
12	116	0.44	51.04	0.51	1,196.55	51.04	0.003	0.05	0.55	67.43	5.40	1.29	11.31	0.88	0.89	0.88
13	114	0.44	50.16	0.51	1,184.77	50.16	0.003	0.05	0.55	66.27	5.30	1.28	11.16	0.88	0.89	0.88
14	114	0.44	50.16	0.51	1,172.60	50.16	0.003	0.05	0.54	65.31	5.17	1.26	10.94	0.88	0.89	0.88
15	114	0.44	50.16	0.52	1,160.82	50.16	0.003	0.05	0.54	64.29	5.05	1.24	10.71	0.88	0.89	0.88
16	116	0.44	51.04	0.53	1,148.64	51.04	0.003	0.05	0.53	63.84	4.96	1.22	10.55	0.88	0.89	0.88
17	116	0.44	51.04	0.54	1,136.86	51.04	0.003	0.05	0.53	63.17	4.91	1.21	10.46	0.88	0.89	0.88
18	122	0.44	53.68	0.57	1,125.87	53.68	0.004	0.06	0.54	64.32	5.04	1.23	10.70	0.88	0.89	0.88
19	124	0.44	54.56	0.59	1,114.48	54.56	0.004	0.06	0.54	64.54	5.10	1.25	10.82	0.88	0.89	0.88
20	126	0.44	55.44	0.60	1,103.09	55.44	0.004	0.06	0.55	64.85	5.17	1.27	10.96	0.88	0.89	0.88
21	130	0.44	57.20	0.63	1,091.90	57.20	0.004	0.07	0.55	65.56	5.26	1.28	11.10	0.88	0.89	0.88
22	134	0.44	58.96	0.66	1,080.12	58.96	0.005	0.07	0.55	66.25	5.31	1.28	11.19	0.88	0.89	0.88
23	140	0.44	61.60	0.69	1,068.34	61.60	0.005	0.07	0.56	67.57	5.42	1.29	11.36	0.88	0.89	0.88
24	110	0.60	66.00	0.75	1,056.95	66.00	0.005	0.08	0.56	69.48	5.58	1.31	11.61	0.89	0.89	0.89
25	120	0.60	72.00	0.83	1,045.17	72.00	0.006	0.09	0.58	73.62	5.93	1.33	12.14	0.89	0.89	0.89
26	134	0.60	80.40	0.93	1,033.39	80.40	0.007	0.10	0.60	79.72	6.44	1.37	12.91	0.89	0.89	0.89
27	112	0.79	88.48	1.04	1,022.00	88.48	0.008	0.12	0.62	85.71	6.95	1.41	13.67	0.90	0.89	0.89
28	122	0.79	96.38	1.15	1,009.43	96.38	0.009	0.13	0.64	92.00	7.47	1.45	14.45	0.90	0.89	0.89
29	104	1.00	104.00	1.25	998.44	104.00	0.009	0.14	0.65	97.95	7.98	1.49	15.19	0.90	0.89	0.89
30	110	1.00	110.00	1.34	987.05	110.00	0.010	0.15	0.67	102.87	8.40	1.51	15.80	0.91	0.89	0.89
31	116	1.00	116.00	1.43	975.27	116.00	0.011	0.17	0.68	108.03	8.84	1.54	16.43	0.91	0.89	0.89
32	98	1.27	124.46	1.55	963.49	124.46	0.012	0.18	0.70	115.30	9.46	1.58	17.31	0.91	0.89	0.89
33	102	1.27	129.54	1.63	952.10	129.54	0.013	0.19	0.71	119.98	9.87	1.61	17.88	0.92	0.89	0.89
34	106	1.27	134.62	1.72	940.32	134.62	0.014	0.21	0.73	124.91	10.29	1.63	18.47	0.92	0.89	0.89
35	112	1.27	142.24	1.84	928.54	142.24	0.015	0.22	0.75	131.98	10.89	1.67	19.31	0.92	0.89	0.89
36	94	1.56	146.64	1.92	917.15	146.64	0.016	0.24	0.76	136.58	11.29	1.69	19.86	0.93	0.89	0.89
37	96	1.56	149.76	1.99	905.17	149.76	0.016	0.25	0.76	140.35	11.56	1.69	20.18	0.93	0.89	0.89
38	98	1.56	152.88	2.05	893.00	152.88	0.017	0.26	0.77	144.31	11.77	1.68	20.41	0.93	0.89	0.89
39	100	1.56	156.00	2.13	880.82	156.00	0.018	0.26	0.77	148.43	11.99	1.67	20.63	0.93	0.89	0.89
40	102	1.56	159.12	2.20	868.65	159.12	0.018	0.27	0.78	152.73	12.22	1.66	20.87	0.93	0.89	0.89
41	102	1.56	159.12	2.23	856.48	159.12	0.018	0.28	0.77	154.57	12.24	1.63	20.82	0.93	0.89	0.89
42	98	1.56	152.88	2.17	844.30	152.88	0.018	0.27	0.76	151.03	11.82	1.58	20.17	0.93	0.89	0.89
43	92	1.56	143.52	2.07	832.13	143.52	0.017	0.26	0.74	144.29	11.14	1.53	19.17	0.93	0.89	0.89
44	88	1.56	137.28	2.01	819.96	137.28	0.017	0.25	0.72	140.03	10.67	1.48	18.47	0.92	0.89	0.89
45	82	1.56	127.92	1.90	808.17	127.92	0.016	0.24	0.70	132.15	9.92	1.42	17.39	0.92	0.89	0.89
46	76	1.56	118.56	1.79	796.00	118.56	0.015	0.22	0.67	123.72	9.14	1.35	16.26	0.91	0.89	0.89
47	72	1.56	112.32	1.72	783.83	112.32	0.014	0.21	0.66	118.17	8.60	1.30	15.46	0.91	0.89	0.89
48	82	1.27	104.14	1.62	772.05	104.14	0.013	0.20	0.63	109.87	7.86	1.25	14.38	0.90	0.89	0.89
49	74	1.27	93.98	1.48	759.87	93.98	0.012	0.18	0.60	98.71	6.93	1.18	13.02	0.89	0.89	0.89
50	86	1.00	86.00	1.38	747.70	86.00	0.011	0.17	0.57	89.56	6.16	1.12	11.88	0.88	0.89	0.89
51	76	1.00	76.00	1.24	735.92	76.00	0.010	0.15	0.54	79.62	5.37	1.06	10.68	0.87	0.89	0.87
52	66	1.00	66.00	1.09	723.74	66.00	0.009	0.14	0.50	68.10	4.48	0.99	9.33	0.86	0.89	0.86
53	70	0.79	55.30	0.93	711.57	55.30	0.008	0.12	0.45	55.10	3.53	0.92	7.83	0.85	0.89	0.85
54	60	0.79	47.40	0.81	699.79	47.40	0.007	0.10	0.39	39.57	2.47	0.84	0.89	0.82	0.89	0.89
55	68	0.60	40.80	0.71	687.62	40.80	0.006	0.09	0.35	30.83	1.89	0.79	0.89	0.81	0.89	0.89
56	80	0.44	35.20	0.63	675.44	35.20	0.005	0.08	0.31	23.66	1.45	0.74	0.89	0.79	0.89	0.89
57	74	0.44	32.56	0.59	663.66	32.56	0.005	0.07	0.29	20.00	1.24	0.72	0.89	0.78	0.89	0.89
58	72	0.44	31.68	0.58	651.49	31.68	0.005	0.07	0.28	18.21	1.13	0.70	0.89	0.78	0.89	0.89
59	70	0.44	30.80	0.58	636.17	30.80	0.005	0.07	0.27	17.70	1.09	0.69	0.89	0.77	0.89	0.89





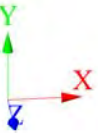














Current Date: 11/9/2012 3:04 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\818 FT SHELL-DYNAMIC RESPONSE SPECTRUM ASCE 07-02 CLASS D.adv\

## Geometry data

### GLOSSARY

- Cb22, Cb33 : Moment gradient coefficients
- Cm22, Cm33 : Coefficients applied to bending term in interaction formula
- d0 : Tapered member section depth at J end of member
- DJX : Rigid end offset distance measured from J node in axis X
- DJY : Rigid end offset distance measured from J node in axis Y
- DJZ : Rigid end offset distance measured from J node in axis Z
- DKX : Rigid end offset distance measured from K node in axis X
- DKY : Rigid end offset distance measured from K node in axis Y
- DKZ : Rigid end offset distance measured from K node in axis Z
- dL : Tapered member section depth at K end of member
- Ig factor : Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
- K22 : Effective length factor about axis 2
- K33 : Effective length factor about axis 3
- L22 : Member length for calculation of axial capacity
- L33 : Member length for calculation of axial capacity
- LB pos : Lateral unbraced length of the compression flange in the positive side of local axis 2
- LB neg : Lateral unbraced length of the compression flange in the negative side of local axis 2
- RX : Rotation about X
- RY : Rotation about Y
- RZ : Rotation about Z
- TO : 1 = Tension only member 0 = Normal member
- TX : Translation in X
- TY : Translation in Y
- TZ : Translation in Z

### Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
3	0.00	12.2917	0.00	0
4	0.00	24.5833	0.00	0
5	0.00	36.875	0.00	0
6	0.00	49.1667	0.00	0
7	0.00	61.4583	0.00	0
8	0.00	73.75	0.00	0
9	0.00	86.0417	0.00	0
10	0.00	98.3333	0.00	0
11	0.00	110.625	0.00	0
12	0.00	122.9167	0.00	0
13	0.00	135.2083	0.00	0
14	0.00	147.50	0.00	0
15	0.00	159.7917	0.00	0
16	0.00	172.0833	0.00	0
17	0.00	184.375	0.00	0
18	0.00	196.6667	0.00	0
19	0.00	208.9583	0.00	0
20	0.00	221.25	0.00	0
21	0.00	233.5417	0.00	0
22	0.00	245.8333	0.00	0

23	0.00	258.125	0.00	0
24	0.00	270.4167	0.00	0
25	0.00	282.7083	0.00	0
26	0.00	295.00	0.00	0
27	0.00	307.2917	0.00	0
28	0.00	319.5833	0.00	0
29	0.00	331.875	0.00	0
30	0.00	344.1667	0.00	0
31	0.00	356.4583	0.00	0
32	0.00	368.75	0.00	0
33	0.00	381.0417	0.00	0
34	0.00	393.3333	0.00	0
35	0.00	405.625	0.00	0
36	0.00	417.9167	0.00	0
37	0.00	430.2083	0.00	0
38	0.00	442.50	0.00	0
39	0.00	454.7917	0.00	0
40	0.00	467.0833	0.00	0
41	0.00	479.375	0.00	0
42	0.00	491.6667	0.00	0
43	0.00	503.9583	0.00	0
44	0.00	516.25	0.00	0
45	0.00	528.5417	0.00	0
46	0.00	540.8333	0.00	0
47	0.00	553.125	0.00	0
48	0.00	565.4167	0.00	0
49	0.00	577.7083	0.00	0
50	0.00	590.00	0.00	0
51	0.00	602.2917	0.00	0
52	0.00	614.5833	0.00	0
53	0.00	626.875	0.00	0
54	0.00	639.1667	0.00	0
55	0.00	651.4583	0.00	0
56	0.00	663.75	0.00	0
57	0.00	676.0417	0.00	0
58	0.00	688.3333	0.00	0
59	0.00	700.625	0.00	0
60	0.00	712.9167	0.00	0
61	0.00	725.2083	0.00	0
62	0.00	737.50	0.00	0
63	0.00	749.7917	0.00	0
64	0.00	762.0833	0.00	0
65	0.00	774.375	0.00	0
66	0.00	786.6667	0.00	0
67	0.00	798.9583	0.00	0
68	0.00	811.25	0.00	0
69	0.00	818.00	0.00	0

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### Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

## Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	1	3		PIPE 74	C 3-60	0.00	0.00	0.00
2	3	4		PIPE 74	C 3-60	0.00	0.00	0.00
3	4	5		PIPE 73	C 3-60	0.00	0.00	0.00
4	5	6		PIPE 73	C 3-60	0.00	0.00	0.00
5	6	7		PIPE 72	C 3-60	0.00	0.00	0.00
6	7	8		PIPE 71	C 3-60	0.00	0.00	0.00
7	8	9		PIPE 71	C 3-60	0.00	0.00	0.00
8	9	10		PIPE 70	C 3-60	0.00	0.00	0.00
9	10	11		PIPE 70	C 3-60	0.00	0.00	0.00
10	11	12		PIPE 69	C 3-60	0.00	0.00	0.00
11	12	13		PIPE 69	C 3-60	0.00	0.00	0.00
12	13	14		PIPE 68	C 3-60	0.00	0.00	0.00
13	14	15		PIPE 67	C 3-60	0.00	0.00	0.00
14	15	16		PIPE 67	C 3-60	0.00	0.00	0.00
15	16	17		PIPE 66	C 3-60	0.00	0.00	0.00
16	17	18		PIPE 66	C 3-60	0.00	0.00	0.00
17	18	19		PIPE 65	C 3-60	0.00	0.00	0.00
18	19	20		PIPE 65	C 3-60	0.00	0.00	0.00
19	20	21		PIPE 64	C 3-60	0.00	0.00	0.00
20	21	22		PIPE 64	C 3-60	0.00	0.00	0.00
21	22	23		PIPE 63	C 3-60	0.00	0.00	0.00
22	23	24		PIPE 62	C 3-60	0.00	0.00	0.00
23	24	25		PIPE 62	C 3-60	0.00	0.00	0.00
24	25	26		PIPE 61	C 3-60	0.00	0.00	0.00
25	26	27		PIPE 61	C 3-60	0.00	0.00	0.00
26	27	28		PIPE 60	C 3-60	0.00	0.00	0.00
27	28	29		PIPE 60	C 3-60	0.00	0.00	0.00
28	29	30		PIPE 59	C 3-60	0.00	0.00	0.00
29	30	31		PIPE 58	C 3-60	0.00	0.00	0.00
30	31	32		PIPE 58	C 3-60	0.00	0.00	0.00
31	32	33		PIPE 57	C 3-60	0.00	0.00	0.00
32	33	34		PIPE 57	C 3-60	0.00	0.00	0.00
33	34	35		PIPE 56	C 3-60	0.00	0.00	0.00
34	35	36		PIPE 56	C 3-60	0.00	0.00	0.00
35	36	37		PIPE 55	C 3-60	0.00	0.00	0.00
36	37	38		PIPE 55	C 3-60	0.00	0.00	0.00
37	38	39		PIPE 54	C 3-60	0.00	0.00	0.00
38	39	40		PIPE 53	C 3-60	0.00	0.00	0.00
39	40	41		PIPE 53	C 3-60	0.00	0.00	0.00
40	41	42		PIPE 52	C 3-60	0.00	0.00	0.00
41	42	43		PIPE 52	C 3-60	0.00	0.00	0.00
42	43	44		PIPE 51	C 3-60	0.00	0.00	0.00
43	44	45		PIPE 51	C 3-60	0.00	0.00	0.00
44	45	46		PIPE 50	C 3-60	0.00	0.00	0.00
45	46	47		PIPE 49	C 3-60	0.00	0.00	0.00
46	47	48		PIPE 49	C 3-60	0.00	0.00	0.00
47	48	49		PIPE 48	C 3-60	0.00	0.00	0.00
48	49	50		PIPE 48	C 3-60	0.00	0.00	0.00
49	50	51		PIPE 47	C 3-60	0.00	0.00	0.00
50	51	52		PIPE 47	C 3-60	0.00	0.00	0.00
51	52	53		PIPE 46	C 3-60	0.00	0.00	0.00
52	53	54		PIPE 46	C 3-60	0.00	0.00	0.00
53	54	55		PIPE 45	C 3-60	0.00	0.00	0.00
54	55	56		PIPE 44	C 3-60	0.00	0.00	0.00
55	56	57		PIPE 44	C 3-60	0.00	0.00	0.00
56	57	58		PIPE 43	C 3-60	0.00	0.00	0.00
57	58	59		PIPE 43	C 3-60	0.00	0.00	0.00
58	59	60		PIPE 42	C 3-60	0.00	0.00	0.00
59	60	61		PIPE 42	C 3-60	0.00	0.00	0.00
60	61	62		PIPE 415A	C 3-60	0.00	0.00	0.00



61	62	63	PIPE 401	C 3-60	0.00	0.00	0.00
62	63	64	PIPE 403A	C 3-60	0.00	0.00	0.00
63	64	65	PIPE 391	C 3-60	0.00	0.00	0.00
64	65	66	PIPE 392A	C 3-60	0.00	0.00	0.00
65	66	67	PIPE 381	C 3-60	0.00	0.00	0.00
66	67	68	PIPE 381A	C 3-60	0.00	0.00	0.00
67	68	69	PIPE 377A	C 3-60	0.00	0.00	0.00

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Current Date: 11/9/2012 3:05 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\818 FT SHELL-DYNAMIC RESPONSE SPECTRUM ASCE 07-02 CLASS D.adv\

## Load data

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
EL	Earthquake	No	EQ
WL	Wind	No	WIND
id0	1.4DL	Yes	
id1	0.9DL+1.6WL	Yes	
id2	1.2DL+1.6WL	Yes	
id3	0.9DL+EL	Yes	
id4	1.2DL+EL	Yes	

### Masses

Node	TX [Kip]	TY [Kip]	TZ [Kip]	RX [Kip*in2]	RY [Kip*in2]	RZ [Kip*in2]
3	1029.8549	1029.8549	1029.8549	1029.8549	1029.8549	1029.8549
4	1021.3474	1021.3474	1021.3474	1021.3474	1021.3474	1021.3474
5	1013.1115	1013.1115	1013.1115	1013.1115	1013.1115	1013.1115
6	1005.1471	1005.1471	1005.1471	1005.1471	1005.1471	1005.1471
7	917.7345	917.7345	917.7345	917.7345	917.7345	917.7345
8	777.4871	777.4871	777.4871	777.4871	777.4871	777.4871
9	664.8488	664.8488	664.8488	664.8488	664.8488	664.8488
10	599.7852	599.7852	599.7852	599.7852	599.7852	599.7852
11	581.6163	581.6163	581.6163	581.6163	581.6163	581.6163
12	570.3391	570.3391	570.3391	570.3391	570.3391	570.3391
13	559.063	559.063	559.063	559.063	559.063	559.063
14	541.4171	541.4171	541.4171	541.4171	541.4171	541.4171
15	523.9277	523.9277	523.9277	523.9277	523.9277	523.9277
16	506.6469	506.6469	506.6469	506.6469	506.6469	506.6469
17	495.9591	495.9591	495.9591	495.9591	495.9591	495.9591
18	485.3795	485.3795	485.3795	485.3795	485.3795	485.3795
19	468.6738	468.6738	468.6738	468.6738	468.6738	468.6738
20	452.1743	452.1743	452.1743	452.1743	452.1743	452.1743
21	435.8809	435.8809	435.8809	435.8809	435.8809	435.8809
22	425.8883	425.8883	425.8883	425.8883	425.8883	425.8883
23	416.0037	416.0037	416.0037	416.0037	416.0037	416.0037
24	400.2766	400.2766	400.2766	400.2766	400.2766	400.2766
25	384.7532	384.7532	384.7532	384.7532	384.7532	384.7532
26	369.28	369.28	369.28	369.28	369.28	369.28
27	348.2389	348.2389	348.2389	348.2389	348.2389	348.2389
28	327.5993	327.5993	327.5993	327.5993	327.5993	327.5993
29	312.9552	312.9552	312.9552	312.9552	312.9552	312.9552

30	298.5171	298.5171	298.5171	298.5171	298.5171	298.5171
31	284.2852	284.2852	284.2852	284.2852	284.2852	284.2852
32	275.889	275.889	275.889	275.889	275.889	275.889
33	267.6009	267.6009	267.6009	267.6009	267.6009	267.6009
34	253.8944	253.8944	253.8944	253.8944	253.8944	253.8944
35	243.1347	243.1347	243.1347	243.1347	243.1347	243.1347
36	235.2482	235.2482	235.2482	235.2482	235.2482	235.2482
37	230.1577	230.1577	230.1577	230.1577	230.1577	230.1577
38	225.1224	225.1224	225.1224	225.1224	225.1224	225.1224
39	217.5087	217.5087	217.5087	217.5087	217.5087	217.5087
40	212.611	212.611	212.611	212.611	212.611	212.611
41	209.0587	209.0587	209.0587	209.0587	209.0587	209.0587
42	205.5344	205.5344	205.5344	205.5344	205.5344	205.5344
43	202.038	202.038	202.038	202.038	202.038	202.038
44	198.5696	198.5696	198.5696	198.5696	198.5696	198.5696
45	196.3635	196.3635	196.3635	196.3635	196.3635	196.3635
46	192.9372	192.9372	192.9372	192.9372	192.9372	192.9372
47	189.5389	189.5389	189.5389	189.5389	189.5389	189.5389
48	186.1685	186.1685	186.1685	186.1685	186.1685	186.1685
49	182.8261	182.8261	182.8261	182.8261	182.8261	182.8261
50	180.6766	180.6766	180.6766	180.6766	180.6766	180.6766
51	177.3763	177.3763	177.3763	177.3763	177.3763	177.3763
52	174.104	174.104	174.104	174.104	174.104	174.104
53	170.8597	170.8597	170.8597	170.8597	170.8597	170.8597
54	167.6433	167.6433	167.6433	167.6433	167.6433	167.6433
55	165.5504	165.5504	165.5504	165.5504	165.5504	165.5504
56	162.353	162.353	162.353	162.353	162.353	162.353
57	159.1839	159.1839	159.1839	159.1839	159.1839	159.1839
58	156.0659	156.0659	156.0659	156.0659	156.0659	156.0659
59	152.6138	152.6138	152.6138	152.6138	152.6138	152.6138
60	150.5775	150.5775	150.5775	150.5775	150.5775	150.5775
61	148.9031	148.9031	148.9031	148.9031	148.9031	148.9031
62	146.8668	146.8668	146.8668	146.8668	146.8668	146.8668
63	144.8304	144.8304	144.8304	144.8304	144.8304	144.8304
64	142.7941	142.7941	142.7941	142.7941	142.7941	142.7941
65	140.7577	140.7577	140.7577	140.7577	140.7577	140.7577
66	138.7213	138.7213	138.7213	138.7213	138.7213	138.7213
67	136.685	136.685	136.685	136.685	136.685	136.685
68	134.6486	134.6486	134.6486	134.6486	134.6486	134.6486
69	133.0648	133.0648	133.0648	133.0648	133.0648	133.0648

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### Load on nodes

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	3	0.00	-1029.85	0.00	0.00	0.00	0.00
	4	0.00	-1021.35	0.00	0.00	0.00	0.00
	5	0.00	-1013.11	0.00	0.00	0.00	0.00
	6	0.00	-1005.15	0.00	0.00	0.00	0.00
	7	0.00	-917.734	0.00	0.00	0.00	0.00
	8	0.00	-777.487	0.00	0.00	0.00	0.00
	9	0.00	-664.849	0.00	0.00	0.00	0.00
	10	0.00	-599.785	0.00	0.00	0.00	0.00
	11	0.00	-581.616	0.00	0.00	0.00	0.00
	12	0.00	-570.339	0.00	0.00	0.00	0.00
	13	0.00	-559.063	0.00	0.00	0.00	0.00

14	0.00	-541.417	0.00	0.00	0.00	0.00
15	0.00	-523.928	0.00	0.00	0.00	0.00
16	0.00	-506.647	0.00	0.00	0.00	0.00
17	0.00	-495.959	0.00	0.00	0.00	0.00
18	0.00	-485.379	0.00	0.00	0.00	0.00
19	0.00	-468.674	0.00	0.00	0.00	0.00
20	0.00	-452.174	0.00	0.00	0.00	0.00
21	0.00	-435.881	0.00	0.00	0.00	0.00
22	0.00	-425.888	0.00	0.00	0.00	0.00
23	0.00	-416.004	0.00	0.00	0.00	0.00
24	0.00	-400.277	0.00	0.00	0.00	0.00
25	0.00	-384.753	0.00	0.00	0.00	0.00
26	0.00	-369.28	0.00	0.00	0.00	0.00
27	0.00	-348.239	0.00	0.00	0.00	0.00
28	0.00	-327.599	0.00	0.00	0.00	0.00
29	0.00	-312.955	0.00	0.00	0.00	0.00
30	0.00	-298.517	0.00	0.00	0.00	0.00
31	0.00	-284.285	0.00	0.00	0.00	0.00
32	0.00	-275.889	0.00	0.00	0.00	0.00
33	0.00	-267.601	0.00	0.00	0.00	0.00
34	0.00	-253.894	0.00	0.00	0.00	0.00
35	0.00	-243.135	0.00	0.00	0.00	0.00
36	0.00	-235.248	0.00	0.00	0.00	0.00
37	0.00	-230.158	0.00	0.00	0.00	0.00
38	0.00	-225.122	0.00	0.00	0.00	0.00
39	0.00	-217.509	0.00	0.00	0.00	0.00
40	0.00	-212.611	0.00	0.00	0.00	0.00
41	0.00	-209.059	0.00	0.00	0.00	0.00
42	0.00	-205.534	0.00	0.00	0.00	0.00
43	0.00	-202.038	0.00	0.00	0.00	0.00
44	0.00	-198.57	0.00	0.00	0.00	0.00
45	0.00	-196.364	0.00	0.00	0.00	0.00
46	0.00	-192.937	0.00	0.00	0.00	0.00
47	0.00	-189.539	0.00	0.00	0.00	0.00
48	0.00	-186.169	0.00	0.00	0.00	0.00
49	0.00	-182.826	0.00	0.00	0.00	0.00
50	0.00	-180.677	0.00	0.00	0.00	0.00
51	0.00	-177.376	0.00	0.00	0.00	0.00
52	0.00	-174.104	0.00	0.00	0.00	0.00
53	0.00	-170.86	0.00	0.00	0.00	0.00
54	0.00	-167.643	0.00	0.00	0.00	0.00
55	0.00	-165.55	0.00	0.00	0.00	0.00
56	0.00	-162.353	0.00	0.00	0.00	0.00
57	0.00	-159.184	0.00	0.00	0.00	0.00
58	0.00	-156.066	0.00	0.00	0.00	0.00
59	0.00	-152.614	0.00	0.00	0.00	0.00
60	0.00	-150.577	0.00	0.00	0.00	0.00
61	0.00	-148.903	0.00	0.00	0.00	0.00
62	0.00	-146.867	0.00	0.00	0.00	0.00
63	0.00	-144.83	0.00	0.00	0.00	0.00
64	0.00	-142.794	0.00	0.00	0.00	0.00
65	0.00	-140.758	0.00	0.00	0.00	0.00
66	0.00	-138.721	0.00	0.00	0.00	0.00
67	0.00	-136.685	0.00	0.00	0.00	0.00
68	0.00	-134.649	0.00	0.00	0.00	0.00
69	0.00	-133.065	0.00	0.00	0.00	0.00
WL	3	3.5285	0.00	0.00	0.00	0.00
	4	4.334	0.00	0.00	0.00	0.00
	5	4.8732	0.00	0.00	0.00	0.00
	6	5.2857	0.00	0.00	0.00	0.00

7	5.6186	0.00	0.00	0.00	0.00	0.00
8	5.8956	0.00	0.00	0.00	0.00	0.00
9	6.137	0.00	0.00	0.00	0.00	0.00
10	6.3509	0.00	0.00	0.00	0.00	0.00
11	6.539	0.00	0.00	0.00	0.00	0.00
12	6.7092	0.00	0.00	0.00	0.00	0.00
13	6.8625	0.00	0.00	0.00	0.00	0.00
14	7.0029	0.00	0.00	0.00	0.00	0.00
15	7.1317	0.00	0.00	0.00	0.00	0.00
16	7.2514	0.00	0.00	0.00	0.00	0.00
17	7.3642	0.00	0.00	0.00	0.00	0.00
18	7.4706	0.00	0.00	0.00	0.00	0.00
19	7.5718	0.00	0.00	0.00	0.00	0.00
20	7.6686	0.00	0.00	0.00	0.00	0.00
21	7.762	0.00	0.00	0.00	0.00	0.00
22	7.8526	0.00	0.00	0.00	0.00	0.00
23	7.9412	0.00	0.00	0.00	0.00	0.00
24	8.0291	0.00	0.00	0.00	0.00	0.00
25	8.1161	0.00	0.00	0.00	0.00	0.00
26	8.1995	0.00	0.00	0.00	0.00	0.00
27	8.2845	0.00	0.00	0.00	0.00	0.00
28	8.3725	0.00	0.00	0.00	0.00	0.00
29	8.4597	0.00	0.00	0.00	0.00	0.00
30	8.5482	0.00	0.00	0.00	0.00	0.00
31	8.6382	0.00	0.00	0.00	0.00	0.00
32	8.7301	0.00	0.00	0.00	0.00	0.00
33	8.8241	0.00	0.00	0.00	0.00	0.00
34	8.9205	0.00	0.00	0.00	0.00	0.00
35	9.0195	0.00	0.00	0.00	0.00	0.00
36	9.1214	0.00	0.00	0.00	0.00	0.00
37	9.2264	0.00	0.00	0.00	0.00	0.00
38	9.3345	0.00	0.00	0.00	0.00	0.00
39	9.446	0.00	0.00	0.00	0.00	0.00
40	9.5611	0.00	0.00	0.00	0.00	0.00
41	9.6798	0.00	0.00	0.00	0.00	0.00
42	9.8022	0.00	0.00	0.00	0.00	0.00
43	9.9285	0.00	0.00	0.00	0.00	0.00
44	10.0587	0.00	0.00	0.00	0.00	0.00
45	10.1929	0.00	0.00	0.00	0.00	0.00
46	10.3311	0.00	0.00	0.00	0.00	0.00
47	10.4734	0.00	0.00	0.00	0.00	0.00
48	10.6197	0.00	0.00	0.00	0.00	0.00
49	10.7701	0.00	0.00	0.00	0.00	0.00
50	10.9246	0.00	0.00	0.00	0.00	0.00
51	11.083	0.00	0.00	0.00	0.00	0.00
52	11.2455	0.00	0.00	0.00	0.00	0.00
53	11.4118	0.00	0.00	0.00	0.00	0.00
54	11.582	0.00	0.00	0.00	0.00	0.00
55	11.7559	0.00	0.00	0.00	0.00	0.00
56	11.9318	0.00	0.00	0.00	0.00	0.00
57	12.1111	0.00	0.00	0.00	0.00	0.00
58	12.2955	0.00	0.00	0.00	0.00	0.00
59	12.4541	0.00	0.00	0.00	0.00	0.00
60	12.644	0.00	0.00	0.00	0.00	0.00
61	12.8672	0.00	0.00	0.00	0.00	0.00
62	13.0634	0.00	0.00	0.00	0.00	0.00
63	13.2621	0.00	0.00	0.00	0.00	0.00
64	13.463	0.00	0.00	0.00	0.00	0.00
65	13.666	0.00	0.00	0.00	0.00	0.00
66	21.3395	0.00	0.00	0.00	0.00	0.00

67	21.6566	0.00	0.00	0.00	0.00	0.00
68	21.9756	0.00	0.00	0.00	0.00	0.00
69	12.1231	0.00	0.00	0.00	0.00	0.00

### Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
EL	Earthquake	No	0.00	0.00	0.00
WL	Wind	No	0.00	0.00	0.00
id0	1.4DL	Yes	0.00	0.00	0.00
id1	0.9DL+1.6WL	Yes	0.00	0.00	0.00
id2	1.2DL+1.6WL	Yes	0.00	0.00	0.00
id3	0.9DL+EL	Yes	0.00	0.00	0.00
id4	1.2DL+EL	Yes	0.00	0.00	0.00

### Earthquake (Dynamic analysis only)

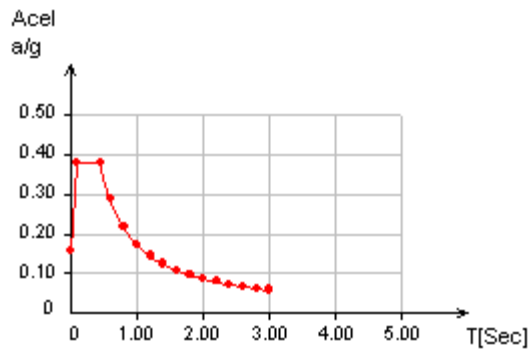
Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
EL	0.8333	0.00	5.00
WL	0.00	0.00	0.00
id0	0.00	0.00	0.00
id1	0.00	0.00	0.00
id2	0.00	0.00	0.00
id3	0.00	0.00	0.00
id4	0.00	0.00	0.00

### Response spectrum

T [Sec]	a/g
0.001	0.1537
0.0902	0.378
0.4508	0.378
0.60	0.2867
0.80	0.215
1.00	0.172
1.20	0.1433
1.40	0.1229
1.60	0.1075
1.80	0.0956
2.00	0.086
2.20	0.0782
2.40	0.0717

2.60	0.0662
2.80	0.0614
3.00	0.0573

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Current Date: 11/9/2012 3:09 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\818 FT SHELL-DYNAMIC RESPONSE SPECTRUM ASCE 07-02 CLASS D.adv\

## Seismic analysis

### Modal analysis

#### MASSES:

Node	Mass X [Kip]	Mass Y [Kip]	Mass Z [Kip]	MMI.xx [Kip*in2]	MMI.yy [Kip*in2]	MMI.zz [Kip*in2]
3	1029.85	1029.85	1029.85	1029.85	1029.85	1029.85
4	1021.35	1021.35	1021.35	1021.35	1021.35	1021.35
5	1013.11	1013.11	1013.11	1013.11	1013.11	1013.11
6	1005.15	1005.15	1005.15	1005.15	1005.15	1005.15
7	917.73	917.73	917.73	917.73	917.73	917.73
8	777.49	777.49	777.49	777.49	777.49	777.49
9	664.85	664.85	664.85	664.85	664.85	664.85
10	599.79	599.79	599.79	599.79	599.79	599.79
11	581.62	581.62	581.62	581.62	581.62	581.62
12	570.34	570.34	570.34	570.34	570.34	570.34
13	559.06	559.06	559.06	559.06	559.06	559.06
14	541.42	541.42	541.42	541.42	541.42	541.42
15	523.93	523.93	523.93	523.93	523.93	523.93
16	506.65	506.65	506.65	506.65	506.65	506.65
17	495.96	495.96	495.96	495.96	495.96	495.96
18	485.38	485.38	485.38	485.38	485.38	485.38
19	468.67	468.67	468.67	468.67	468.67	468.67
20	452.17	452.17	452.17	452.17	452.17	452.17
21	435.88	435.88	435.88	435.88	435.88	435.88
22	425.89	425.89	425.89	425.89	425.89	425.89
23	416.00	416.00	416.00	416.00	416.00	416.00
24	400.28	400.28	400.28	400.28	400.28	400.28
25	384.75	384.75	384.75	384.75	384.75	384.75
26	369.28	369.28	369.28	369.28	369.28	369.28
27	348.24	348.24	348.24	348.24	348.24	348.24
28	327.60	327.60	327.60	327.60	327.60	327.60
29	312.96	312.96	312.96	312.96	312.96	312.96
30	298.52	298.52	298.52	298.52	298.52	298.52
31	284.29	284.29	284.29	284.29	284.29	284.29
32	275.89	275.89	275.89	275.89	275.89	275.89
33	267.60	267.60	267.60	267.60	267.60	267.60
34	253.89	253.89	253.89	253.89	253.89	253.89
35	243.13	243.13	243.13	243.13	243.13	243.13
36	235.25	235.25	235.25	235.25	235.25	235.25
37	230.16	230.16	230.16	230.16	230.16	230.16
38	225.12	225.12	225.12	225.12	225.12	225.12
39	217.51	217.51	217.51	217.51	217.51	217.51
40	212.61	212.61	212.61	212.61	212.61	212.61
41	209.06	209.06	209.06	209.06	209.06	209.06
42	205.53	205.53	205.53	205.53	205.53	205.53
43	202.04	202.04	202.04	202.04	202.04	202.04
44	198.57	198.57	198.57	198.57	198.57	198.57
45	196.36	196.36	196.36	196.36	196.36	196.36
46	192.94	192.94	192.94	192.94	192.94	192.94
47	189.54	189.54	189.54	189.54	189.54	189.54
48	186.17	186.17	186.17	186.17	186.17	186.17
49	182.83	182.83	182.83	182.83	182.83	182.83



50	180.68	180.68	180.68	180.68	180.68	180.68
51	177.38	177.38	177.38	177.38	177.38	177.38
52	174.10	174.10	174.10	174.10	174.10	174.10
53	170.86	170.86	170.86	170.86	170.86	170.86
54	167.64	167.64	167.64	167.64	167.64	167.64
55	165.55	165.55	165.55	165.55	165.55	165.55
56	162.35	162.35	162.35	162.35	162.35	162.35
57	159.18	159.18	159.18	159.18	159.18	159.18
58	156.07	156.07	156.07	156.07	156.07	156.07
59	152.61	152.61	152.61	152.61	152.61	152.61
60	150.58	150.58	150.58	150.58	150.58	150.58
61	148.90	148.90	148.90	148.90	148.90	148.90
62	146.87	146.87	146.87	146.87	146.87	146.87
63	144.83	144.83	144.83	144.83	144.83	144.83
64	142.79	142.79	142.79	142.79	142.79	142.79
65	140.76	140.76	140.76	140.76	140.76	140.76
66	138.72	138.72	138.72	138.72	138.72	138.72
67	136.68	136.68	136.68	136.68	136.68	136.68
68	134.65	134.65	134.65	134.65	134.65	134.65
69	133.06	133.06	133.06	133.06	133.06	133.06

**MODE FREQUENCIES**

MODE	W [RAD/SEC]	T [SEC]
1	1.61	3.90916
2	1.61	3.90916
3	6.27	1.00285
4	6.27	1.00285
5	14.71	0.42703
6	14.71	0.42703
7	26.48	0.23731
8	26.81	0.23437
9	26.81	0.23437
10	41.67	0.15079
11	41.67	0.15079
12	58.83	0.10681
13	58.83	0.10681
14	59.44	0.10570
15	77.74	0.08082
16	77.74	0.08082
17	96.16	0.06534
18	97.81	0.06424
19	97.81	0.06424
20	118.75	0.05291
21	118.75	0.05291
22	133.25	0.04715
23	140.69	0.04466
24	140.69	0.04466
25	163.06	0.03853
26	163.06	0.03853
27	168.77	0.03723
28	186.06	0.03377
29	186.06	0.03377
30	204.55	0.03072
31	209.32	0.03002
32	209.32	0.03002
33	232.64	0.02701
34	232.64	0.02701
35	240.06	0.02617
36	255.70	0.02457
37	255.70	0.02457
38	275.28	0.02282

39	278.45	0.02257
40	278.45	0.02257
41	300.97	0.02088
42	300.97	0.02088
43	312.04	0.02014
44	323.48	0.01942
45	323.48	0.01942
46	345.44	0.01819
47	345.44	0.01819
48	348.38	0.01804
49	367.28	0.01711
50	367.28	0.01711

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**MASS PARTICIPATION PERCENTAGE**

MODE	Modal participation					
	Part.X	Part.Y	Part.Z	Rot.X	Rot.Y	Rot.Z
1	0.00	0.00	32.41	0.00	0.00	0.00
2	32.41	0.00	0.00	0.00	0.00	0.00
3	9.40	0.00	11.71	0.00	0.00	0.00
4	11.71	0.00	9.40	0.00	0.00	0.00
5	0.00	0.00	11.65	0.00	0.00	0.00
6	11.65	0.00	0.00	0.00	0.00	0.00
7	0.00	52.32	0.00	0.00	0.00	0.00
8	0.00	0.00	7.69	0.00	0.00	0.00
9	7.69	0.00	0.00	0.00	0.00	0.00
10	0.18	0.00	5.52	0.00	0.00	0.00
11	5.52	0.00	0.18	0.00	0.00	0.00
12	0.00	0.00	4.40	0.00	0.00	0.00
13	4.40	0.00	0.00	0.00	0.00	0.00
14	0.00	20.03	0.00	0.00	0.00	0.00
15	2.12	0.00	1.41	0.00	0.00	0.00
16	1.41	0.00	2.12	0.00	0.00	0.00
17	0.00	7.28	0.00	0.00	0.00	0.00
18	0.03	0.00	2.83	0.00	0.00	0.00
19	2.83	0.00	0.03	0.00	0.00	0.00
20	1.56	0.00	0.61	0.00	0.00	0.00
21	0.61	0.00	1.56	0.00	0.00	0.00
22	0.00	5.26	0.00	0.00	0.00	0.00
23	1.26	0.00	0.33	0.00	0.00	0.00
24	0.33	0.00	1.26	0.00	0.00	0.00
25	0.88	0.00	0.30	0.00	0.00	0.00
26	0.30	0.00	0.88	0.00	0.00	0.00
27	0.00	3.82	0.00	0.00	0.00	0.00
28	0.62	0.00	0.22	0.00	0.00	0.00
29	0.22	0.00	0.62	0.00	0.00	0.00
30	0.00	2.73	0.00	0.00	0.00	0.00
31	0.31	0.00	0.35	0.00	0.00	0.00
32	0.35	0.00	0.31	0.00	0.00	0.00
33	0.13	0.00	0.41	0.00	0.00	0.00
34	0.41	0.00	0.13	0.00	0.00	0.00
35	0.00	2.01	0.00	0.00	0.00	0.00
36	0.07	0.00	0.41	0.00	0.00	0.00
37	0.41	0.00	0.07	0.00	0.00	0.00
38	0.00	1.28	0.00	0.00	0.00	0.00
39	0.00	0.00	0.40	0.00	0.00	0.00
40	0.40	0.00	0.00	0.00	0.00	0.00
41	0.02	0.00	0.34	0.00	0.00	0.00
42	0.34	0.00	0.02	0.00	0.00	0.00
43	0.00	0.82	0.00	0.00	0.00	0.00
44	0.04	0.00	0.25	0.00	0.00	0.00
45	0.25	0.00	0.04	0.00	0.00	0.00
46	0.08	0.00	0.18	0.00	0.00	0.00

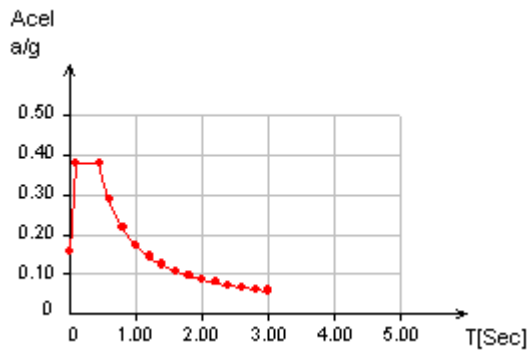
47	0.18	0.00	0.08	0.00	0.00	0.00
48	0.00	0.61	0.00	0.00	0.00	0.00
49	0.10	0.00	0.12	0.00	0.00	0.00
50	0.12	0.00	0.10	0.00	0.00	0.00
-----						
TOTAL:	98.35	96.14	98.35	0.00	0.00	0.00

**TOTAL MASS**

DOF	Total mass [Kip/in*Sec2]
TX	60.20
TY	60.20
TZ	60.20
RX	60.20
RY	60.20
RZ	60.20

**SEISMIC RESPONSE SPECTRUM**

T[Sec]	a/g
0.00100	0.15
0.09015	0.38
0.45076	0.38
0.60000	0.29
0.80000	0.22
1.00000	0.17
1.20000	0.14
1.40000	0.12
1.60000	0.11
1.80000	0.10
2.00000	0.09
2.20000	0.08
2.40000	0.07
2.60000	0.07
2.80000	0.06
3.00000	0.06



Condition = **EL=Earthquake**  
Scale Factor = 0.83  
Damping factor = 5.00

**COMPUTED SPECTRAL VALUES**

MODE	W [RAD/SEC]	T [SEC]	a [in/Sec <sup>2</sup> ]
1	1.61	3.90916	18.43
2	1.61	3.90916	18.43
3	6.27	1.00285	55.17
4	6.27	1.00285	55.17
5	14.71	0.42703	121.53
6	14.71	0.42703	121.53
7	26.48	0.23731	121.53
8	26.81	0.23437	121.53
9	26.81	0.23437	121.53
10	41.67	0.15079	121.53
11	41.67	0.15079	121.53
12	58.83	0.10681	121.53
13	58.83	0.10681	121.53
14	59.44	0.10570	121.53
15	77.74	0.08082	113.98
16	77.74	0.08082	113.98
17	96.16	0.06534	101.46
18	97.81	0.06424	100.57
19	97.81	0.06424	100.57
20	118.75	0.05291	91.41
21	118.75	0.05291	91.41
22	133.25	0.04715	86.75
23	140.69	0.04466	84.73
24	140.69	0.04466	84.73
25	163.06	0.03853	79.77
26	163.06	0.03853	79.77
27	168.77	0.03723	78.72
28	186.06	0.03377	75.92
29	186.06	0.03377	75.92
30	204.55	0.03072	73.45
31	209.32	0.03002	72.89
32	209.32	0.03002	72.89
33	232.64	0.02701	70.45
34	232.64	0.02701	70.45
35	240.06	0.02617	69.78
36	255.70	0.02457	68.48
37	255.70	0.02457	68.48
38	275.28	0.02282	67.07
39	278.45	0.02257	66.86
40	278.45	0.02257	66.86
41	300.97	0.02088	65.49
42	300.97	0.02088	65.49
43	312.04	0.02014	64.89
44	323.48	0.01942	64.32
45	323.48	0.01942	64.32
46	345.44	0.01819	63.32
47	345.44	0.01819	63.32
48	348.38	0.01804	63.19
49	367.28	0.01711	62.44
50	367.28	0.01711	62.44

**MODAL SHAPES**

Normalized displacements to  $\Phi^T M \Phi = 1$

**Modal shapes : 1**

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**W = 1.61 [RAD/SEC]                      PERIOD = 3.90916 [SEC]**

**DISPLACEMENTS**

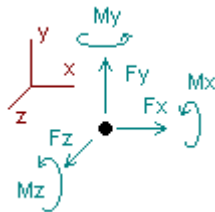
Node	Trans.X [phi]	Trans.Y [phi]	Trans.Z [phi]	Rot.X [phiRot]	Rot.Y [phiRot]	Rot.Z [phiRot]
3	-5.92E-07	0.00E+00	-7.29E-05	-7.26E-07	0.00E+00	0.00E+00
4	-2.06E-06	0.00E+00	-2.53E-04	-1.46E-06	0.00E+00	9.38E-08
5	-4.39E-06	0.00E+00	-5.41E-04	-2.19E-06	0.00E+00	9.38E-08
6	-7.61E-06	0.00E+00	-9.37E-04	-2.92E-06	0.00E+00	9.38E-08
7	-1.17E-05	0.00E+00	-1.45E-03	-3.71E-06	0.00E+00	9.38E-08
8	-1.69E-05	0.00E+00	-2.09E-03	-4.62E-06	0.00E+00	9.38E-08
9	-2.33E-05	0.00E+00	-2.88E-03	-5.67E-06	0.00E+00	9.38E-08
10	-3.11E-05	0.00E+00	-3.83E-03	-6.81E-06	0.00E+00	9.38E-08
11	-4.02E-05	0.00E+00	-4.95E-03	-7.98E-06	0.00E+00	9.38E-08
12	-5.07E-05	0.00E+00	-6.25E-03	-9.15E-06	0.00E+00	9.38E-08
13	-6.27E-05	0.00E+00	-7.72E-03	-1.03E-05	0.00E+00	9.38E-08
14	-7.61E-05	0.00E+00	-9.37E-03	-1.16E-05	0.00E+00	9.38E-08
15	-9.10E-05	0.00E+00	-1.12E-02	-1.28E-05	0.00E+00	1.04E-07
16	-1.07E-04	0.00E+00	-1.32E-02	-1.41E-05	0.00E+00	1.14E-07
17	-1.25E-04	0.00E+00	-1.54E-02	-1.53E-05	0.00E+00	1.24E-07
18	-1.45E-04	0.00E+00	-1.78E-02	-1.66E-05	0.00E+00	1.35E-07
19	-1.66E-04	0.00E+00	-2.04E-02	-1.79E-05	0.00E+00	1.45E-07
20	-1.88E-04	0.00E+00	-2.32E-02	-1.93E-05	0.00E+00	1.56E-07
21	-2.13E-04	0.00E+00	-2.62E-02	-2.06E-05	0.00E+00	1.67E-07
22	-2.38E-04	0.00E+00	-2.94E-02	-2.20E-05	0.00E+00	1.79E-07
23	-2.66E-04	0.00E+00	-3.28E-02	-2.34E-05	0.00E+00	1.90E-07
24	-2.95E-04	0.00E+00	-3.64E-02	-2.48E-05	0.00E+00	2.01E-07
25	-3.26E-04	0.00E+00	-4.02E-02	-2.62E-05	0.00E+00	2.13E-07
26	-3.59E-04	0.00E+00	-4.42E-02	-2.77E-05	0.00E+00	2.25E-07
27	-3.93E-04	0.00E+00	-4.85E-02	-2.92E-05	0.00E+00	2.37E-07
28	-4.30E-04	0.00E+00	-5.29E-02	-3.08E-05	0.00E+00	2.50E-07
29	-4.68E-04	0.00E+00	-5.77E-02	-3.24E-05	0.00E+00	2.63E-07
30	-5.08E-04	0.00E+00	-6.26E-02	-3.41E-05	0.00E+00	2.77E-07
31	-5.51E-04	0.00E+00	-6.78E-02	-3.58E-05	0.00E+00	2.90E-07
32	-5.95E-04	0.00E+00	-7.33E-02	-3.75E-05	0.00E+00	3.04E-07
33	-6.41E-04	0.00E+00	-7.90E-02	-3.92E-05	0.00E+00	3.18E-07
34	-6.90E-04	0.00E+00	-8.50E-02	-4.10E-05	0.00E+00	3.32E-07
35	-7.41E-04	0.00E+00	-9.12E-02	-4.27E-05	0.00E+00	3.47E-07
36	-7.93E-04	0.00E+00	-9.77E-02	-4.45E-05	0.00E+00	3.61E-07
37	-8.48E-04	0.00E+00	-1.05E-01	-4.63E-05	0.00E+00	3.76E-07
38	-9.05E-04	0.00E+00	-1.12E-01	-4.80E-05	0.00E+00	3.90E-07
39	-9.64E-04	0.00E+00	-1.19E-01	-4.97E-05	0.00E+00	4.04E-07
40	-1.03E-03	0.00E+00	-1.26E-01	-5.14E-05	0.00E+00	4.18E-07
41	-1.09E-03	0.00E+00	-1.34E-01	-5.31E-05	0.00E+00	4.31E-07
42	-1.15E-03	0.00E+00	-1.42E-01	-5.47E-05	0.00E+00	4.44E-07
43	-1.22E-03	0.00E+00	-1.50E-01	-5.63E-05	0.00E+00	4.57E-07
44	-1.29E-03	0.00E+00	-1.59E-01	-5.79E-05	0.00E+00	4.70E-07
45	-1.36E-03	0.00E+00	-1.68E-01	-5.93E-05	0.00E+00	4.82E-07
46	-1.43E-03	0.00E+00	-1.77E-01	-6.08E-05	0.00E+00	4.93E-07
47	-1.51E-03	0.00E+00	-1.86E-01	-6.21E-05	0.00E+00	5.04E-07
48	-1.58E-03	0.00E+00	-1.95E-01	-6.35E-05	0.00E+00	5.15E-07
49	-1.66E-03	0.00E+00	-2.05E-01	-6.47E-05	0.00E+00	6.13E-07
50	-1.74E-03	0.00E+00	-2.14E-01	-6.59E-05	0.00E+00	6.13E-07
51	-1.82E-03	0.00E+00	-2.24E-01	-6.70E-05	0.00E+00	6.13E-07
52	-1.90E-03	0.00E+00	-2.34E-01	-6.81E-05	0.00E+00	6.13E-07
53	-1.98E-03	0.00E+00	-2.44E-01	-6.91E-05	0.00E+00	6.13E-07
54	-2.07E-03	0.00E+00	-2.55E-01	-7.00E-05	0.00E+00	6.13E-07
55	-2.15E-03	0.00E+00	-2.65E-01	-7.08E-05	0.00E+00	6.13E-07
56	-2.24E-03	0.00E+00	-2.76E-01	-7.16E-05	0.00E+00	6.13E-07
57	-2.32E-03	0.00E+00	-2.86E-01	-7.23E-05	0.00E+00	6.13E-07
58	-2.41E-03	0.00E+00	-2.97E-01	-7.30E-05	0.00E+00	6.13E-07
59	-2.50E-03	0.00E+00	-3.08E-01	-7.35E-05	0.00E+00	6.13E-07
60	-2.59E-03	0.00E+00	-3.19E-01	-7.40E-05	0.00E+00	6.13E-07
61	-2.68E-03	0.00E+00	-3.30E-01	-7.44E-05	0.00E+00	6.13E-07
62	-2.77E-03	0.00E+00	-3.41E-01	-7.47E-05	0.00E+00	6.13E-07
63	-2.86E-03	0.00E+00	-3.52E-01	-7.50E-05	0.00E+00	6.13E-07
64	-2.95E-03	0.00E+00	-3.63E-01	-7.52E-05	0.00E+00	6.13E-07
65	-3.04E-03	0.00E+00	-3.74E-01	-7.54E-05	0.00E+00	6.13E-07

66	-3.13E-03	0.00E+00	-3.85E-01	-7.55E-05	0.00E+00	6.13E-07
67	-3.22E-03	0.00E+00	-3.96E-01	-7.55E-05	0.00E+00	6.13E-07
68	-3.31E-03	0.00E+00	-4.08E-01	-7.55E-05	0.00E+00	6.13E-07
69	-3.36E-03	0.00E+00	-4.14E-01	-7.55E-05	0.00E+00	6.13E-07

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## Analysis Results

### Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition <b>id1=0.9DL+1.6WL</b>						
1	-1041.11240	20904.00100	0.00000	0.00000	0.00000	512750.39000
SUM	-1041.11240	20904.00100	0.00000	0.00000	0.00000	512750.39000
Condition <b>id3=0.9DL+EL</b>						
1	1497.76090	20904.00200	0.00286	0.00675	0.00095	303945.98000
SUM	1497.76090	20904.00200	0.00286	0.00675	0.00095	303945.98000

### Forces at member ends

- Notes.- Axial: Axial forces  
 V2: Shear force in 2  
 V3: Shear force in 3  
 Torsion: Torsional moment  
 M22: Bending moments 2  
 M33: Bending moments 3

#### CONDITIONid1=0.9DL+1.6WL

Member	End	Axial [Kip]	V2 [Kip]	V3 [Kip]	Torsion [Kip*ft]	M22 [Kip*ft]	M33 [Kip*ft]
1	NJ: 1	-20904.00120	-1041.11238	0.00000	0.00000	0.00000	-512750.38826
1	NK: 3	-20904.00120	-1041.11238	0.00000	0.00000	0.00000	-499953.38191
2	NJ: 3	-19977.13620	-1035.46682	0.00000	0.00000	0.00000	-499953.38191
2	NK: 4	-19977.13620	-1035.46682	0.00000	0.00000	0.00000	-487225.76887
3	NJ: 4	-19057.92120	-1028.53243	0.00000	0.00000	0.00000	-487225.76887
3	NK: 5	-19057.92120	-1028.53243	0.00000	0.00000	0.00000	-474583.39108
4	NJ: 5	-18146.12220	-1020.73532	0.00000	0.00000	0.00000	-474583.39108
4	NK: 6	-18146.12220	-1020.73532	0.00000	0.00000	0.00000	-462036.85276

5	NJ: 6	-17241.48720	-1012.27822	0.00000	0.00000	0.00000	-462036.85276
5	NK: 7	-17241.48720	-1012.27822	0.00000	0.00000	0.00000	-449594.26636
6	NJ: 7	-16415.52660	-1003.28851	0.00000	0.00000	0.00000	-449594.26636
6	NK: 8	-16415.52660	-1003.28851	0.00000	0.00000	0.00000	-437262.17841
7	NJ: 8	-15715.78830	-993.85559	0.00000	0.00000	0.00000	-437262.17841
7	NK: 9	-15715.78830	-993.85559	0.00000	0.00000	0.00000	-425046.03673
8	NJ: 9	-15117.42420	-984.03634	0.00000	0.00000	0.00000	-425046.03673
8	NK: 10	-15117.42420	-984.03634	0.00000	0.00000	0.00000	-412950.59000
9	NJ: 10	-14577.61770	-973.87493	0.00000	0.00000	0.00000	-412950.59000
9	NK: 11	-14577.61770	-973.87493	0.00000	0.00000	0.00000	-400980.04394
10	NJ: 11	-14054.16330	-963.41259	0.00000	0.00000	0.00000	-400980.04394
10	NK: 12	-14054.16330	-963.41259	0.00000	0.00000	0.00000	-389138.09748
11	NJ: 12	-13540.85820	-952.67794	0.00000	0.00000	0.00000	-389138.09748
11	NK: 13	-13540.85820	-952.67794	0.00000	0.00000	0.00000	-377428.09777
12	NJ: 13	-13037.70150	-941.69792	0.00000	0.00000	0.00000	-377428.09777
12	NK: 14	-13037.70150	-941.69792	0.00000	0.00000	0.00000	-365853.06086
13	NJ: 14	-12550.42620	-930.49332	0.00000	0.00000	0.00000	-365853.06086
13	NK: 15	-12550.42620	-930.49332	0.00000	0.00000	0.00000	-354415.74711
14	NJ: 15	-12078.89100	-919.08257	0.00000	0.00000	0.00000	-354415.74711
14	NK: 16	-12078.89100	-919.08257	0.00000	0.00000	0.00000	-343118.69057
15	NJ: 16	-11622.90870	-907.48025	0.00000	0.00000	0.00000	-343118.69057
15	NK: 17	-11622.90870	-907.48025	0.00000	0.00000	0.00000	-331964.24583
16	NJ: 17	-11176.54560	-895.69750	0.00000	0.00000	0.00000	-331964.24583
16	NK: 18	-11176.54560	-895.69750	0.00000	0.00000	0.00000	-320954.63074
17	NJ: 18	-10739.70450	-883.74448	0.00000	0.00000	0.00000	-320954.63074
17	NK: 19	-10739.70450	-883.74448	0.00000	0.00000	0.00000	-310091.93816
18	NJ: 19	-10317.89790	-871.62962	0.00000	0.00000	0.00000	-310091.93816
18	NK: 20	-10317.89790	-871.62962	0.00000	0.00000	0.00000	-299378.15739
19	NJ: 20	-9910.94130	-859.35983	0.00000	0.00000	0.00000	-299378.15739
19	NK: 21	-9910.94130	-859.35983	0.00000	0.00000	0.00000	-288815.19283
20	NJ: 21	-9518.64840	-846.94067	0.00000	0.00000	0.00000	-288815.19283
20	NK: 22	-9518.64840	-846.94067	0.00000	0.00000	0.00000	-278404.88047
21	NJ: 22	-9135.34920	-834.37650	0.00000	0.00000	0.00000	-278404.88047
21	NK: 23	-9135.34920	-834.37650	0.00000	0.00000	0.00000	-268149.00260
22	NJ: 23	-8760.94560	-821.67064	0.00000	0.00000	0.00000	-268149.00260
22	NK: 24	-8760.94560	-821.67064	0.00000	0.00000	0.00000	-258049.30101
23	NJ: 24	-8400.69630	-808.82411	0.00000	0.00000	0.00000	-258049.30101
23	NK: 25	-8400.69630	-808.82411	0.00000	0.00000	0.00000	-248107.50463
24	NJ: 25	-8054.41860	-795.83832	0.00000	0.00000	0.00000	-248107.50463
24	NK: 26	-8054.41860	-795.83832	0.00000	0.00000	0.00000	-238325.32525



25	NJ: 26	-7722.06660	-782.71917	0.00000	0.00000	0.00000	-238325.32525
25	NK: 27	-7722.06660	-782.71917	0.00000	0.00000	0.00000	-228704.40212
26	NJ: 27	-7408.65150	-769.46400	0.00000	0.00000	0.00000	-228704.40212
26	NK: 28	-7408.65150	-769.46400	0.00000	0.00000	0.00000	-219246.40709
27	NJ: 28	-7113.81240	-756.06796	0.00000	0.00000	0.00000	-219246.40709
27	NK: 29	-7113.81240	-756.06796	0.00000	0.00000	0.00000	-209953.07172
28	NJ: 29	-6832.15290	-742.53236	0.00000	0.00000	0.00000	-209953.07172
28	NK: 30	-6832.15290	-742.53236	0.00000	0.00000	0.00000	-200826.11143
29	NJ: 30	-6563.48760	-728.85524	0.00000	0.00000	0.00000	-200826.11143
29	NK: 31	-6563.48760	-728.85524	0.00000	0.00000	0.00000	-191867.26579
30	NJ: 31	-6307.63110	-715.03410	0.00000	0.00000	0.00000	-191867.26579
30	NK: 32	-6307.63110	-715.03410	0.00000	0.00000	0.00000	-183078.30499
31	NJ: 32	-6059.33100	-701.06597	0.00000	0.00000	0.00000	-183078.30499
31	NK: 33	-6059.33100	-701.06597	0.00000	0.00000	0.00000	-174461.03584
32	NJ: 33	-5818.49010	-686.94741	0.00000	0.00000	0.00000	-174461.03584
32	NK: 34	-5818.49010	-686.94741	0.00000	0.00000	0.00000	-166017.30722
33	NJ: 34	-5589.98550	-672.67461	0.00000	0.00000	0.00000	-166017.30722
33	NK: 35	-5589.98550	-672.67461	0.00000	0.00000	0.00000	-157749.01517
34	NJ: 35	-5371.16400	-658.24334	0.00000	0.00000	0.00000	-157749.01517
34	NK: 36	-5371.16400	-658.24334	0.00000	0.00000	0.00000	-149658.10750
35	NJ: 36	-5159.44080	-643.64904	0.00000	0.00000	0.00000	-149658.10750
35	NK: 37	-5159.44080	-643.64904	0.00000	0.00000	0.00000	-141746.58800
36	NJ: 37	-4952.29860	-628.88686	0.00000	0.00000	0.00000	-141746.58800
36	NK: 38	-4952.29860	-628.88686	0.00000	0.00000	0.00000	-134016.52031
37	NJ: 38	-4749.68880	-613.95164	0.00000	0.00000	0.00000	-134016.52031
37	NK: 39	-4749.68880	-613.95164	0.00000	0.00000	0.00000	-126470.03140
38	NJ: 39	-4553.93070	-598.83797	0.00000	0.00000	0.00000	-126470.03140
38	NK: 40	-4553.93070	-598.83797	0.00000	0.00000	0.00000	-119109.31466
39	NJ: 40	-4362.58080	-583.54022	0.00000	0.00000	0.00000	-119109.31466
39	NK: 41	-4362.58080	-583.54022	0.00000	0.00000	0.00000	-111936.63273
40	NJ: 41	-4174.42770	-568.05257	0.00000	0.00000	0.00000	-111936.63273
40	NK: 42	-4174.42770	-568.05257	0.00000	0.00000	0.00000	-104954.31991
41	NJ: 42	-3989.44710	-552.36900	0.00000	0.00000	0.00000	-104954.31991
41	NK: 43	-3989.44710	-552.36900	0.00000	0.00000	0.00000	-98164.78431
42	NJ: 43	-3807.61290	-536.48336	0.00000	0.00000	0.00000	-98164.78431
42	NK: 44	-3807.61290	-536.48336	0.00000	0.00000	0.00000	-91570.50963
43	NJ: 44	-3628.89990	-520.38939	0.00000	0.00000	0.00000	-91570.50963
43	NK: 45	-3628.89990	-520.38939	0.00000	0.00000	0.00000	-85174.05665
44	NJ: 45	-3452.17230	-504.08072	0.00000	0.00000	0.00000	-85174.05665
44	NK: 46	-3452.17230	-504.08072	0.00000	0.00000	0.00000	-78978.06445

45	NJ: 46	-3278.52900	-487.55091	0.00000	0.00000	0.00000	-78978.06445
45	NK: 47	-3278.52900	-487.55091	0.00000	0.00000	0.00000	-72985.25121
46	NJ: 47	-3107.94390	-470.79347	0.00000	0.00000	0.00000	-72985.25121
46	NK: 48	-3107.94390	-470.79347	0.00000	0.00000	0.00000	-67198.41484
47	NJ: 48	-2940.39180	-453.80189	0.00000	0.00000	0.00000	-67198.41484
47	NK: 49	-2940.39180	-453.80189	0.00000	0.00000	0.00000	-61620.43321
48	NJ: 49	-2775.84840	-436.56968	0.00000	0.00000	0.00000	-61620.43321
48	NK: 50	-2775.84840	-436.56968	0.00000	0.00000	0.00000	-56254.26417
49	NJ: 50	-2613.23910	-419.09036	0.00000	0.00000	0.00000	-56254.26417
49	NK: 51	-2613.23910	-419.09036	0.00000	0.00000	0.00000	-51102.94517
50	NJ: 51	-2453.60070	-401.35749	0.00000	0.00000	0.00000	-51102.94517
50	NK: 52	-2453.60070	-401.35749	0.00000	0.00000	0.00000	-46169.59268
51	NJ: 52	-2296.90710	-383.36472	0.00000	0.00000	0.00000	-46169.59268
51	NK: 53	-2296.90710	-383.36472	0.00000	0.00000	0.00000	-41457.40128
52	NJ: 53	-2143.13310	-365.10581	0.00000	0.00000	0.00000	-41457.40128
52	NK: 54	-2143.13310	-365.10581	0.00000	0.00000	0.00000	-36969.64240
53	NJ: 54	-1992.25440	-346.57460	0.00000	0.00000	0.00000	-36969.64240
53	NK: 55	-1992.25440	-346.57460	0.00000	0.00000	0.00000	-32709.66291
54	NJ: 55	-1843.25940	-327.76513	0.00000	0.00000	0.00000	-32709.66291
54	NK: 56	-1843.25940	-327.76513	0.00000	0.00000	0.00000	-28680.88324
55	NJ: 56	-1697.14170	-308.67422	0.00000	0.00000	0.00000	-28680.88324
55	NK: 57	-1697.14170	-308.67422	0.00000	0.00000	0.00000	-24886.76266
56	NJ: 57	-1553.87610	-289.29640	0.00000	0.00000	0.00000	-24886.76266
56	NK: 58	-1553.87610	-289.29640	0.00000	0.00000	0.00000	-21330.82775
57	NJ: 58	-1413.41670	-269.62361	0.00000	0.00000	0.00000	-21330.82775
57	NK: 59	-1413.41670	-269.62361	0.00000	0.00000	0.00000	-18016.70416
58	NJ: 59	-1276.06410	-249.69698	0.00000	0.00000	0.00000	-18016.70416
58	NK: 60	-1276.06410	-249.69698	0.00000	0.00000	0.00000	-14947.51216
59	NJ: 60	-1140.54480	-229.46664	0.00000	0.00000	0.00000	-14947.51216
59	NK: 61	-1140.54480	-229.46664	0.00000	0.00000	0.00000	-12126.98473
60	NJ: 61	-1006.53210	-208.87906	0.00000	0.00000	0.00000	-12126.98473
60	NK: 62	-1006.53210	-208.87906	0.00000	0.00000	0.00000	-9559.51296
61	NJ: 62	-874.35180	-187.97755	0.00000	0.00000	0.00000	-9559.51296
61	NK: 63	-874.35180	-187.97755	0.00000	0.00000	0.00000	-7248.95556
62	NJ: 63	-744.00480	-166.75816	0.00000	0.00000	0.00000	-7248.95556
62	NK: 64	-744.00480	-166.75816	0.00000	0.00000	0.00000	-5199.21987
63	NJ: 64	-615.49020	-145.21728	0.00000	0.00000	0.00000	-5199.21987
63	NK: 65	-615.49020	-145.21728	0.00000	0.00000	0.00000	-3414.25740
64	NJ: 65	-488.80800	-123.35172	0.00000	0.00000	0.00000	-3414.25740
64	NK: 66	-488.80800	-123.35172	0.00000	0.00000	0.00000	-1898.05915

65	NJ: 66	-363.95910	-89.20857	0.00000	0.00000	0.00000	-1898.05915
65	NK: 67	-363.95910	-89.20857	0.00000	0.00000	0.00000	-801.53721
66	NJ: 67	-240.94260	-54.55794	0.00000	0.00000	0.00000	-801.53721
66	NK: 68	-240.94260	-54.55794	0.00000	0.00000	0.00000	-130.92918
67	NJ: 68	-119.75850	-19.39692	0.00000	0.00000	0.00000	-130.92918
67	NK: 69	-119.75850	-19.39692	0.00000	0.00000	0.00000	0.00000

CONDITIONid3=0.9DL+EL

Member	End	Axial [Kip]	V2 [Kip]	V3 [Kip]	Torsion [Kip*ft]	M22 [Kip*ft]	M33 [Kip*ft]
1	NJ: 1	-20904.00193	-1497.76090	-0.00286	-0.00095	-0.00675	-303945.97733
1	NK: 3	-20904.00193	-1497.76090	-0.00286	-0.00095	-0.02912	-289470.14059
2	NJ: 3	-19977.13700	-1485.01381	-0.00314	-0.00094	-0.02914	-289489.74763
2	NK: 4	-19977.13700	-1485.01381	-0.00314	-0.00094	-0.01168	-275508.97945
3	NJ: 4	-19057.92181	-1459.42657	-0.00208	-0.00094	-0.01172	-275499.60682
3	NK: 5	-19057.92181	-1459.42657	-0.00208	-0.00094	-0.03551	-262090.07908
4	NJ: 5	-18146.12354	-1423.10121	-0.00219	-0.00094	-0.03554	-262090.07755
4	NK: 6	-18146.12354	-1423.10121	-0.00219	-0.00094	-0.01038	-249309.70955
5	NJ: 6	-17241.48838	-1378.11167	-0.00374	-0.00094	-0.01035	-249309.70793
5	NK: 7	-17241.48838	-1378.11167	-0.00374	-0.00094	-0.03771	-237197.09256
6	NJ: 7	-16415.52811	-1330.11603	-0.00269	-0.00093	-0.03771	-237197.09106
6	NK: 8	-16415.52811	-1330.11603	-0.00269	-0.00093	-0.01264	-225765.98795
7	NJ: 8	-15715.78880	-1284.37226	-0.00278	-0.00093	-0.01264	-225765.98668
7	NK: 9	-15715.78880	-1284.37226	-0.00278	-0.00093	-0.02589	-215015.76648
8	NJ: 9	-15117.42483	-1241.21149	-0.00160	-0.00092	-0.02588	-215015.76542
8	NK: 10	-15117.42483	-1241.21149	-0.00160	-0.00092	-0.00758	-204946.56974
9	NJ: 10	-14577.61847	-1198.63155	-0.00167	-0.00092	-0.00759	-204946.56881
9	NK: 11	-14577.61847	-1198.63155	-0.00167	-0.00092	-0.01439	-195560.58935
10	NJ: 11	-14054.16419	-1154.14733	-0.00090	-0.00091	-0.01439	-195560.58851
10	NK: 12	-14054.16419	-1154.14733	-0.00090	-0.00091	-0.00915	-186855.90921
11	NJ: 12	-13540.85864	-1108.05023	-0.00136	-0.00090	-0.00914	-186855.90844
11	NK: 13	-13540.85864	-1108.05023	-0.00136	-0.00090	-0.01092	-178819.49664
12	NJ: 13	-13037.70191	-1061.00935	-0.00078	-0.00090	-0.01094	-178819.49596
12	NK: 14	-13037.70191	-1061.00935	-0.00078	-0.00090	-0.00748	-171426.97745
13	NJ: 14	-12550.42714	-1014.01120	-0.00114	-0.00089	-0.00747	-171426.97686
13	NK: 15	-12550.42714	-1014.01120	-0.00114	-0.00089	-0.01178	-164644.38853
14	NJ: 15	-12078.89204	-967.48214	-0.00124	-0.00088	-0.01177	-164644.38804
14	NK: 16	-12078.89204	-967.48214	-0.00124	-0.00088	-0.00499	-158429.75722

15	NJ: 16	-11622.90954	-921.84901	-0.00101	-0.00087	-0.00500	-158429.75679
15	NK: 17	-11622.90954	-921.84901	-0.00101	-0.00087	-0.01456	-152734.61504
16	NJ: 17	-11176.54598	-876.93844	-0.00135	-0.00086	-0.01455	-152734.61466
16	NK: 18	-11176.54598	-876.93844	-0.00135	-0.00086	-0.00676	-147503.34261
17	NJ: 18	-10739.70543	-833.23169	-0.00151	-0.00085	-0.00677	-147503.34228
17	NK: 19	-10739.70543	-833.23169	-0.00151	-0.00085	-0.01656	-142675.50059
18	NJ: 19	-10317.89960	-791.79268	-0.00135	-0.00084	-0.01657	-142675.50029
18	NK: 20	-10317.89960	-791.79268	-0.00135	-0.00084	-0.01378	-138191.50760
19	NJ: 20	-9910.94259	-753.00081	-0.00158	-0.00083	-0.01379	-138191.50731
19	NK: 21	-9910.94259	-753.00081	-0.00158	-0.00083	-0.00794	-133993.72808
20	NJ: 21	-9518.64945	-717.10214	-0.00108	-0.00082	-0.00794	-133993.72779
20	NK: 22	-9518.64945	-717.10214	-0.00108	-0.00082	-0.01884	-130028.27709
21	NJ: 22	-9135.35108	-683.92465	-0.00208	-0.00081	-0.01884	-130028.27678
21	NK: 23	-9135.35108	-683.92465	-0.00208	-0.00081	-0.00796	-126241.97295
22	NJ: 23	-8760.94753	-653.88611	-0.00068	-0.00079	-0.00796	-126241.97261
22	NK: 24	-8760.94753	-653.88611	-0.00068	-0.00079	-0.01281	-122586.56010
23	NJ: 24	-8400.69686	-627.57719	-0.00144	-0.00078	-0.01281	-122586.55973
23	NK: 25	-8400.69686	-627.57719	-0.00144	-0.00078	-0.00572	-119024.97214
24	NJ: 25	-8054.42017	-604.92489	-0.00052	-0.00077	-0.00572	-119024.97174
24	NK: 26	-8054.42017	-604.92489	-0.00052	-0.00077	-0.00919	-115528.19071
25	NJ: 26	-7722.06871	-585.80820	-0.00089	-0.00075	-0.00919	-115528.19027
25	NK: 27	-7722.06871	-585.80820	-0.00089	-0.00075	-0.00476	-112075.36802
26	NJ: 27	-7408.65311	-570.12587	-0.00078	-0.00074	-0.00476	-112075.36755
26	NK: 28	-7408.65311	-570.12587	-0.00078	-0.00074	-0.00941	-108658.97690
27	NJ: 28	-7113.81287	-557.21579	-0.00095	-0.00073	-0.00941	-108658.97641
27	NK: 29	-7113.81287	-557.21579	-0.00095	-0.00073	-0.00398	-105279.30041
28	NJ: 29	-6832.15425	-546.31346	-0.00035	-0.00071	-0.00398	-105279.29989
28	NK: 30	-6832.15425	-546.31346	-0.00035	-0.00071	-0.00091	-101937.60931
29	NJ: 30	-6563.48950	-536.98488	-0.00038	-0.00070	-0.00094	-101937.60877
29	NK: 31	-6563.48950	-536.98488	-0.00038	-0.00070	-0.00440	-98640.12537
30	NJ: 31	-6307.63239	-528.75251	-0.00020	-0.00069	-0.00440	-98640.12482
30	NK: 32	-6307.63239	-528.75251	-0.00020	-0.00069	-0.00296	-95397.13483
31	NJ: 32	-6059.33216	-521.10430	-0.00055	-0.00067	-0.00296	-95397.13427
31	NK: 33	-6059.33216	-521.10430	-0.00055	-0.00067	-0.00418	-92216.24783
32	NJ: 33	-5818.49127	-513.82516	-0.00035	-0.00066	-0.00418	-92216.24728
32	NK: 34	-5818.49127	-513.82516	-0.00035	-0.00066	-0.00529	-89106.85285
33	NJ: 34	-5589.98675	-506.74704	-0.00070	-0.00064	-0.00529	-89106.85232
33	NK: 35	-5589.98675	-506.74704	-0.00070	-0.00064	-0.00467	-86085.21812
34	NJ: 35	-5371.16561	-499.45088	-0.00053	-0.00063	-0.00467	-86085.21760
34	NK: 36	-5371.16561	-499.45088	-0.00053	-0.00063	-0.00472	-83165.51569

35	NJ: 36	-5159.44252	-491.64027	-0.00056	-0.00061	-0.00473	-83165.51520
35	NK: 37	-5159.44252	-491.64027	-0.00056	-0.00061	-0.00344	-80358.50114
36	NJ: 37	-4952.29957	-483.12282	-0.00040	-0.00060	-0.00346	-80358.50068
36	NK: 38	-4952.29957	-483.12282	-0.00040	-0.00060	-0.00397	-77670.33306
37	NJ: 38	-4749.68997	-473.83949	-0.00033	-0.00058	-0.00398	-77670.33263
37	NK: 39	-4749.68997	-473.83949	-0.00033	-0.00058	-0.00241	-75104.42044
38	NJ: 39	-4553.93238	-463.83770	-0.00053	-0.00057	-0.00241	-75104.42005
38	NK: 40	-4553.93238	-463.83770	-0.00053	-0.00057	-0.00615	-72663.85238
39	NJ: 40	-4362.58260	-452.99095	-0.00058	-0.00055	-0.00615	-72663.85203
39	NK: 41	-4362.58260	-452.99095	-0.00058	-0.00055	-0.00297	-70345.28618
40	NJ: 41	-4174.42874	-441.28927	-0.00053	-0.00053	-0.00300	-70345.28586
40	NK: 42	-4174.42874	-441.28927	-0.00053	-0.00053	-0.00685	-68139.63899
41	NJ: 42	-3989.44805	-428.82766	-0.00100	-0.00052	-0.00687	-68139.63871
41	NK: 43	-3989.44805	-428.82766	-0.00100	-0.00052	-0.00587	-66033.34931
42	NJ: 43	-3807.61462	-415.75448	-0.00052	-0.00050	-0.00588	-66033.34905
42	NK: 44	-3807.61462	-415.75448	-0.00052	-0.00050	-0.00142	-64008.61135
43	NJ: 44	-3628.90136	-402.25874	-0.00034	-0.00048	-0.00148	-64008.61111
43	NK: 45	-3628.90136	-402.25874	-0.00034	-0.00048	-0.00434	-62043.89929
44	NJ: 45	-3452.17300	-388.49944	-0.00069	-0.00046	-0.00433	-62043.89904
44	NK: 46	-3452.17300	-388.49944	-0.00069	-0.00046	-0.00437	-60112.75480
45	NJ: 46	-3278.52962	-374.85884	-0.00030	-0.00045	-0.00438	-60112.75454
45	NK: 47	-3278.52962	-374.85884	-0.00030	-0.00045	-0.00167	-58188.25722
46	NJ: 47	-3107.94507	-361.66621	-0.00034	-0.00043	-0.00168	-58188.25692
46	NK: 48	-3107.94507	-361.66621	-0.00034	-0.00043	-0.00284	-56242.54921
47	NJ: 48	-2940.39287	-349.26660	-0.00026	-0.00041	-0.00282	-56242.54886
47	NK: 49	-2940.39287	-349.26660	-0.00026	-0.00041	-0.00206	-54247.99285
48	NJ: 49	-2775.84926	-338.01099	-0.00038	-0.00039	-0.00207	-54247.99241
48	NK: 50	-2775.84926	-338.01099	-0.00038	-0.00039	-0.00362	-52178.30219
49	NJ: 50	-2613.23954	-328.20766	-0.00037	-0.00037	-0.00361	-52178.30164
49	NK: 51	-2613.23954	-328.20766	-0.00037	-0.00037	-0.00176	-50007.35281
50	NJ: 51	-2453.60169	-320.21889	-0.00033	-0.00035	-0.00176	-50007.35213
50	NK: 52	-2453.60169	-320.21889	-0.00033	-0.00035	-0.00452	-47714.59267
51	NJ: 52	-2296.90824	-314.17201	-0.00056	-0.00033	-0.00450	-47714.59182
51	NK: 53	-2296.90824	-314.17201	-0.00056	-0.00033	-0.00261	-45283.93828
52	NJ: 53	-2143.13384	-310.03767	-0.00017	-0.00031	-0.00261	-45283.93724
52	NK: 54	-2143.13384	-310.03767	-0.00017	-0.00031	-0.00262	-42704.40720
53	NJ: 54	-1992.25471	-307.60408	-0.00031	-0.00029	-0.00262	-42704.40594
53	NK: 55	-1992.25471	-307.60408	-0.00031	-0.00029	-0.00141	-39970.55284
54	NJ: 55	-1843.26034	-306.50920	-0.00014	-0.00027	-0.00142	-39970.55132
54	NK: 56	-1843.26034	-306.50920	-0.00014	-0.00027	-0.00226	-37080.40444

55	NJ: 56	-1697.14288	-306.29584	-0.00042	-0.00025	-0.00225	-37080.40264
55	NK: 57	-1697.14288	-306.29584	-0.00042	-0.00025	-0.00310	-34039.87586
56	NJ: 57	-1553.87693	-306.40594	-0.00031	-0.00023	-0.00310	-34039.87374
56	NK: 58	-1553.87693	-306.40594	-0.00031	-0.00023	-0.00107	-30860.83282
57	NJ: 58	-1413.41705	-306.24339	-0.00019	-0.00021	-0.00108	-30860.83033
57	NK: 59	-1413.41705	-306.24339	-0.00019	-0.00021	-0.00246	-27561.33444
58	NJ: 59	-1276.06488	-305.18844	-0.00032	-0.00019	-0.00246	-27561.33154
58	NK: 60	-1276.06488	-305.18844	-0.00032	-0.00019	-0.00153	-24166.90079
59	NJ: 60	-1140.54566	-302.58736	-0.00012	-0.00018	-0.00152	-24166.89738
59	NK: 61	-1140.54566	-302.58736	-0.00012	-0.00018	-0.00055	-20709.53885
60	NJ: 61	-1006.53278	-297.66273	-0.00012	-0.00016	-0.00055	-20709.53485
60	NK: 62	-1006.53278	-297.66273	-0.00012	-0.00016	-0.00111	-17231.63970
61	NJ: 62	-874.35225	-289.40127	-0.00026	-0.00014	-0.00112	-17231.63502
61	NK: 63	-874.35225	-289.40127	-0.00026	-0.00014	-0.00214	-13789.70836
62	NJ: 63	-744.00522	-276.43421	-0.00035	-0.00012	-0.00214	-13789.70294
62	NK: 64	-744.00522	-276.43421	-0.00035	-0.00012	-0.00217	-10457.80989
63	NJ: 64	-615.49064	-256.98985	-0.00036	-0.00010	-0.00217	-10457.80369
63	NK: 65	-615.49064	-256.98985	-0.00036	-0.00010	-0.00227	-7331.32897
64	NJ: 65	-488.80846	-228.96007	-0.00038	-0.00008	-0.00227	-7331.32200
64	NK: 66	-488.80846	-228.96007	-0.00038	-0.00008	-0.00244	-4529.53489
65	NJ: 66	-363.95947	-190.13324	-0.00027	-0.00006	-0.00244	-4529.52726
65	NK: 67	-363.95947	-190.13324	-0.00027	-0.00006	-0.00092	-2195.59661
66	NJ: 67	-240.94298	-138.55587	0.00000	-0.00004	-0.00092	-2195.58852
66	NK: 68	-240.94298	-138.55587	0.00000	-0.00004	-0.00052	-492.74332
67	NJ: 68	-119.75875	-72.99657	0.00000	-0.00002	-0.00052	-492.73503
67	NK: 69	-119.75875	-72.99657	0.00000	-0.00002	0.00000	-0.00928

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## Geometry data

### GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member    0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

### Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
3	0.00	12.2917	0.00	0
4	0.00	24.5833	0.00	0
5	0.00	36.875	0.00	0
6	0.00	49.1667	0.00	0
7	0.00	61.4583	0.00	0
8	0.00	73.75	0.00	0
9	0.00	86.0417	0.00	0
10	0.00	98.3333	0.00	0
11	0.00	110.625	0.00	0
12	0.00	122.9167	0.00	0
13	0.00	135.2083	0.00	0
14	0.00	147.50	0.00	0
15	0.00	159.7917	0.00	0
16	0.00	172.0833	0.00	0
17	0.00	184.375	0.00	0
18	0.00	196.6667	0.00	0
19	0.00	208.9583	0.00	0
20	0.00	221.25	0.00	0
21	0.00	233.5417	0.00	0
22	0.00	245.8333	0.00	0

23	0.00	258.125	0.00	0
24	0.00	270.4167	0.00	0
25	0.00	282.7083	0.00	0
26	0.00	295.00	0.00	0
27	0.00	307.2917	0.00	0
28	0.00	319.5833	0.00	0
29	0.00	331.875	0.00	0
30	0.00	344.1667	0.00	0
31	0.00	356.4583	0.00	0
32	0.00	368.75	0.00	0
33	0.00	381.0417	0.00	0
34	0.00	393.3333	0.00	0
35	0.00	405.625	0.00	0
36	0.00	417.9167	0.00	0
37	0.00	430.2083	0.00	0
38	0.00	442.50	0.00	0
39	0.00	454.7917	0.00	0
40	0.00	467.0833	0.00	0
41	0.00	479.375	0.00	0
42	0.00	491.6667	0.00	0
43	0.00	503.9583	0.00	0
44	0.00	516.25	0.00	0
45	0.00	528.5417	0.00	0
46	0.00	540.8333	0.00	0
47	0.00	553.125	0.00	0
48	0.00	565.4167	0.00	0
49	0.00	577.7083	0.00	0
50	0.00	590.00	0.00	0
51	0.00	602.2917	0.00	0
52	0.00	614.5833	0.00	0
53	0.00	626.875	0.00	0
54	0.00	639.1667	0.00	0
55	0.00	651.4583	0.00	0
56	0.00	663.75	0.00	0
57	0.00	676.0417	0.00	0
58	0.00	688.3333	0.00	0
59	0.00	700.625	0.00	0
60	0.00	712.9167	0.00	0
61	0.00	725.2083	0.00	0
62	0.00	737.50	0.00	0
63	0.00	749.7917	0.00	0
64	0.00	762.0833	0.00	0
65	0.00	774.375	0.00	0
66	0.00	786.6667	0.00	0
67	0.00	798.9583	0.00	0
68	0.00	811.25	0.00	0
69	0.00	818.00	0.00	0

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## Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1



## Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	1	3		PIPE 74	C 3-60	0.00	0.00	0.00
2	3	4		PIPE 74	C 3-60	0.00	0.00	0.00
3	4	5		PIPE 73	C 3-60	0.00	0.00	0.00
4	5	6		PIPE 73	C 3-60	0.00	0.00	0.00
5	6	7		PIPE 72	C 3-60	0.00	0.00	0.00
6	7	8		PIPE 71	C 3-60	0.00	0.00	0.00
7	8	9		PIPE 71	C 3-60	0.00	0.00	0.00
8	9	10		PIPE 70	C 3-60	0.00	0.00	0.00
9	10	11		PIPE 70	C 3-60	0.00	0.00	0.00
10	11	12		PIPE 69	C 3-60	0.00	0.00	0.00
11	12	13		PIPE 69	C 3-60	0.00	0.00	0.00
12	13	14		PIPE 68	C 3-60	0.00	0.00	0.00
13	14	15		PIPE 67	C 3-60	0.00	0.00	0.00
14	15	16		PIPE 67	C 3-60	0.00	0.00	0.00
15	16	17		PIPE 66	C 3-60	0.00	0.00	0.00
16	17	18		PIPE 66	C 3-60	0.00	0.00	0.00
17	18	19		PIPE 65	C 3-60	0.00	0.00	0.00
18	19	20		PIPE 65	C 3-60	0.00	0.00	0.00
19	20	21		PIPE 64	C 3-60	0.00	0.00	0.00
20	21	22		PIPE 64	C 3-60	0.00	0.00	0.00
21	22	23		PIPE 63	C 3-60	0.00	0.00	0.00
22	23	24		PIPE 62	C 3-60	0.00	0.00	0.00
23	24	25		PIPE 62	C 3-60	0.00	0.00	0.00
24	25	26		PIPE 61	C 3-60	0.00	0.00	0.00
25	26	27		PIPE 61	C 3-60	0.00	0.00	0.00
26	27	28		PIPE 60	C 3-60	0.00	0.00	0.00
27	28	29		PIPE 60	C 3-60	0.00	0.00	0.00
28	29	30		PIPE 59	C 3-60	0.00	0.00	0.00
29	30	31		PIPE 58	C 3-60	0.00	0.00	0.00
30	31	32		PIPE 58	C 3-60	0.00	0.00	0.00
31	32	33		PIPE 57	C 3-60	0.00	0.00	0.00
32	33	34		PIPE 57	C 3-60	0.00	0.00	0.00
33	34	35		PIPE 56	C 3-60	0.00	0.00	0.00
34	35	36		PIPE 56	C 3-60	0.00	0.00	0.00
35	36	37		PIPE 55	C 3-60	0.00	0.00	0.00
36	37	38		PIPE 55	C 3-60	0.00	0.00	0.00
37	38	39		PIPE 54	C 3-60	0.00	0.00	0.00
38	39	40		PIPE 53	C 3-60	0.00	0.00	0.00
39	40	41		PIPE 53	C 3-60	0.00	0.00	0.00
40	41	42		PIPE 52	C 3-60	0.00	0.00	0.00
41	42	43		PIPE 52	C 3-60	0.00	0.00	0.00
42	43	44		PIPE 51	C 3-60	0.00	0.00	0.00
43	44	45		PIPE 51	C 3-60	0.00	0.00	0.00
44	45	46		PIPE 50	C 3-60	0.00	0.00	0.00
45	46	47		PIPE 49	C 3-60	0.00	0.00	0.00
46	47	48		PIPE 49	C 3-60	0.00	0.00	0.00
47	48	49		PIPE 48	C 3-60	0.00	0.00	0.00
48	49	50		PIPE 48	C 3-60	0.00	0.00	0.00
49	50	51		PIPE 47	C 3-60	0.00	0.00	0.00
50	51	52		PIPE 47	C 3-60	0.00	0.00	0.00
51	52	53		PIPE 46	C 3-60	0.00	0.00	0.00
52	53	54		PIPE 46	C 3-60	0.00	0.00	0.00
53	54	55		PIPE 45	C 3-60	0.00	0.00	0.00
54	55	56		PIPE 44	C 3-60	0.00	0.00	0.00
55	56	57		PIPE 44	C 3-60	0.00	0.00	0.00
56	57	58		PIPE 43	C 3-60	0.00	0.00	0.00
57	58	59		PIPE 43	C 3-60	0.00	0.00	0.00
58	59	60		PIPE 42	C 3-60	0.00	0.00	0.00
59	60	61		PIPE 42	C 3-60	0.00	0.00	0.00
60	61	62		PIPE 415A	C 3-60	0.00	0.00	0.00

61	62	63	PIPE 401	C 3-60	0.00	0.00	0.00
62	63	64	PIPE 403A	C 3-60	0.00	0.00	0.00
63	64	65	PIPE 391	C 3-60	0.00	0.00	0.00
64	65	66	PIPE 392A	C 3-60	0.00	0.00	0.00
65	66	67	PIPE 381	C 3-60	0.00	0.00	0.00
66	67	68	PIPE 381A	C 3-60	0.00	0.00	0.00
67	68	69	PIPE 377A	C 3-60	0.00	0.00	0.00

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## Load data

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
EL	Earthquake	No	EQ
WL	Wind	No	WIND
id0	1.4DL	Yes	
id1	0.9DL+1.6WL	Yes	
id2	1.2DL+1.6WL	Yes	
id3	0.9DL+EL	Yes	
id4	1.2DL+EL	Yes	

### Masses

Node	TX [Kip]	TY [Kip]	TZ [Kip]	RX [Kip*in2]	RY [Kip*in2]	RZ [Kip*in2]
3	1029.8549	1029.8549	1029.8549	1029.8549	1029.8549	1029.8549
4	1021.3474	1021.3474	1021.3474	1021.3474	1021.3474	1021.3474
5	1013.1115	1013.1115	1013.1115	1013.1115	1013.1115	1013.1115
6	1005.1471	1005.1471	1005.1471	1005.1471	1005.1471	1005.1471
7	917.7345	917.7345	917.7345	917.7345	917.7345	917.7345
8	777.4871	777.4871	777.4871	777.4871	777.4871	777.4871
9	664.8488	664.8488	664.8488	664.8488	664.8488	664.8488
10	599.7852	599.7852	599.7852	599.7852	599.7852	599.7852
11	581.6163	581.6163	581.6163	581.6163	581.6163	581.6163
12	570.3391	570.3391	570.3391	570.3391	570.3391	570.3391
13	559.063	559.063	559.063	559.063	559.063	559.063
14	541.4171	541.4171	541.4171	541.4171	541.4171	541.4171
15	523.9277	523.9277	523.9277	523.9277	523.9277	523.9277
16	506.6469	506.6469	506.6469	506.6469	506.6469	506.6469
17	495.9591	495.9591	495.9591	495.9591	495.9591	495.9591
18	485.3795	485.3795	485.3795	485.3795	485.3795	485.3795
19	468.6738	468.6738	468.6738	468.6738	468.6738	468.6738
20	452.1743	452.1743	452.1743	452.1743	452.1743	452.1743
21	435.8809	435.8809	435.8809	435.8809	435.8809	435.8809
22	425.8883	425.8883	425.8883	425.8883	425.8883	425.8883
23	416.0037	416.0037	416.0037	416.0037	416.0037	416.0037
24	400.2766	400.2766	400.2766	400.2766	400.2766	400.2766
25	384.7532	384.7532	384.7532	384.7532	384.7532	384.7532
26	369.28	369.28	369.28	369.28	369.28	369.28
27	348.2389	348.2389	348.2389	348.2389	348.2389	348.2389
28	327.5993	327.5993	327.5993	327.5993	327.5993	327.5993
29	312.9552	312.9552	312.9552	312.9552	312.9552	312.9552

30	298.5171	298.5171	298.5171	298.5171	298.5171	298.5171
31	284.2852	284.2852	284.2852	284.2852	284.2852	284.2852
32	275.889	275.889	275.889	275.889	275.889	275.889
33	267.6009	267.6009	267.6009	267.6009	267.6009	267.6009
34	253.8944	253.8944	253.8944	253.8944	253.8944	253.8944
35	243.1347	243.1347	243.1347	243.1347	243.1347	243.1347
36	235.2482	235.2482	235.2482	235.2482	235.2482	235.2482
37	230.1577	230.1577	230.1577	230.1577	230.1577	230.1577
38	225.1224	225.1224	225.1224	225.1224	225.1224	225.1224
39	217.5087	217.5087	217.5087	217.5087	217.5087	217.5087
40	212.611	212.611	212.611	212.611	212.611	212.611
41	209.0587	209.0587	209.0587	209.0587	209.0587	209.0587
42	205.5344	205.5344	205.5344	205.5344	205.5344	205.5344
43	202.038	202.038	202.038	202.038	202.038	202.038
44	198.5696	198.5696	198.5696	198.5696	198.5696	198.5696
45	196.3635	196.3635	196.3635	196.3635	196.3635	196.3635
46	192.9372	192.9372	192.9372	192.9372	192.9372	192.9372
47	189.5389	189.5389	189.5389	189.5389	189.5389	189.5389
48	186.1685	186.1685	186.1685	186.1685	186.1685	186.1685
49	182.8261	182.8261	182.8261	182.8261	182.8261	182.8261
50	180.6766	180.6766	180.6766	180.6766	180.6766	180.6766
51	177.3763	177.3763	177.3763	177.3763	177.3763	177.3763
52	174.104	174.104	174.104	174.104	174.104	174.104
53	170.8597	170.8597	170.8597	170.8597	170.8597	170.8597
54	167.6433	167.6433	167.6433	167.6433	167.6433	167.6433
55	165.5504	165.5504	165.5504	165.5504	165.5504	165.5504
56	162.353	162.353	162.353	162.353	162.353	162.353
57	159.1839	159.1839	159.1839	159.1839	159.1839	159.1839
58	156.0659	156.0659	156.0659	156.0659	156.0659	156.0659
59	152.6138	152.6138	152.6138	152.6138	152.6138	152.6138
60	150.5775	150.5775	150.5775	150.5775	150.5775	150.5775
61	148.9031	148.9031	148.9031	148.9031	148.9031	148.9031
62	146.8668	146.8668	146.8668	146.8668	146.8668	146.8668
63	144.8304	144.8304	144.8304	144.8304	144.8304	144.8304
64	142.7941	142.7941	142.7941	142.7941	142.7941	142.7941
65	140.7577	140.7577	140.7577	140.7577	140.7577	140.7577
66	138.7213	138.7213	138.7213	138.7213	138.7213	138.7213
67	136.685	136.685	136.685	136.685	136.685	136.685
68	134.6486	134.6486	134.6486	134.6486	134.6486	134.6486
69	133.0648	133.0648	133.0648	133.0648	133.0648	133.0648

### Load on nodes

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	3	0.00	-1029.85	0.00	0.00	0.00	0.00
	4	0.00	-1021.35	0.00	0.00	0.00	0.00
	5	0.00	-1013.11	0.00	0.00	0.00	0.00
	6	0.00	-1005.15	0.00	0.00	0.00	0.00
	7	0.00	-917.734	0.00	0.00	0.00	0.00
	8	0.00	-777.487	0.00	0.00	0.00	0.00
	9	0.00	-664.849	0.00	0.00	0.00	0.00
	10	0.00	-599.785	0.00	0.00	0.00	0.00
	11	0.00	-581.616	0.00	0.00	0.00	0.00
	12	0.00	-570.339	0.00	0.00	0.00	0.00
	13	0.00	-559.063	0.00	0.00	0.00	0.00

14	0.00	-541.417	0.00	0.00	0.00	0.00
15	0.00	-523.928	0.00	0.00	0.00	0.00
16	0.00	-506.647	0.00	0.00	0.00	0.00
17	0.00	-495.959	0.00	0.00	0.00	0.00
18	0.00	-485.379	0.00	0.00	0.00	0.00
19	0.00	-468.674	0.00	0.00	0.00	0.00
20	0.00	-452.174	0.00	0.00	0.00	0.00
21	0.00	-435.881	0.00	0.00	0.00	0.00
22	0.00	-425.888	0.00	0.00	0.00	0.00
23	0.00	-416.004	0.00	0.00	0.00	0.00
24	0.00	-400.277	0.00	0.00	0.00	0.00
25	0.00	-384.753	0.00	0.00	0.00	0.00
26	0.00	-369.28	0.00	0.00	0.00	0.00
27	0.00	-348.239	0.00	0.00	0.00	0.00
28	0.00	-327.599	0.00	0.00	0.00	0.00
29	0.00	-312.955	0.00	0.00	0.00	0.00
30	0.00	-298.517	0.00	0.00	0.00	0.00
31	0.00	-284.285	0.00	0.00	0.00	0.00
32	0.00	-275.889	0.00	0.00	0.00	0.00
33	0.00	-267.601	0.00	0.00	0.00	0.00
34	0.00	-253.894	0.00	0.00	0.00	0.00
35	0.00	-243.135	0.00	0.00	0.00	0.00
36	0.00	-235.248	0.00	0.00	0.00	0.00
37	0.00	-230.158	0.00	0.00	0.00	0.00
38	0.00	-225.122	0.00	0.00	0.00	0.00
39	0.00	-217.509	0.00	0.00	0.00	0.00
40	0.00	-212.611	0.00	0.00	0.00	0.00
41	0.00	-209.059	0.00	0.00	0.00	0.00
42	0.00	-205.534	0.00	0.00	0.00	0.00
43	0.00	-202.038	0.00	0.00	0.00	0.00
44	0.00	-198.57	0.00	0.00	0.00	0.00
45	0.00	-196.364	0.00	0.00	0.00	0.00
46	0.00	-192.937	0.00	0.00	0.00	0.00
47	0.00	-189.539	0.00	0.00	0.00	0.00
48	0.00	-186.169	0.00	0.00	0.00	0.00
49	0.00	-182.826	0.00	0.00	0.00	0.00
50	0.00	-180.677	0.00	0.00	0.00	0.00
51	0.00	-177.376	0.00	0.00	0.00	0.00
52	0.00	-174.104	0.00	0.00	0.00	0.00
53	0.00	-170.86	0.00	0.00	0.00	0.00
54	0.00	-167.643	0.00	0.00	0.00	0.00
55	0.00	-165.55	0.00	0.00	0.00	0.00
56	0.00	-162.353	0.00	0.00	0.00	0.00
57	0.00	-159.184	0.00	0.00	0.00	0.00
58	0.00	-156.066	0.00	0.00	0.00	0.00
59	0.00	-152.614	0.00	0.00	0.00	0.00
60	0.00	-150.577	0.00	0.00	0.00	0.00
61	0.00	-148.903	0.00	0.00	0.00	0.00
62	0.00	-146.867	0.00	0.00	0.00	0.00
63	0.00	-144.83	0.00	0.00	0.00	0.00
64	0.00	-142.794	0.00	0.00	0.00	0.00
65	0.00	-140.758	0.00	0.00	0.00	0.00
66	0.00	-138.721	0.00	0.00	0.00	0.00
67	0.00	-136.685	0.00	0.00	0.00	0.00
68	0.00	-134.649	0.00	0.00	0.00	0.00
69	0.00	-133.065	0.00	0.00	0.00	0.00
WL	3	3.5285	0.00	0.00	0.00	0.00
	4	4.334	0.00	0.00	0.00	0.00
	5	4.8732	0.00	0.00	0.00	0.00
	6	5.2857	0.00	0.00	0.00	0.00

7	5.6186	0.00	0.00	0.00	0.00	0.00
8	5.8956	0.00	0.00	0.00	0.00	0.00
9	6.137	0.00	0.00	0.00	0.00	0.00
10	6.3509	0.00	0.00	0.00	0.00	0.00
11	6.539	0.00	0.00	0.00	0.00	0.00
12	6.7092	0.00	0.00	0.00	0.00	0.00
13	6.8625	0.00	0.00	0.00	0.00	0.00
14	7.0029	0.00	0.00	0.00	0.00	0.00
15	7.1317	0.00	0.00	0.00	0.00	0.00
16	7.2514	0.00	0.00	0.00	0.00	0.00
17	7.3642	0.00	0.00	0.00	0.00	0.00
18	7.4706	0.00	0.00	0.00	0.00	0.00
19	7.5718	0.00	0.00	0.00	0.00	0.00
20	7.6686	0.00	0.00	0.00	0.00	0.00
21	7.762	0.00	0.00	0.00	0.00	0.00
22	7.8526	0.00	0.00	0.00	0.00	0.00
23	7.9412	0.00	0.00	0.00	0.00	0.00
24	8.0291	0.00	0.00	0.00	0.00	0.00
25	8.1161	0.00	0.00	0.00	0.00	0.00
26	8.1995	0.00	0.00	0.00	0.00	0.00
27	8.2845	0.00	0.00	0.00	0.00	0.00
28	8.3725	0.00	0.00	0.00	0.00	0.00
29	8.4597	0.00	0.00	0.00	0.00	0.00
30	8.5482	0.00	0.00	0.00	0.00	0.00
31	8.6382	0.00	0.00	0.00	0.00	0.00
32	8.7301	0.00	0.00	0.00	0.00	0.00
33	8.8241	0.00	0.00	0.00	0.00	0.00
34	8.9205	0.00	0.00	0.00	0.00	0.00
35	9.0195	0.00	0.00	0.00	0.00	0.00
36	9.1214	0.00	0.00	0.00	0.00	0.00
37	9.2264	0.00	0.00	0.00	0.00	0.00
38	9.3345	0.00	0.00	0.00	0.00	0.00
39	9.446	0.00	0.00	0.00	0.00	0.00
40	9.5611	0.00	0.00	0.00	0.00	0.00
41	9.6798	0.00	0.00	0.00	0.00	0.00
42	9.8022	0.00	0.00	0.00	0.00	0.00
43	9.9285	0.00	0.00	0.00	0.00	0.00
44	10.0587	0.00	0.00	0.00	0.00	0.00
45	10.1929	0.00	0.00	0.00	0.00	0.00
46	10.3311	0.00	0.00	0.00	0.00	0.00
47	10.4734	0.00	0.00	0.00	0.00	0.00
48	10.6197	0.00	0.00	0.00	0.00	0.00
49	10.7701	0.00	0.00	0.00	0.00	0.00
50	10.9246	0.00	0.00	0.00	0.00	0.00
51	11.083	0.00	0.00	0.00	0.00	0.00
52	11.2455	0.00	0.00	0.00	0.00	0.00
53	11.4118	0.00	0.00	0.00	0.00	0.00
54	11.582	0.00	0.00	0.00	0.00	0.00
55	11.7559	0.00	0.00	0.00	0.00	0.00
56	11.9318	0.00	0.00	0.00	0.00	0.00
57	12.1111	0.00	0.00	0.00	0.00	0.00
58	12.2955	0.00	0.00	0.00	0.00	0.00
59	12.4541	0.00	0.00	0.00	0.00	0.00
60	12.644	0.00	0.00	0.00	0.00	0.00
61	12.8672	0.00	0.00	0.00	0.00	0.00
62	13.0634	0.00	0.00	0.00	0.00	0.00
63	13.2621	0.00	0.00	0.00	0.00	0.00
64	13.463	0.00	0.00	0.00	0.00	0.00
65	13.666	0.00	0.00	0.00	0.00	0.00
66	21.3395	0.00	0.00	0.00	0.00	0.00

67	21.6566	0.00	0.00	0.00	0.00	0.00
68	21.9756	0.00	0.00	0.00	0.00	0.00
69	12.1231	0.00	0.00	0.00	0.00	0.00

### Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
EL	Earthquake	No	0.00	0.00	0.00
WL	Wind	No	0.00	0.00	0.00
id0	1.4DL	Yes	0.00	0.00	0.00
id1	0.9DL+1.6WL	Yes	0.00	0.00	0.00
id2	1.2DL+1.6WL	Yes	0.00	0.00	0.00
id3	0.9DL+EL	Yes	0.00	0.00	0.00
id4	1.2DL+EL	Yes	0.00	0.00	0.00

### Earthquake (Dynamic analysis only)

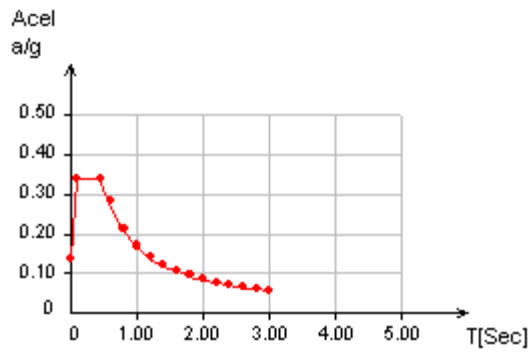
Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
EL	0.8333	0.00	5.00
WL	0.00	0.00	0.00
id0	0.00	0.00	0.00
id1	0.00	0.00	0.00
id2	0.00	0.00	0.00
id3	0.00	0.00	0.00
id4	0.00	0.00	0.00

### Response spectrum

T [Sec]	a/g
0.001	0.1372
0.0902	0.338
0.4508	0.338
0.60	0.28
0.80	0.21
1.00	0.168
1.20	0.14
1.40	0.12
1.60	0.105
1.80	0.0933
2.00	0.084
2.20	0.0764
2.40	0.07

2.60	0.0646
2.80	0.06
3.00	0.056

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Current Date: 11/9/2012 3:12 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\818 FT SHELL-DYNAMIC RESPONSE SPECTRUM ASCE 07-05 CLASS D.adv\

## Seismic analysis

### Modal analysis

#### MASSES:

Node	Mass X [Kip]	Mass Y [Kip]	Mass Z [Kip]	MMI.xx [Kip*in2]	MMI.yy [Kip*in2]	MMI.zz [Kip*in2]
3	1029.85	1029.85	1029.85	1029.85	1029.85	1029.85
4	1021.35	1021.35	1021.35	1021.35	1021.35	1021.35
5	1013.11	1013.11	1013.11	1013.11	1013.11	1013.11
6	1005.15	1005.15	1005.15	1005.15	1005.15	1005.15
7	917.73	917.73	917.73	917.73	917.73	917.73
8	777.49	777.49	777.49	777.49	777.49	777.49
9	664.85	664.85	664.85	664.85	664.85	664.85
10	599.79	599.79	599.79	599.79	599.79	599.79
11	581.62	581.62	581.62	581.62	581.62	581.62
12	570.34	570.34	570.34	570.34	570.34	570.34
13	559.06	559.06	559.06	559.06	559.06	559.06
14	541.42	541.42	541.42	541.42	541.42	541.42
15	523.93	523.93	523.93	523.93	523.93	523.93
16	506.65	506.65	506.65	506.65	506.65	506.65
17	495.96	495.96	495.96	495.96	495.96	495.96
18	485.38	485.38	485.38	485.38	485.38	485.38
19	468.67	468.67	468.67	468.67	468.67	468.67
20	452.17	452.17	452.17	452.17	452.17	452.17
21	435.88	435.88	435.88	435.88	435.88	435.88
22	425.89	425.89	425.89	425.89	425.89	425.89
23	416.00	416.00	416.00	416.00	416.00	416.00
24	400.28	400.28	400.28	400.28	400.28	400.28
25	384.75	384.75	384.75	384.75	384.75	384.75
26	369.28	369.28	369.28	369.28	369.28	369.28
27	348.24	348.24	348.24	348.24	348.24	348.24
28	327.60	327.60	327.60	327.60	327.60	327.60
29	312.96	312.96	312.96	312.96	312.96	312.96
30	298.52	298.52	298.52	298.52	298.52	298.52
31	284.29	284.29	284.29	284.29	284.29	284.29
32	275.89	275.89	275.89	275.89	275.89	275.89
33	267.60	267.60	267.60	267.60	267.60	267.60
34	253.89	253.89	253.89	253.89	253.89	253.89
35	243.13	243.13	243.13	243.13	243.13	243.13
36	235.25	235.25	235.25	235.25	235.25	235.25
37	230.16	230.16	230.16	230.16	230.16	230.16
38	225.12	225.12	225.12	225.12	225.12	225.12
39	217.51	217.51	217.51	217.51	217.51	217.51
40	212.61	212.61	212.61	212.61	212.61	212.61
41	209.06	209.06	209.06	209.06	209.06	209.06
42	205.53	205.53	205.53	205.53	205.53	205.53
43	202.04	202.04	202.04	202.04	202.04	202.04
44	198.57	198.57	198.57	198.57	198.57	198.57
45	196.36	196.36	196.36	196.36	196.36	196.36
46	192.94	192.94	192.94	192.94	192.94	192.94
47	189.54	189.54	189.54	189.54	189.54	189.54
48	186.17	186.17	186.17	186.17	186.17	186.17
49	182.83	182.83	182.83	182.83	182.83	182.83

50	180.68	180.68	180.68	180.68	180.68	180.68
51	177.38	177.38	177.38	177.38	177.38	177.38
52	174.10	174.10	174.10	174.10	174.10	174.10
53	170.86	170.86	170.86	170.86	170.86	170.86
54	167.64	167.64	167.64	167.64	167.64	167.64
55	165.55	165.55	165.55	165.55	165.55	165.55
56	162.35	162.35	162.35	162.35	162.35	162.35
57	159.18	159.18	159.18	159.18	159.18	159.18
58	156.07	156.07	156.07	156.07	156.07	156.07
59	152.61	152.61	152.61	152.61	152.61	152.61
60	150.58	150.58	150.58	150.58	150.58	150.58
61	148.90	148.90	148.90	148.90	148.90	148.90
62	146.87	146.87	146.87	146.87	146.87	146.87
63	144.83	144.83	144.83	144.83	144.83	144.83
64	142.79	142.79	142.79	142.79	142.79	142.79
65	140.76	140.76	140.76	140.76	140.76	140.76
66	138.72	138.72	138.72	138.72	138.72	138.72
67	136.68	136.68	136.68	136.68	136.68	136.68
68	134.65	134.65	134.65	134.65	134.65	134.65
69	133.06	133.06	133.06	133.06	133.06	133.06

**MODE FREQUENCIES**

MODE	W [RAD/SEC]	T [SEC]
1	1.61	3.90916
2	1.61	3.90916
3	6.27	1.00285
4	6.27	1.00285
5	14.71	0.42703
6	14.71	0.42703
7	26.48	0.23731
8	26.81	0.23437
9	26.81	0.23437
10	41.67	0.15079
11	41.67	0.15079
12	58.83	0.10681
13	58.83	0.10681
14	59.44	0.10570
15	77.74	0.08082
16	77.74	0.08082
17	96.16	0.06534
18	97.81	0.06424
19	97.81	0.06424
20	118.75	0.05291
21	118.75	0.05291
22	133.25	0.04715
23	140.69	0.04466
24	140.69	0.04466
25	163.06	0.03853
26	163.06	0.03853
27	168.77	0.03723
28	186.06	0.03377
29	186.06	0.03377
30	204.55	0.03072
31	209.32	0.03002
32	209.32	0.03002
33	232.64	0.02701
34	232.64	0.02701
35	240.06	0.02617
36	255.70	0.02457
37	255.70	0.02457
38	275.28	0.02282

39	278.45	0.02257
40	278.45	0.02257
41	300.97	0.02088
42	300.97	0.02088
43	312.04	0.02014
44	323.48	0.01942
45	323.48	0.01942
46	345.44	0.01819
47	345.44	0.01819
48	348.38	0.01804
49	367.28	0.01711
50	367.28	0.01711

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**MASS PARTICIPATION PERCENTAGE**

MODE	Modal participation					
	Part.X	Part.Y	Part.Z	Rot.X	Rot.Y	Rot.Z
1	0.00	0.00	32.41	0.00	0.00	0.00
2	32.41	0.00	0.00	0.00	0.00	0.00
3	9.40	0.00	11.71	0.00	0.00	0.00
4	11.71	0.00	9.40	0.00	0.00	0.00
5	0.00	0.00	11.65	0.00	0.00	0.00
6	11.65	0.00	0.00	0.00	0.00	0.00
7	0.00	52.32	0.00	0.00	0.00	0.00
8	0.00	0.00	7.69	0.00	0.00	0.00
9	7.69	0.00	0.00	0.00	0.00	0.00
10	0.18	0.00	5.52	0.00	0.00	0.00
11	5.52	0.00	0.18	0.00	0.00	0.00
12	0.00	0.00	4.40	0.00	0.00	0.00
13	4.40	0.00	0.00	0.00	0.00	0.00
14	0.00	20.03	0.00	0.00	0.00	0.00
15	2.12	0.00	1.41	0.00	0.00	0.00
16	1.41	0.00	2.12	0.00	0.00	0.00
17	0.00	7.28	0.00	0.00	0.00	0.00
18	0.03	0.00	2.83	0.00	0.00	0.00
19	2.83	0.00	0.03	0.00	0.00	0.00
20	1.56	0.00	0.61	0.00	0.00	0.00
21	0.61	0.00	1.56	0.00	0.00	0.00
22	0.00	5.26	0.00	0.00	0.00	0.00
23	1.26	0.00	0.33	0.00	0.00	0.00
24	0.33	0.00	1.26	0.00	0.00	0.00
25	0.88	0.00	0.30	0.00	0.00	0.00
26	0.30	0.00	0.88	0.00	0.00	0.00
27	0.00	3.82	0.00	0.00	0.00	0.00
28	0.62	0.00	0.22	0.00	0.00	0.00
29	0.22	0.00	0.62	0.00	0.00	0.00
30	0.00	2.73	0.00	0.00	0.00	0.00
31	0.31	0.00	0.35	0.00	0.00	0.00
32	0.35	0.00	0.31	0.00	0.00	0.00
33	0.13	0.00	0.41	0.00	0.00	0.00
34	0.41	0.00	0.13	0.00	0.00	0.00
35	0.00	2.01	0.00	0.00	0.00	0.00
36	0.07	0.00	0.41	0.00	0.00	0.00
37	0.41	0.00	0.07	0.00	0.00	0.00
38	0.00	1.28	0.00	0.00	0.00	0.00
39	0.00	0.00	0.40	0.00	0.00	0.00
40	0.40	0.00	0.00	0.00	0.00	0.00
41	0.02	0.00	0.34	0.00	0.00	0.00
42	0.34	0.00	0.02	0.00	0.00	0.00
43	0.00	0.82	0.00	0.00	0.00	0.00
44	0.04	0.00	0.25	0.00	0.00	0.00
45	0.25	0.00	0.04	0.00	0.00	0.00
46	0.08	0.00	0.18	0.00	0.00	0.00

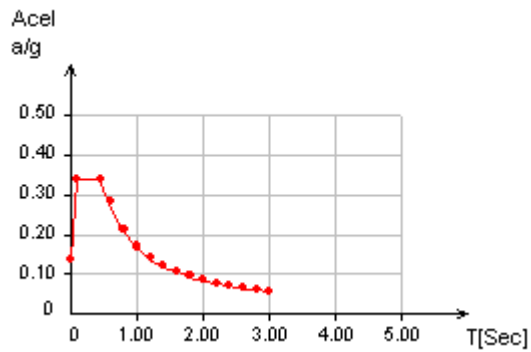
47	0.18	0.00	0.08	0.00	0.00	0.00
48	0.00	0.61	0.00	0.00	0.00	0.00
49	0.10	0.00	0.12	0.00	0.00	0.00
50	0.12	0.00	0.10	0.00	0.00	0.00
<hr/>						
TOTAL:	98.35	96.14	98.35	0.00	0.00	0.00

**TOTAL MASS**

DOF	Total mass [Kip/in*Sec2]
TX	60.20
TY	60.20
TZ	60.20
RX	60.20
RY	60.20
RZ	60.20

**SEISMIC RESPONSE SPECTRUM**

T[Sec]	a/g
0.00100	0.14
0.09015	0.34
0.45076	0.34
0.60000	0.28
0.80000	0.21
1.00000	0.17
1.20000	0.14
1.40000	0.12
1.60000	0.11
1.80000	0.09
2.00000	0.08
2.20000	0.08
2.40000	0.07
2.60000	0.06
2.80000	0.06
3.00000	0.06



Condition = **EL=Earthquake**  
Scale Factor = 0.83  
Damping factor = 5.00

**COMPUTED SPECTRAL VALUES**

MODE	W [RAD/SEC]	T [SEC]	a [in/Sec <sup>2</sup> ]
1	1.61	3.90916	18.00
2	1.61	3.90916	18.00
3	6.27	1.00285	53.89
4	6.27	1.00285	53.89
5	14.71	0.42703	108.67
6	14.71	0.42703	108.67
7	26.48	0.23731	108.67
8	26.81	0.23437	108.67
9	26.81	0.23437	108.67
10	41.67	0.15079	108.67
11	41.67	0.15079	108.67
12	58.83	0.10681	108.67
13	58.83	0.10681	108.67
14	59.44	0.10570	108.67
15	77.74	0.08082	101.92
16	77.74	0.08082	101.92
17	96.16	0.06534	90.71
18	97.81	0.06424	89.91
19	97.81	0.06424	89.91
20	118.75	0.05291	81.71
21	118.75	0.05291	81.71
22	133.25	0.04715	77.54
23	140.69	0.04466	75.73
24	140.69	0.04466	75.73
25	163.06	0.03853	71.30
26	163.06	0.03853	71.30
27	168.77	0.03723	70.35
28	186.06	0.03377	67.85
29	186.06	0.03377	67.85
30	204.55	0.03072	65.64
31	209.32	0.03002	65.13
32	209.32	0.03002	65.13
33	232.64	0.02701	62.95
34	232.64	0.02701	62.95
35	240.06	0.02617	62.35
36	255.70	0.02457	61.19
37	255.70	0.02457	61.19
38	275.28	0.02282	59.93
39	278.45	0.02257	59.74
40	278.45	0.02257	59.74
41	300.97	0.02088	58.51
42	300.97	0.02088	58.51
43	312.04	0.02014	57.98
44	323.48	0.01942	57.46
45	323.48	0.01942	57.46
46	345.44	0.01819	56.57
47	345.44	0.01819	56.57
48	348.38	0.01804	56.46
49	367.28	0.01711	55.79
50	367.28	0.01711	55.79

**MODAL SHAPES**

Normalized displacements to  $\Phi^T M \Phi = 1$

**Modal shapes : 1**

-----  
**W = 1.61 [RAD/SEC]                      PERIOD = 3.90916 [SEC]**

**DISPLACEMENTS**

Node	Trans.X [phi]	Trans.Y [phi]	Trans.Z [phi]	Rot.X [phiRot]	Rot.Y [phiRot]	Rot.Z [phiRot]
3	-5.92E-07	0.00E+00	-7.29E-05	-7.26E-07	0.00E+00	0.00E+00
4	-2.06E-06	0.00E+00	-2.53E-04	-1.46E-06	0.00E+00	9.38E-08
5	-4.39E-06	0.00E+00	-5.41E-04	-2.19E-06	0.00E+00	9.38E-08
6	-7.61E-06	0.00E+00	-9.37E-04	-2.92E-06	0.00E+00	9.38E-08
7	-1.17E-05	0.00E+00	-1.45E-03	-3.71E-06	0.00E+00	9.38E-08
8	-1.69E-05	0.00E+00	-2.09E-03	-4.62E-06	0.00E+00	9.38E-08
9	-2.33E-05	0.00E+00	-2.88E-03	-5.67E-06	0.00E+00	9.38E-08
10	-3.11E-05	0.00E+00	-3.83E-03	-6.81E-06	0.00E+00	9.38E-08
11	-4.02E-05	0.00E+00	-4.95E-03	-7.98E-06	0.00E+00	9.38E-08
12	-5.07E-05	0.00E+00	-6.25E-03	-9.15E-06	0.00E+00	9.38E-08
13	-6.27E-05	0.00E+00	-7.72E-03	-1.03E-05	0.00E+00	9.38E-08
14	-7.61E-05	0.00E+00	-9.37E-03	-1.16E-05	0.00E+00	9.38E-08
15	-9.10E-05	0.00E+00	-1.12E-02	-1.28E-05	0.00E+00	1.04E-07
16	-1.07E-04	0.00E+00	-1.32E-02	-1.41E-05	0.00E+00	1.14E-07
17	-1.25E-04	0.00E+00	-1.54E-02	-1.53E-05	0.00E+00	1.24E-07
18	-1.45E-04	0.00E+00	-1.78E-02	-1.66E-05	0.00E+00	1.35E-07
19	-1.66E-04	0.00E+00	-2.04E-02	-1.79E-05	0.00E+00	1.45E-07
20	-1.88E-04	0.00E+00	-2.32E-02	-1.93E-05	0.00E+00	1.56E-07
21	-2.13E-04	0.00E+00	-2.62E-02	-2.06E-05	0.00E+00	1.67E-07
22	-2.38E-04	0.00E+00	-2.94E-02	-2.20E-05	0.00E+00	1.79E-07
23	-2.66E-04	0.00E+00	-3.28E-02	-2.34E-05	0.00E+00	1.90E-07
24	-2.95E-04	0.00E+00	-3.64E-02	-2.48E-05	0.00E+00	2.01E-07
25	-3.26E-04	0.00E+00	-4.02E-02	-2.62E-05	0.00E+00	2.13E-07
26	-3.59E-04	0.00E+00	-4.42E-02	-2.77E-05	0.00E+00	2.25E-07
27	-3.93E-04	0.00E+00	-4.85E-02	-2.92E-05	0.00E+00	2.37E-07
28	-4.30E-04	0.00E+00	-5.29E-02	-3.08E-05	0.00E+00	2.50E-07
29	-4.68E-04	0.00E+00	-5.77E-02	-3.24E-05	0.00E+00	2.63E-07
30	-5.08E-04	0.00E+00	-6.26E-02	-3.41E-05	0.00E+00	2.77E-07
31	-5.51E-04	0.00E+00	-6.78E-02	-3.58E-05	0.00E+00	2.90E-07
32	-5.95E-04	0.00E+00	-7.33E-02	-3.75E-05	0.00E+00	3.04E-07
33	-6.41E-04	0.00E+00	-7.90E-02	-3.92E-05	0.00E+00	3.18E-07
34	-6.90E-04	0.00E+00	-8.50E-02	-4.10E-05	0.00E+00	3.32E-07
35	-7.41E-04	0.00E+00	-9.12E-02	-4.27E-05	0.00E+00	3.47E-07
36	-7.93E-04	0.00E+00	-9.77E-02	-4.45E-05	0.00E+00	3.61E-07
37	-8.48E-04	0.00E+00	-1.05E-01	-4.63E-05	0.00E+00	3.76E-07
38	-9.05E-04	0.00E+00	-1.12E-01	-4.80E-05	0.00E+00	3.90E-07
39	-9.64E-04	0.00E+00	-1.19E-01	-4.97E-05	0.00E+00	4.04E-07
40	-1.03E-03	0.00E+00	-1.26E-01	-5.14E-05	0.00E+00	4.18E-07
41	-1.09E-03	0.00E+00	-1.34E-01	-5.31E-05	0.00E+00	4.31E-07
42	-1.15E-03	0.00E+00	-1.42E-01	-5.47E-05	0.00E+00	4.44E-07
43	-1.22E-03	0.00E+00	-1.50E-01	-5.63E-05	0.00E+00	4.57E-07
44	-1.29E-03	0.00E+00	-1.59E-01	-5.79E-05	0.00E+00	4.70E-07
45	-1.36E-03	0.00E+00	-1.68E-01	-5.93E-05	0.00E+00	4.82E-07
46	-1.43E-03	0.00E+00	-1.77E-01	-6.08E-05	0.00E+00	4.93E-07
47	-1.51E-03	0.00E+00	-1.86E-01	-6.21E-05	0.00E+00	5.04E-07
48	-1.58E-03	0.00E+00	-1.95E-01	-6.35E-05	0.00E+00	5.15E-07
49	-1.66E-03	0.00E+00	-2.05E-01	-6.47E-05	0.00E+00	6.13E-07
50	-1.74E-03	0.00E+00	-2.14E-01	-6.59E-05	0.00E+00	6.13E-07
51	-1.82E-03	0.00E+00	-2.24E-01	-6.70E-05	0.00E+00	6.13E-07
52	-1.90E-03	0.00E+00	-2.34E-01	-6.81E-05	0.00E+00	6.13E-07
53	-1.98E-03	0.00E+00	-2.44E-01	-6.91E-05	0.00E+00	6.13E-07
54	-2.07E-03	0.00E+00	-2.55E-01	-7.00E-05	0.00E+00	6.13E-07
55	-2.15E-03	0.00E+00	-2.65E-01	-7.08E-05	0.00E+00	6.13E-07
56	-2.24E-03	0.00E+00	-2.76E-01	-7.16E-05	0.00E+00	6.13E-07
57	-2.32E-03	0.00E+00	-2.86E-01	-7.23E-05	0.00E+00	6.13E-07
58	-2.41E-03	0.00E+00	-2.97E-01	-7.30E-05	0.00E+00	6.13E-07
59	-2.50E-03	0.00E+00	-3.08E-01	-7.35E-05	0.00E+00	6.13E-07
60	-2.59E-03	0.00E+00	-3.19E-01	-7.40E-05	0.00E+00	6.13E-07
61	-2.68E-03	0.00E+00	-3.30E-01	-7.44E-05	0.00E+00	6.13E-07
62	-2.77E-03	0.00E+00	-3.41E-01	-7.47E-05	0.00E+00	6.13E-07
63	-2.86E-03	0.00E+00	-3.52E-01	-7.50E-05	0.00E+00	6.13E-07
64	-2.95E-03	0.00E+00	-3.63E-01	-7.52E-05	0.00E+00	6.13E-07
65	-3.04E-03	0.00E+00	-3.74E-01	-7.54E-05	0.00E+00	6.13E-07

66	-3.13E-03	0.00E+00	-3.85E-01	-7.55E-05	0.00E+00	6.13E-07
67	-3.22E-03	0.00E+00	-3.96E-01	-7.55E-05	0.00E+00	6.13E-07
68	-3.31E-03	0.00E+00	-4.08E-01	-7.55E-05	0.00E+00	6.13E-07
69	-3.36E-03	0.00E+00	-4.14E-01	-7.55E-05	0.00E+00	6.13E-07

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Current Date: 11/9/2012 2:59 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\818 FT SHELL-DYNAMIC RESPONSE SPECTRUM ASCE 07-05 CLASS D.adv\

## Load data

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
EL	Earthquake	No	EQ
WL	Wind	No	WIND
id0	1.4DL	Yes	
id1	0.9DL+1.6WL	Yes	
id2	1.2DL+1.6WL	Yes	
id3	0.9DL+EL	Yes	
id4	1.2DL+EL	Yes	

### Masses

Node	TX [Kip]	TY [Kip]	TZ [Kip]	RX [Kip*in2]	RY [Kip*in2]	RZ [Kip*in2]
3	1029.8549	1029.8549	1029.8549	1029.8549	1029.8549	1029.8549
4	1021.3474	1021.3474	1021.3474	1021.3474	1021.3474	1021.3474
5	1013.1115	1013.1115	1013.1115	1013.1115	1013.1115	1013.1115
6	1005.1471	1005.1471	1005.1471	1005.1471	1005.1471	1005.1471
7	917.7345	917.7345	917.7345	917.7345	917.7345	917.7345
8	777.4871	777.4871	777.4871	777.4871	777.4871	777.4871
9	664.8488	664.8488	664.8488	664.8488	664.8488	664.8488
10	599.7852	599.7852	599.7852	599.7852	599.7852	599.7852
11	581.6163	581.6163	581.6163	581.6163	581.6163	581.6163
12	570.3391	570.3391	570.3391	570.3391	570.3391	570.3391
13	559.063	559.063	559.063	559.063	559.063	559.063
14	541.4171	541.4171	541.4171	541.4171	541.4171	541.4171
15	523.9277	523.9277	523.9277	523.9277	523.9277	523.9277
16	506.6469	506.6469	506.6469	506.6469	506.6469	506.6469
17	495.9591	495.9591	495.9591	495.9591	495.9591	495.9591
18	485.3795	485.3795	485.3795	485.3795	485.3795	485.3795
19	468.6738	468.6738	468.6738	468.6738	468.6738	468.6738
20	452.1743	452.1743	452.1743	452.1743	452.1743	452.1743
21	435.8809	435.8809	435.8809	435.8809	435.8809	435.8809
22	425.8883	425.8883	425.8883	425.8883	425.8883	425.8883
23	416.0037	416.0037	416.0037	416.0037	416.0037	416.0037
24	400.2766	400.2766	400.2766	400.2766	400.2766	400.2766
25	384.7532	384.7532	384.7532	384.7532	384.7532	384.7532
26	369.28	369.28	369.28	369.28	369.28	369.28
27	348.2389	348.2389	348.2389	348.2389	348.2389	348.2389
28	327.5993	327.5993	327.5993	327.5993	327.5993	327.5993
29	312.9552	312.9552	312.9552	312.9552	312.9552	312.9552



30	298.5171	298.5171	298.5171	298.5171	298.5171	298.5171
31	284.2852	284.2852	284.2852	284.2852	284.2852	284.2852
32	275.889	275.889	275.889	275.889	275.889	275.889
33	267.6009	267.6009	267.6009	267.6009	267.6009	267.6009
34	253.8944	253.8944	253.8944	253.8944	253.8944	253.8944
35	243.1347	243.1347	243.1347	243.1347	243.1347	243.1347
36	235.2482	235.2482	235.2482	235.2482	235.2482	235.2482
37	230.1577	230.1577	230.1577	230.1577	230.1577	230.1577
38	225.1224	225.1224	225.1224	225.1224	225.1224	225.1224
39	217.5087	217.5087	217.5087	217.5087	217.5087	217.5087
40	212.611	212.611	212.611	212.611	212.611	212.611
41	209.0587	209.0587	209.0587	209.0587	209.0587	209.0587
42	205.5344	205.5344	205.5344	205.5344	205.5344	205.5344
43	202.038	202.038	202.038	202.038	202.038	202.038
44	198.5696	198.5696	198.5696	198.5696	198.5696	198.5696
45	196.3635	196.3635	196.3635	196.3635	196.3635	196.3635
46	192.9372	192.9372	192.9372	192.9372	192.9372	192.9372
47	189.5389	189.5389	189.5389	189.5389	189.5389	189.5389
48	186.1685	186.1685	186.1685	186.1685	186.1685	186.1685
49	182.8261	182.8261	182.8261	182.8261	182.8261	182.8261
50	180.6766	180.6766	180.6766	180.6766	180.6766	180.6766
51	177.3763	177.3763	177.3763	177.3763	177.3763	177.3763
52	174.104	174.104	174.104	174.104	174.104	174.104
53	170.8597	170.8597	170.8597	170.8597	170.8597	170.8597
54	167.6433	167.6433	167.6433	167.6433	167.6433	167.6433
55	165.5504	165.5504	165.5504	165.5504	165.5504	165.5504
56	162.353	162.353	162.353	162.353	162.353	162.353
57	159.1839	159.1839	159.1839	159.1839	159.1839	159.1839
58	156.0659	156.0659	156.0659	156.0659	156.0659	156.0659
59	152.6138	152.6138	152.6138	152.6138	152.6138	152.6138
60	150.5775	150.5775	150.5775	150.5775	150.5775	150.5775
61	148.9031	148.9031	148.9031	148.9031	148.9031	148.9031
62	146.8668	146.8668	146.8668	146.8668	146.8668	146.8668
63	144.8304	144.8304	144.8304	144.8304	144.8304	144.8304
64	142.7941	142.7941	142.7941	142.7941	142.7941	142.7941
65	140.7577	140.7577	140.7577	140.7577	140.7577	140.7577
66	138.7213	138.7213	138.7213	138.7213	138.7213	138.7213
67	136.685	136.685	136.685	136.685	136.685	136.685
68	134.6486	134.6486	134.6486	134.6486	134.6486	134.6486
69	133.0648	133.0648	133.0648	133.0648	133.0648	133.0648

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### Load on nodes

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
DL	3	0.00	-1029.85	0.00	0.00	0.00	0.00
	4	0.00	-1021.35	0.00	0.00	0.00	0.00
	5	0.00	-1013.11	0.00	0.00	0.00	0.00
	6	0.00	-1005.15	0.00	0.00	0.00	0.00
	7	0.00	-917.734	0.00	0.00	0.00	0.00
	8	0.00	-777.487	0.00	0.00	0.00	0.00
	9	0.00	-664.849	0.00	0.00	0.00	0.00
	10	0.00	-599.785	0.00	0.00	0.00	0.00
	11	0.00	-581.616	0.00	0.00	0.00	0.00
	12	0.00	-570.339	0.00	0.00	0.00	0.00
	13	0.00	-559.063	0.00	0.00	0.00	0.00

14	0.00	-541.417	0.00	0.00	0.00	0.00
15	0.00	-523.928	0.00	0.00	0.00	0.00
16	0.00	-506.647	0.00	0.00	0.00	0.00
17	0.00	-495.959	0.00	0.00	0.00	0.00
18	0.00	-485.379	0.00	0.00	0.00	0.00
19	0.00	-468.674	0.00	0.00	0.00	0.00
20	0.00	-452.174	0.00	0.00	0.00	0.00
21	0.00	-435.881	0.00	0.00	0.00	0.00
22	0.00	-425.888	0.00	0.00	0.00	0.00
23	0.00	-416.004	0.00	0.00	0.00	0.00
24	0.00	-400.277	0.00	0.00	0.00	0.00
25	0.00	-384.753	0.00	0.00	0.00	0.00
26	0.00	-369.28	0.00	0.00	0.00	0.00
27	0.00	-348.239	0.00	0.00	0.00	0.00
28	0.00	-327.599	0.00	0.00	0.00	0.00
29	0.00	-312.955	0.00	0.00	0.00	0.00
30	0.00	-298.517	0.00	0.00	0.00	0.00
31	0.00	-284.285	0.00	0.00	0.00	0.00
32	0.00	-275.889	0.00	0.00	0.00	0.00
33	0.00	-267.601	0.00	0.00	0.00	0.00
34	0.00	-253.894	0.00	0.00	0.00	0.00
35	0.00	-243.135	0.00	0.00	0.00	0.00
36	0.00	-235.248	0.00	0.00	0.00	0.00
37	0.00	-230.158	0.00	0.00	0.00	0.00
38	0.00	-225.122	0.00	0.00	0.00	0.00
39	0.00	-217.509	0.00	0.00	0.00	0.00
40	0.00	-212.611	0.00	0.00	0.00	0.00
41	0.00	-209.059	0.00	0.00	0.00	0.00
42	0.00	-205.534	0.00	0.00	0.00	0.00
43	0.00	-202.038	0.00	0.00	0.00	0.00
44	0.00	-198.57	0.00	0.00	0.00	0.00
45	0.00	-196.364	0.00	0.00	0.00	0.00
46	0.00	-192.937	0.00	0.00	0.00	0.00
47	0.00	-189.539	0.00	0.00	0.00	0.00
48	0.00	-186.169	0.00	0.00	0.00	0.00
49	0.00	-182.826	0.00	0.00	0.00	0.00
50	0.00	-180.677	0.00	0.00	0.00	0.00
51	0.00	-177.376	0.00	0.00	0.00	0.00
52	0.00	-174.104	0.00	0.00	0.00	0.00
53	0.00	-170.86	0.00	0.00	0.00	0.00
54	0.00	-167.643	0.00	0.00	0.00	0.00
55	0.00	-165.55	0.00	0.00	0.00	0.00
56	0.00	-162.353	0.00	0.00	0.00	0.00
57	0.00	-159.184	0.00	0.00	0.00	0.00
58	0.00	-156.066	0.00	0.00	0.00	0.00
59	0.00	-152.614	0.00	0.00	0.00	0.00
60	0.00	-150.577	0.00	0.00	0.00	0.00
61	0.00	-148.903	0.00	0.00	0.00	0.00
62	0.00	-146.867	0.00	0.00	0.00	0.00
63	0.00	-144.83	0.00	0.00	0.00	0.00
64	0.00	-142.794	0.00	0.00	0.00	0.00
65	0.00	-140.758	0.00	0.00	0.00	0.00
66	0.00	-138.721	0.00	0.00	0.00	0.00
67	0.00	-136.685	0.00	0.00	0.00	0.00
68	0.00	-134.649	0.00	0.00	0.00	0.00
69	0.00	-133.065	0.00	0.00	0.00	0.00
WL	3	3.5285	0.00	0.00	0.00	0.00
	4	4.334	0.00	0.00	0.00	0.00
	5	4.8732	0.00	0.00	0.00	0.00
	6	5.2857	0.00	0.00	0.00	0.00

7	5.6186	0.00	0.00	0.00	0.00	0.00
8	5.8956	0.00	0.00	0.00	0.00	0.00
9	6.137	0.00	0.00	0.00	0.00	0.00
10	6.3509	0.00	0.00	0.00	0.00	0.00
11	6.539	0.00	0.00	0.00	0.00	0.00
12	6.7092	0.00	0.00	0.00	0.00	0.00
13	6.8625	0.00	0.00	0.00	0.00	0.00
14	7.0029	0.00	0.00	0.00	0.00	0.00
15	7.1317	0.00	0.00	0.00	0.00	0.00
16	7.2514	0.00	0.00	0.00	0.00	0.00
17	7.3642	0.00	0.00	0.00	0.00	0.00
18	7.4706	0.00	0.00	0.00	0.00	0.00
19	7.5718	0.00	0.00	0.00	0.00	0.00
20	7.6686	0.00	0.00	0.00	0.00	0.00
21	7.762	0.00	0.00	0.00	0.00	0.00
22	7.8526	0.00	0.00	0.00	0.00	0.00
23	7.9412	0.00	0.00	0.00	0.00	0.00
24	8.0291	0.00	0.00	0.00	0.00	0.00
25	8.1161	0.00	0.00	0.00	0.00	0.00
26	8.1995	0.00	0.00	0.00	0.00	0.00
27	8.2845	0.00	0.00	0.00	0.00	0.00
28	8.3725	0.00	0.00	0.00	0.00	0.00
29	8.4597	0.00	0.00	0.00	0.00	0.00
30	8.5482	0.00	0.00	0.00	0.00	0.00
31	8.6382	0.00	0.00	0.00	0.00	0.00
32	8.7301	0.00	0.00	0.00	0.00	0.00
33	8.8241	0.00	0.00	0.00	0.00	0.00
34	8.9205	0.00	0.00	0.00	0.00	0.00
35	9.0195	0.00	0.00	0.00	0.00	0.00
36	9.1214	0.00	0.00	0.00	0.00	0.00
37	9.2264	0.00	0.00	0.00	0.00	0.00
38	9.3345	0.00	0.00	0.00	0.00	0.00
39	9.446	0.00	0.00	0.00	0.00	0.00
40	9.5611	0.00	0.00	0.00	0.00	0.00
41	9.6798	0.00	0.00	0.00	0.00	0.00
42	9.8022	0.00	0.00	0.00	0.00	0.00
43	9.9285	0.00	0.00	0.00	0.00	0.00
44	10.0587	0.00	0.00	0.00	0.00	0.00
45	10.1929	0.00	0.00	0.00	0.00	0.00
46	10.3311	0.00	0.00	0.00	0.00	0.00
47	10.4734	0.00	0.00	0.00	0.00	0.00
48	10.6197	0.00	0.00	0.00	0.00	0.00
49	10.7701	0.00	0.00	0.00	0.00	0.00
50	10.9246	0.00	0.00	0.00	0.00	0.00
51	11.083	0.00	0.00	0.00	0.00	0.00
52	11.2455	0.00	0.00	0.00	0.00	0.00
53	11.4118	0.00	0.00	0.00	0.00	0.00
54	11.582	0.00	0.00	0.00	0.00	0.00
55	11.7559	0.00	0.00	0.00	0.00	0.00
56	11.9318	0.00	0.00	0.00	0.00	0.00
57	12.1111	0.00	0.00	0.00	0.00	0.00
58	12.2955	0.00	0.00	0.00	0.00	0.00
59	12.4541	0.00	0.00	0.00	0.00	0.00
60	12.644	0.00	0.00	0.00	0.00	0.00
61	12.8672	0.00	0.00	0.00	0.00	0.00
62	13.0634	0.00	0.00	0.00	0.00	0.00
63	13.2621	0.00	0.00	0.00	0.00	0.00
64	13.463	0.00	0.00	0.00	0.00	0.00
65	13.666	0.00	0.00	0.00	0.00	0.00
66	21.3395	0.00	0.00	0.00	0.00	0.00

67	21.6566	0.00	0.00	0.00	0.00	0.00
68	21.9756	0.00	0.00	0.00	0.00	0.00
69	12.1231	0.00	0.00	0.00	0.00	0.00

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### Self weight multipliers for load conditions

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Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
EL	Earthquake	No	0.00	0.00	0.00
WL	Wind	No	0.00	0.00	0.00
id0	1.4DL	Yes	0.00	0.00	0.00
id1	0.9DL+1.6WL	Yes	0.00	0.00	0.00
id2	1.2DL+1.6WL	Yes	0.00	0.00	0.00
id3	0.9DL+EL	Yes	0.00	0.00	0.00
id4	1.2DL+EL	Yes	0.00	0.00	0.00

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### Earthquake (Dynamic analysis only)

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Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
EL	0.8333	0.00	5.00
WL	0.00	0.00	0.00
id0	0.00	0.00	0.00
id1	0.00	0.00	0.00
id2	0.00	0.00	0.00
id3	0.00	0.00	0.00
id4	0.00	0.00	0.00

---

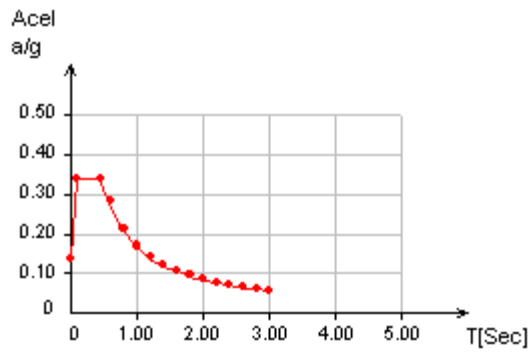
### Response spectrum

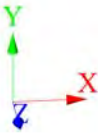
---

T [Sec]	a/g
0.001	0.1372
0.0902	0.338
0.4508	0.338
0.60	0.28
0.80	0.21
1.00	0.168
1.20	0.14
1.40	0.12
1.60	0.105
1.80	0.0933
2.00	0.084
2.20	0.0764
2.40	0.07

2.60	0.0646
2.80	0.06
3.00	0.056

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Current Date: 11/9/2012 3:14 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\826 FT LINER-DYNAMIC RESPONSE SPECTRUM ASCE 07-02 CLASS D.adv\

## Geometry data

### GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member    0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

### Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
3	0.00	13.9428	0.00	0
4	0.00	27.8855	0.00	0
5	0.00	41.8283	0.00	0
6	0.00	55.771	0.00	0
7	0.00	69.7138	0.00	0
8	0.00	83.6566	0.00	0
9	0.00	97.5993	0.00	0
10	0.00	111.5421	0.00	0
11	0.00	125.4848	0.00	0
12	0.00	139.4276	0.00	0
13	0.00	153.3703	0.00	0
14	0.00	167.3131	0.00	0
15	0.00	181.2559	0.00	0
16	0.00	195.1986	0.00	0
17	0.00	209.1414	0.00	0
18	0.00	223.0841	0.00	0
19	0.00	237.0269	0.00	0
20	0.00	250.9697	0.00	0
21	0.00	264.9124	0.00	0
22	0.00	278.8552	0.00	0

23	0.00	292.7979	0.00	0
24	0.00	306.7407	0.00	0
25	0.00	320.6834	0.00	0
26	0.00	334.6262	0.00	0
27	0.00	348.569	0.00	0
28	0.00	362.5117	0.00	0
29	0.00	376.4545	0.00	0
30	0.00	390.3972	0.00	0
31	0.00	404.34	0.00	0
32	0.00	418.2828	0.00	0
33	0.00	432.2255	0.00	0
34	0.00	446.1683	0.00	0
35	0.00	460.111	0.00	0
36	0.00	474.0538	0.00	0
37	0.00	487.9966	0.00	0
38	0.00	501.9393	0.00	0
39	0.00	515.8821	0.00	0
40	0.00	529.8248	0.00	0
41	0.00	543.7676	0.00	0
42	0.00	557.7103	0.00	0
43	0.00	571.6531	0.00	0
44	0.00	585.5959	0.00	0
45	0.00	599.5386	0.00	0
46	0.00	613.4814	0.00	0
47	0.00	627.4241	0.00	0
48	0.00	641.3669	0.00	0
49	0.00	655.3097	0.00	0
50	0.00	669.2524	0.00	0
51	0.00	683.1952	0.00	0
52	0.00	697.1379	0.00	0
53	0.00	711.0807	0.00	0
54	0.00	725.0234	0.00	0
55	0.00	738.9662	0.00	0
56	0.00	752.909	0.00	0
57	0.00	766.8517	0.00	0
58	0.00	780.7945	0.00	0
59	0.00	794.7372	0.00	0
60	0.00	808.68	0.00	0
61	0.00	826.67	0.00	0

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## Restraints

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Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

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## Members

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Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	1	3		PIPE 42	C 3-60	0.00	0.00	0.00
2	3	4		PIPE 42	C 3-60	0.00	0.00	0.00
3	4	5		PIPE 42	C 3-60	0.00	0.00	0.00
4	5	6		PIPE 42	C 3-60	0.00	0.00	0.00
5	6	7		PIPE 42	C 3-60	0.00	0.00	0.00
6	7	8		PIPE 41	C 3-60	0.00	0.00	0.00
7	8	9		PIPE 41	C 3-60	0.00	0.00	0.00
8	9	10		PIPE 41	C 3-60	0.00	0.00	0.00
9	10	11		PIPE 40	C 3-60	0.00	0.00	0.00
10	11	12		PIPE 40	C 3-60	0.00	0.00	0.00
11	12	13		PIPE 39	C 3-60	0.00	0.00	0.00
12	13	14		PIPE 39	C 3-60	0.00	0.00	0.00
13	14	15		PIPE 39	C 3-60	0.00	0.00	0.00
14	15	16		PIPE 38	C 3-60	0.00	0.00	0.00
15	16	17		PIPE 38	C 3-60	0.00	0.00	0.00
16	17	18		PIPE 38	C 3-60	0.00	0.00	0.00
17	18	19		PIPE 37	C 3-60	0.00	0.00	0.00
18	19	20		PIPE 37	C 3-60	0.00	0.00	0.00
19	20	21		PIPE 36	C 3-60	0.00	0.00	0.00
20	21	22		PIPE 36	C 3-60	0.00	0.00	0.00
21	22	23		PIPE 36	C 3-60	0.00	0.00	0.00
22	23	24		PIPE 35	C 3-60	0.00	0.00	0.00
23	24	25		PIPE 35	C 3-60	0.00	0.00	0.00
24	25	26		PIPE 35	C 3-60	0.00	0.00	0.00
25	26	27		PIPE 34	C 3-60	0.00	0.00	0.00
26	27	28		PIPE 34	C 3-60	0.00	0.00	0.00
27	28	29		PIPE 33	C 3-60	0.00	0.00	0.00
28	29	30		PIPE 33	C 3-60	0.00	0.00	0.00
29	30	31		PIPE 33	C 3-60	0.00	0.00	0.00
30	31	32		PIPE 32	C 3-60	0.00	0.00	0.00
31	32	33		PIPE 32	C 3-60	0.00	0.00	0.00
32	33	34		PIPE 31	C 3-60	0.00	0.00	0.00
33	34	35		PIPE 31	C 3-60	0.00	0.00	0.00
34	35	36		PIPE 31	C 3-60	0.00	0.00	0.00
35	36	37		PIPE 30	C 3-60	0.00	0.00	0.00
36	37	38		PIPE 30	C 3-60	0.00	0.00	0.00
37	38	39		PIPE 30	C 3-60	0.00	0.00	0.00
38	39	40		PIPE 29	C 3-60	0.00	0.00	0.00
39	40	41		PIPE 29	C 3-60	0.00	0.00	0.00
40	41	42		PIPE 28	C 3-60	0.00	0.00	0.00
41	42	43		PIPE 28	C 3-60	0.00	0.00	0.00
42	43	44		PIPE 28	C 3-60	0.00	0.00	0.00
43	44	45		PIPE 27	C 3-60	0.00	0.00	0.00
44	45	46		PIPE 27	C 3-60	0.00	0.00	0.00
45	46	47		PIPE 26	C 3-60	0.00	0.00	0.00
46	47	48		PIPE 26	C 3-60	0.00	0.00	0.00
47	48	49		PIPE 26	C 3-60	0.00	0.00	0.00
48	49	50		PIPE 25	C 3-60	0.00	0.00	0.00
49	50	51		PIPE 25	C 3-60	0.00	0.00	0.00
50	51	52		PIPE 25	C 3-60	0.00	0.00	0.00
51	52	53		PIPE 24	C 3-60	0.00	0.00	0.00
52	53	54		PIPE 24	C 3-60	0.00	0.00	0.00
53	54	55		PIPE 23	C 3-60	0.00	0.00	0.00
54	55	56		PIPE 23	C 3-60	0.00	0.00	0.00
55	56	57		PIPE 23	C 3-60	0.00	0.00	0.00
56	57	58		PIPE 22	C 3-60	0.00	0.00	0.00
57	58	59		PIPE 22	C 3-60	0.00	0.00	0.00
58	59	60		PIPE 21	C 3-60	0.00	0.00	0.00
59	60	61		PIPE 21	C 3-60	0.00	0.00	0.00





Current Date: 11/9/2012 3:15 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\826 FT LINER-DYNAMIC RESPONSE SPECTRUM ASCE 07-02 CLASS D.adv\

## Load data

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
EL	Earthquake	No	EQ
id0	1.4DL	Yes	
id1	1.2DL+EL	Yes	
id2	0.9DL+EL	Yes	

### Masses

Node	TX [Kip]	TY [Kip]	TZ [Kip]	RX [Kip*in2]	RY [Kip*in2]	RZ [Kip*in2]
3	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
4	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
5	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
6	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
7	516.766	516.7659	516.7659	516.7659	516.7659	516.7659
8	368.314	368.314	368.314	368.314	368.314	368.314
9	321.78	321.7801	321.7801	321.7801	321.7801	321.7801
10	275.502	275.5022	275.5022	275.5022	275.5022	275.5022
11	249.119	249.1187	249.1187	249.1187	249.1187	249.1187
12	241.794	241.7937	241.7937	241.7937	241.7937	241.7937
13	235.145	235.1449	235.1449	235.1449	235.1449	235.1449
14	229.215	229.2151	229.2151	229.2151	229.2151	229.2151
15	224.845	224.8448	224.8448	224.8448	224.8448	224.8448
16	222.546	222.5463	222.5463	222.5463	222.5463	222.5463
17	220.285	220.2849	220.2849	220.2849	220.2849	220.2849
18	218.023	218.0234	218.0234	218.0234	218.0234	218.0234
19	213.724	213.7241	213.7241	213.7241	213.7241	213.7241
20	207.522	207.5219	207.5219	207.5219	207.5219	207.5219
21	201.401	201.4011	201.4011	201.4011	201.4011	201.4011
22	195.327	195.3269	195.3269	195.3269	195.3269	195.3269
23	190.332	190.3319	190.3319	190.3319	190.3319	190.3319
24	186.351	186.3514	186.3514	186.3514	186.3514	186.3514
25	182.38	182.3796	182.3796	182.3796	182.3796	182.3796
26	178.484	178.4836	178.4836	178.4836	178.4836	178.4836
27	174.63	174.6297	174.6297	174.6297	174.6297	174.6297
28	170.786	170.7856	170.7856	170.7856	170.7856	170.7856
29	167.016	167.0161	167.0161	167.0161	167.0161	167.0161
30	163.226	163.2256	163.2256	163.2256	163.2256	163.2256
31	159.51	159.5098	159.5098	159.5098	159.5098	159.5098
32	155.929	155.9293	155.9293	155.9293	155.9293	155.9293

33	152.328	152.3285	152.3285	152.3285	152.3285	152.3285
34	148.74	148.7395	148.7395	148.7395	148.7395	148.7395
35	145.223	145.2232	145.2232	145.2232	145.2232	145.2232
36	141.749	141.7489	141.7489	141.7489	141.7489	141.7489
37	138.288	138.2876	138.2876	138.2876	138.2876	138.2876
38	134.898	134.8978	134.8978	134.8978	134.8978	134.8978
39	132.349	132.3489	132.3489	132.3489	132.3489	132.3489
40	130.581	130.5808	130.5808	130.5808	130.5808	130.5808
41	128.813	128.8127	128.8127	128.8127	128.8127	128.8127
42	127.045	127.0446	127.0446	127.0446	127.0446	127.0446
43	125.277	125.2766	125.2766	125.2766	125.2766	125.2766
44	123.508	123.5085	123.5085	123.5085	123.5085	123.5085
45	121.74	121.7404	121.7404	121.7404	121.7404	121.7404
46	119.972	119.9724	119.9724	119.9724	119.9724	119.9724
47	118.233	118.2328	118.2328	118.2328	118.2328	118.2328
48	116.493	116.4932	116.4932	116.4932	116.4932	116.4932
49	114.725	114.7252	114.7252	114.7252	114.7252	114.7252
50	112.986	112.9856	112.9856	112.9856	112.9856	112.9856
51	111.246	111.2461	111.2461	111.2461	111.2461	111.2461
52	109.478	109.478	109.478	109.478	109.478	109.478
53	107.738	107.7384	107.7384	107.7384	107.7384	107.7384
54	105.999	105.9989	105.9989	105.9989	105.9989	105.9989
55	104.231	104.2308	104.2308	104.2308	104.2308	104.2308
56	102.491	102.4912	102.4912	102.4912	102.4912	102.4912
57	100.752	100.7517	100.7517	100.7517	100.7517	100.7517
58	98.9836	98.9836	98.9836	98.9836	98.9836	98.9836
59	97.244	97.244	97.244	97.244	97.244	97.244
60	95.5045	95.5045	95.5045	95.5045	95.5045	95.5045
61	120.651	120.6511	120.6511	120.6511	120.6511	120.6511

**Load on nodes**

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
EL	3	1.71	0.00	0.00	0.00	0.00	0.00
	4	2.84	0.00	0.00	0.00	0.00	0.00
	5	3.98	0.00	0.00	0.00	0.00	0.00
	6	4.58	0.00	0.00	0.00	0.00	0.00
	7	4.27	0.00	0.00	0.00	0.00	0.00
	8	3.97	0.00	0.00	0.00	0.00	0.00
	9	3.97	0.00	0.00	0.00	0.00	0.00
	10	3.96	0.00	0.00	0.00	0.00	0.00
	11	4.15	0.00	0.00	0.00	0.00	0.00
	12	4.46	0.00	0.00	0.00	0.00	0.00
	13	4.75	0.00	0.00	0.00	0.00	0.00
	14	5.05	0.00	0.00	0.00	0.00	0.00
	15	5.38	0.00	0.00	0.00	0.00	0.00
	16	5.72	0.00	0.00	0.00	0.00	0.00
	17	6.05	0.00	0.00	0.00	0.00	0.00
	18	6.34	0.00	0.00	0.00	0.00	0.00
	19	6.56	0.00	0.00	0.00	0.00	0.00
	20	6.74	0.00	0.00	0.00	0.00	0.00
	21	6.89	0.00	0.00	0.00	0.00	0.00
	22	7.04	0.00	0.00	0.00	0.00	0.00
	23	7.21	0.00	0.00	0.00	0.00	0.00
	24	7.39	0.00	0.00	0.00	0.00	0.00

25	7.55	0.00	0.00	0.00	0.00	0.00
26	7.70	0.00	0.00	0.00	0.00	0.00
27	7.84	0.00	0.00	0.00	0.00	0.00
28	7.97	0.00	0.00	0.00	0.00	0.00
29	8.09	0.00	0.00	0.00	0.00	0.00
30	8.19	0.00	0.00	0.00	0.00	0.00
31	8.29	0.00	0.00	0.00	0.00	0.00
32	8.37	0.00	0.00	0.00	0.00	0.00
33	8.45	0.00	0.00	0.00	0.00	0.00
34	8.51	0.00	0.00	0.00	0.00	0.00
35	8.56	0.00	0.00	0.00	0.00	0.00
36	8.60	0.00	0.00	0.00	0.00	0.00
37	8.64	0.00	0.00	0.00	0.00	0.00
38	8.69	0.00	0.00	0.00	0.00	0.00
39	8.78	0.00	0.00	0.00	0.00	0.00
40	8.89	0.00	0.00	0.00	0.00	0.00
41	9.00	0.00	0.00	0.00	0.00	0.00
42	9.10	0.00	0.00	0.00	0.00	0.00
43	9.20	0.00	0.00	0.00	0.00	0.00
44	9.28	0.00	0.00	0.00	0.00	0.00
45	9.36	0.00	0.00	0.00	0.00	0.00
46	9.44	0.00	0.00	0.00	0.00	0.00
47	9.51	0.00	0.00	0.00	0.00	0.00
48	9.58	0.00	0.00	0.00	0.00	0.00
49	9.63	0.00	0.00	0.00	0.00	0.00
50	9.69	0.00	0.00	0.00	0.00	0.00
51	9.73	0.00	0.00	0.00	0.00	0.00
52	9.77	0.00	0.00	0.00	0.00	0.00
53	9.80	0.00	0.00	0.00	0.00	0.00
54	9.83	0.00	0.00	0.00	0.00	0.00
55	9.85	0.00	0.00	0.00	0.00	0.00
56	9.87	0.00	0.00	0.00	0.00	0.00
57	9.87	0.00	0.00	0.00	0.00	0.00
58	9.87	0.00	0.00	0.00	0.00	0.00
59	9.87	0.00	0.00	0.00	0.00	0.00
60	11.31	0.00	0.00	0.00	0.00	0.00
61	6.37	0.00	0.00	0.00	0.00	0.00

### Self weight multipliers for load conditions

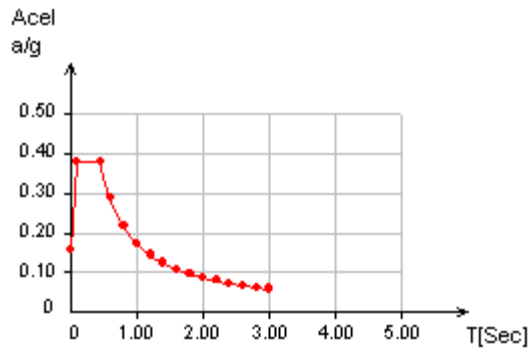
Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
EL	Earthquake	No	0.00	0.00	0.00
id0	1.4DL	Yes	0.00	0.00	0.00
id1	1.2DL+EL	Yes	0.00	0.00	0.00
id2	0.9DL+EL	Yes	0.00	0.00	0.00

### Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
EL	0.9833	0.00	5.00
id0	0.00	0.00	0.00
id1	0.00	0.00	0.00
id2	0.00	0.00	0.00

## Response spectrum

T [Sec]	a/g
0.001	0.1537
0.0902	0.378
0.4508	0.378
0.60	0.2867
0.80	0.215
1.00	0.172
1.20	0.1433
1.40	0.1229
1.60	0.1075
1.80	0.0956
2.00	0.086
2.20	0.0782
2.40	0.0717
2.60	0.0662
2.80	0.0614
3.00	0.0573





Current Date: 11/9/2012 3:16 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\826 FT LINER-DYNAMIC RESPONSE SPECTRUM ASCE 07-02 CLASS D.adv\

## Seismic analysis

### Modal analysis

#### MASSES:

Node	Mass X [Kip]	Mass Y [Kip]	Mass Z [Kip]	MMI.xx [Kip*in2]	MMI.yy [Kip*in2]	MMI.zz [Kip*in2]
3	638.35	638.35	638.35	638.35	638.35	638.35
4	638.35	638.35	638.35	638.35	638.35	638.35
5	638.35	638.35	638.35	638.35	638.35	638.35
6	638.35	638.35	638.35	638.35	638.35	638.35
7	516.77	516.77	516.77	516.77	516.77	516.77
8	368.31	368.31	368.31	368.31	368.31	368.31
9	321.78	321.78	321.78	321.78	321.78	321.78
10	275.50	275.50	275.50	275.50	275.50	275.50
11	249.12	249.12	249.12	249.12	249.12	249.12
12	241.79	241.79	241.79	241.79	241.79	241.79
13	235.15	235.14	235.14	235.14	235.14	235.14
14	229.22	229.22	229.22	229.22	229.22	229.22
15	224.85	224.84	224.84	224.84	224.84	224.84
16	222.55	222.55	222.55	222.55	222.55	222.55
17	220.29	220.28	220.28	220.28	220.28	220.28
18	218.02	218.02	218.02	218.02	218.02	218.02
19	213.72	213.72	213.72	213.72	213.72	213.72
20	207.52	207.52	207.52	207.52	207.52	207.52
21	201.40	201.40	201.40	201.40	201.40	201.40
22	195.33	195.33	195.33	195.33	195.33	195.33
23	190.33	190.33	190.33	190.33	190.33	190.33
24	186.35	186.35	186.35	186.35	186.35	186.35
25	182.38	182.38	182.38	182.38	182.38	182.38
26	178.48	178.48	178.48	178.48	178.48	178.48
27	174.63	174.63	174.63	174.63	174.63	174.63
28	170.79	170.79	170.79	170.79	170.79	170.79
29	167.02	167.02	167.02	167.02	167.02	167.02
30	163.23	163.23	163.23	163.23	163.23	163.23
31	159.51	159.51	159.51	159.51	159.51	159.51
32	155.93	155.93	155.93	155.93	155.93	155.93
33	152.33	152.33	152.33	152.33	152.33	152.33
34	148.74	148.74	148.74	148.74	148.74	148.74
35	145.22	145.22	145.22	145.22	145.22	145.22
36	141.75	141.75	141.75	141.75	141.75	141.75
37	138.29	138.29	138.29	138.29	138.29	138.29
38	134.90	134.90	134.90	134.90	134.90	134.90
39	132.35	132.35	132.35	132.35	132.35	132.35
40	130.58	130.58	130.58	130.58	130.58	130.58
41	128.81	128.81	128.81	128.81	128.81	128.81
42	127.05	127.04	127.04	127.04	127.04	127.04
43	125.28	125.28	125.28	125.28	125.28	125.28
44	123.51	123.51	123.51	123.51	123.51	123.51
45	121.74	121.74	121.74	121.74	121.74	121.74
46	119.97	119.97	119.97	119.97	119.97	119.97
47	118.23	118.23	118.23	118.23	118.23	118.23
48	116.49	116.49	116.49	116.49	116.49	116.49
49	114.73	114.73	114.73	114.73	114.73	114.73

50	112.99	112.99	112.99	112.99	112.99	112.99
51	111.25	111.25	111.25	111.25	111.25	111.25
52	109.48	109.48	109.48	109.48	109.48	109.48
53	107.74	107.74	107.74	107.74	107.74	107.74
54	106.00	106.00	106.00	106.00	106.00	106.00
55	104.23	104.23	104.23	104.23	104.23	104.23
56	102.49	102.49	102.49	102.49	102.49	102.49
57	100.75	100.75	100.75	100.75	100.75	100.75
58	98.98	98.98	98.98	98.98	98.98	98.98
59	97.24	97.24	97.24	97.24	97.24	97.24
60	95.50	95.50	95.50	95.50	95.50	95.50
61	120.65	120.65	120.65	120.65	120.65	120.65

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**MODE FREQUENCIES**

MODE	W [RAD/SEC]	T [SEC]
1	0.82	7.66419
2	0.82	7.66419
3	3.52	1.78514
4	3.52	1.78514
5	8.72	0.72066
6	8.72	0.72066
7	16.13	0.38946
8	16.13	0.38946
9	24.45	0.25703
10	25.47	0.24671
11	25.47	0.24671
12	36.80	0.17075
13	36.80	0.17075
14	49.72	0.12638
15	49.72	0.12638
16	60.05	0.10463
17	63.85	0.09840
18	63.85	0.09840
19	79.90	0.07864
20	79.90	0.07864
21	97.18	0.06465
22	97.18	0.06465
23	98.35	0.06389
24	115.13	0.05457
25	115.13	0.05457
26	134.54	0.04670
27	134.54	0.04670
28	135.39	0.04641
29	154.75	0.04060
30	154.75	0.04060
31	168.75	0.03723
32	175.16	0.03587
33	175.16	0.03587
34	196.22	0.03202
35	196.22	0.03202
36	203.01	0.03095
37	217.67	0.02887
38	217.67	0.02887
39	238.39	0.02636
40	239.37	0.02625
41	239.37	0.02625
42	261.05	0.02407
43	261.05	0.02407
44	272.76	0.02304
45	282.38	0.02225
46	282.38	0.02225



47	304.25	0.02065
48	304.25	0.02065
49	310.68	0.02022
50	325.51	0.01930

**MASS PARTICIPATION PERCENTAGE**

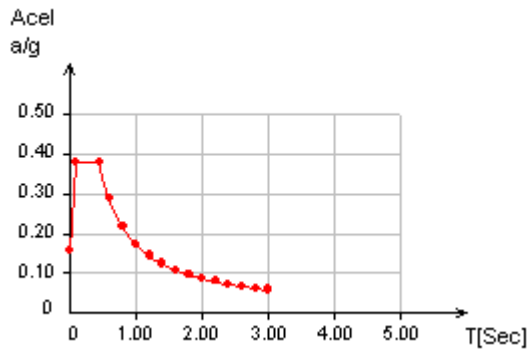
MODE	Modal participation					
	Part.X	Part.Y	Part.Z	Rot.X	Rot.Y	Rot.Z
1	36.30	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	36.30	0.00	0.00	0.00
3	17.87	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	17.87	0.00	0.00	0.00
5	9.34	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	9.34	0.00	0.00	0.00
7	0.00	0.00	6.71	0.00	0.00	0.00
8	6.71	0.00	0.00	0.00	0.00	0.00
9	0.00	55.43	0.00	0.00	0.00	0.00
10	5.21	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	5.21	0.00	0.00	0.00
12	0.00	0.00	4.22	0.00	0.00	0.00
13	4.22	0.00	0.00	0.00	0.00	0.00
14	3.77	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	3.77	0.00	0.00	0.00
16	0.00	14.14	0.00	0.00	0.00	0.00
17	2.99	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	2.99	0.00	0.00	0.00
19	2.21	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	2.21	0.00	0.00	0.00
21	1.85	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	1.85	0.00	0.00	0.00
23	0.00	6.77	0.00	0.00	0.00	0.00
24	1.46	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	1.46	0.00	0.00	0.00
26	0.01	0.00	1.08	0.00	0.00	0.00
27	1.08	0.00	0.01	0.00	0.00	0.00
28	0.00	6.05	0.00	0.00	0.00	0.00
29	0.94	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.94	0.00	0.00	0.00
31	0.00	5.74	0.00	0.00	0.00	0.00
32	0.81	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.81	0.00	0.00	0.00
34	0.00	0.00	0.67	0.00	0.00	0.00
35	0.67	0.00	0.00	0.00	0.00	0.00
36	0.00	3.31	0.00	0.00	0.00	0.00
37	0.00	0.00	0.57	0.00	0.00	0.00
38	0.57	0.00	0.00	0.00	0.00	0.00
39	0.00	2.25	0.00	0.00	0.00	0.00
40	0.28	0.00	0.22	0.00	0.00	0.00
41	0.22	0.00	0.28	0.00	0.00	0.00
42	0.46	0.00	0.00	0.00	0.00	0.00
43	0.00	0.00	0.46	0.00	0.00	0.00
44	0.00	1.25	0.00	0.00	0.00	0.00
45	0.40	0.00	0.00	0.00	0.00	0.00
46	0.00	0.00	0.40	0.00	0.00	0.00
47	0.35	0.00	0.00	0.00	0.00	0.00
48	0.00	0.00	0.35	0.00	0.00	0.00
49	0.00	0.65	0.00	0.00	0.00	0.00
50	0.34	0.00	0.00	0.00	0.00	0.00
TOTAL:	98.06	95.59	97.72	0.00	0.00	0.00

**TOTAL MASS**

DOF	Total mass [Kip/in*Sec2]
TX	30.87
TY	30.87
TZ	30.87
RX	30.87
RY	30.87
RZ	30.87

**SEISMIC RESPONSE SPECTRUM**

T[Sec]	a/g
0.00100	0.15
0.09015	0.38
0.45076	0.38
0.60000	0.29
0.80000	0.22
1.00000	0.17
1.20000	0.14
1.40000	0.12
1.60000	0.11
1.80000	0.10
2.00000	0.09
2.20000	0.08
2.40000	0.07
2.60000	0.07
2.80000	0.06
3.00000	0.06



Condition = **EL=Earthquake**  
 Scale Factor = 0.98  
 Damping factor = 5.00

**COMPUTED SPECTRAL VALUES**

MODE	W [RAD/SEC]	T [SEC]	a [in/Sec2]
1	0.82	7.66419	21.75
2	0.82	7.66419	21.75
3	3.52	1.78514	36.59
4	3.52	1.78514	36.59
5	8.72	0.72066	92.36

6	8.72	0.72066	92.36
7	16.13	0.38946	143.41
8	16.13	0.38946	143.41
9	24.45	0.25703	143.41
10	25.47	0.24671	143.41
11	25.47	0.24671	143.41
12	36.80	0.17075	143.41
13	36.80	0.17075	143.41
14	49.72	0.12638	143.41
15	49.72	0.12638	143.41
16	60.05	0.10463	143.41
17	63.85	0.09840	143.41
18	63.85	0.09840	143.41
19	79.90	0.07864	132.42
20	79.90	0.07864	132.42
21	97.18	0.06465	119.07
22	97.18	0.06465	119.07
23	98.35	0.06389	118.34
24	115.13	0.05457	109.45
25	115.13	0.05457	109.45
26	134.54	0.04670	101.94
27	134.54	0.04670	101.94
28	135.39	0.04641	101.65
29	154.75	0.04060	96.11
30	154.75	0.04060	96.11
31	168.75	0.03723	92.90
32	175.16	0.03587	91.60
33	175.16	0.03587	91.60
34	196.22	0.03202	87.92
35	196.22	0.03202	87.92
36	203.01	0.03095	86.90
37	217.67	0.02887	84.91
38	217.67	0.02887	84.91
39	238.39	0.02636	82.51
40	239.37	0.02625	82.41
41	239.37	0.02625	82.41
42	261.05	0.02407	80.33
43	261.05	0.02407	80.33
44	272.76	0.02304	79.34
45	282.38	0.02225	78.60
46	282.38	0.02225	78.60
47	304.25	0.02065	77.07
48	304.25	0.02065	77.07
49	310.68	0.02022	76.66
50	325.51	0.01930	75.78

### MODAL SHAPES

Normalized displacements to  $\Phi^T M \Phi = 1$

#### Modal shapes : 1

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**W = 0.82 [RAD/SEC]                      PERIOD = 7.66419 [SEC]**

#### DISPLACEMENTS

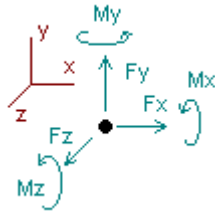
Node	Trans.X [phi]	Trans.Y [phi]	Trans.Z [phi]	Rot.X [phiRot]	Rot.Y [phiRot]	Rot.Z [phiRot]
3	9.33E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.02E-06
4	3.55E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.01E-06
5	7.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.98E-06
6	1.37E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.92E-06
7	2.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.03E-06

8	3.11E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.52E-06
9	4.35E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.18E-06
10	5.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.01E-05
11	7.78E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.22E-05
12	1.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.43E-05
13	1.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.64E-05
14	1.56E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.86E-05
15	1.89E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.08E-05
16	2.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.30E-05
17	2.66E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.52E-05
18	3.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.73E-05
19	3.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.95E-05
20	4.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.17E-05
21	4.65E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.39E-05
22	5.23E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.50E-05
23	5.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.73E-05
24	6.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.95E-05
25	7.16E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.18E-05
26	7.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.41E-05
27	8.64E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.63E-05
28	9.44E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.86E-05
29	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.08E-05
30	1.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.30E-05
31	1.21E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.52E-05
32	1.30E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.74E-05
33	1.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.95E-05
34	1.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.17E-05
35	1.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.38E-05
36	1.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.58E-05
37	1.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.78E-05
38	1.94E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.98E-05
39	2.06E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.17E-05
40	2.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.35E-05
41	2.31E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.53E-05
42	2.43E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.69E-05
43	2.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.85E-05
44	2.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.00E-05
45	2.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.14E-05
46	2.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.27E-05
47	3.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.40E-05
48	3.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.51E-05
49	3.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.61E-05
50	3.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.70E-05
51	3.69E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.78E-05
52	3.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.85E-05
53	3.98E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.92E-05
54	4.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.97E-05
55	4.28E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.01E-05
56	4.43E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.05E-05
57	4.59E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.07E-05
58	4.74E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.09E-05
59	4.89E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.10E-05
60	5.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.10E-05
61	5.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.11E-05

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## Analysis Results

### Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition <b>id2=0.9DL+EL</b>						
1	685.30927	0.00565	0.03399	0.28674	0.00087	164428.02000
SUM	685.30927	0.00565	0.03399	0.28674	0.00087	164428.02000

### Forces at member ends

- Notes.- Axial: Axial forces  
 V2: Shear force in 2  
 V3: Shear force in 3  
 Torsion: Torsional moment  
 M22: Bending moments 2  
 M33: Bending moments 3

CONDITION **id2=0.9DL+EL**

Member	End	Axial [Kip]	V2 [Kip]	V3 [Kip]	Torsion [Kip*ft]	M22 [Kip*ft]	M33 [Kip*ft]
1	NJ: 1	-0.00565	-685.30927	-0.03399	-0.00087	-0.28674	-164428.02134
1	NK: 3	-0.00565	-685.30927	-0.03399	-0.00087	-0.18808	-157955.81184
2	NJ: 3	-0.00429	-674.40295	-0.01184	-0.00087	-0.18808	-157955.81113
2	NK: 4	-0.00429	-674.40295	-0.01184	-0.00087	-0.35138	-151821.33289
3	NJ: 4	-0.00395	-650.81133	-0.01552	-0.00087	-0.35137	-151821.33194
3	NK: 5	-0.00395	-650.81133	-0.01552	-0.00087	-0.13694	-146054.19839
4	NJ: 5	-0.00335	-616.66390	-0.02558	-0.00087	-0.13694	-146054.19747
4	NK: 6	-0.00335	-616.66390	-0.02558	-0.00087	-0.22198	-140654.23330
5	NJ: 6	-0.00240	-575.01973	-0.01010	-0.00086	-0.22199	-140654.23251
5	NK: 7	-0.00240	-575.01973	-0.01010	-0.00086	-0.35757	-135592.58592

6	NJ: 7	-0.00193	-537.96386	-0.01448	-0.00086	-0.35757	-135592.58539
6	NK: 8	-0.00193	-537.96386	-0.01448	-0.00086	-0.15638	-130820.55559
7	NJ: 8	-0.00264	-510.22933	-0.02039	-0.00085	-0.15638	-130820.55526
7	NK: 9	-0.00264	-510.22933	-0.02039	-0.00085	-0.12837	-126298.70756
8	NJ: 9	-0.00238	-485.18929	-0.00824	-0.00085	-0.12838	-126298.70730
8	NK: 10	-0.00238	-485.18929	-0.00824	-0.00085	-0.24225	-121999.62066
9	NJ: 10	-0.00186	-463.34242	-0.00867	-0.00084	-0.24225	-121999.62047
9	NK: 11	-0.00186	-463.34242	-0.00867	-0.00084	-0.12267	-117900.11468
10	NJ: 11	-0.00181	-443.39963	-0.01599	-0.00084	-0.12267	-117900.11452
10	NK: 12	-0.00181	-443.39963	-0.01599	-0.00084	-0.10183	-113979.78755
11	NJ: 12	-0.00212	-424.09385	-0.00930	-0.00083	-0.10183	-113979.78741
11	NK: 13	-0.00212	-424.09385	-0.00930	-0.00083	-0.22965	-110217.25364
12	NJ: 13	-0.00238	-405.67820	-0.00616	-0.00083	-0.22965	-110217.25352
12	NK: 14	-0.00238	-405.67820	-0.00616	-0.00083	-0.14478	-106590.55777
13	NJ: 14	-0.00257	-388.49872	-0.01543	-0.00082	-0.14478	-106590.55765
13	NK: 15	-0.00257	-388.49872	-0.01543	-0.00082	-0.07163	-103078.02070
14	NJ: 15	-0.00238	-372.76399	-0.01046	-0.00081	-0.07163	-103078.02059
14	NK: 16	-0.00238	-372.76399	-0.01046	-0.00081	-0.21642	-99658.92803
15	NJ: 16	-0.00216	-358.60042	-0.00428	-0.00081	-0.21642	-99658.92790
15	NK: 17	-0.00216	-358.60042	-0.00428	-0.00081	-0.15961	-96313.86067
16	NJ: 17	-0.00188	-346.32170	-0.01460	-0.00080	-0.15961	-96313.86052
16	NK: 18	-0.00188	-346.32170	-0.01460	-0.00080	-0.04866	-93026.04401
17	NJ: 18	-0.00166	-336.10114	-0.01119	-0.00079	-0.04867	-93026.04383
17	NK: 19	-0.00166	-336.10114	-0.01119	-0.00079	-0.20021	-89782.32444
18	NJ: 19	-0.00145	-327.94367	-0.00284	-0.00078	-0.20021	-89782.32422
18	NK: 20	-0.00145	-327.94367	-0.00284	-0.00078	-0.17114	-86574.63123
19	NJ: 20	-0.00116	-321.55172	-0.01315	-0.00251	-0.17114	-86574.63099
19	NK: 21	-0.00116	-321.55172	-0.01315	-0.00251	-0.03117	-83400.17657
20	NJ: 21	-0.00101	-316.24820	-0.01087	-0.00077	-0.03117	-83400.17631
20	NK: 22	-0.00101	-316.24820	-0.01087	-0.00077	-0.16555	-80259.96220
21	NJ: 22	-0.00103	-311.83566	-0.00209	-0.00076	-0.16556	-80259.96199
21	NK: 23	-0.00103	-311.83566	-0.00209	-0.00076	-0.18412	-77156.55723
22	NJ: 23	-0.00120	-307.60854	-0.01015	-0.00075	-0.18412	-77156.55701
22	NK: 24	-0.00120	-307.60854	-0.01015	-0.00075	-0.05317	-74093.04973
23	NJ: 24	-0.00134	-303.43959	-0.01233	-0.00074	-0.05316	-74093.04949
23	NK: 25	-0.00134	-303.43959	-0.01233	-0.00074	-0.12825	-71072.99017
24	NJ: 25	-0.00138	-299.18732	-0.00339	-0.00073	-0.12825	-71072.98993
24	NK: 26	-0.00138	-299.18732	-0.00339	-0.00073	-0.16710	-68100.39654
25	NJ: 26	-0.00131	-294.75269	-0.00893	-0.00071	-0.16710	-68100.39630
25	NK: 27	-0.00131	-294.75269	-0.00893	-0.00071	-0.04575	-65179.28290

26	NJ: 27	-0.00170	-290.07234	-0.01184	-0.00070	-0.04575	-65179.28266
26	NK: 28	-0.00170	-290.07234	-0.01184	-0.00070	-0.12249	-62313.35338
27	NJ: 28	-0.00217	-285.07165	-0.00282	-0.00069	-0.12250	-62313.35316
27	NK: 29	-0.00217	-285.07165	-0.00282	-0.00069	-0.16044	-59505.66139
28	NJ: 29	-0.00229	-279.76130	-0.00865	-0.00067	-0.16044	-59505.66117
28	NK: 30	-0.00229	-279.76130	-0.00865	-0.00067	-0.04051	-56758.29657
29	NJ: 30	-0.00203	-274.21816	-0.01100	-0.00066	-0.04051	-56758.29636
29	NK: 31	-0.00203	-274.21816	-0.01100	-0.00066	-0.11351	-54072.43843
30	NJ: 31	-0.00182	-268.51701	-0.00285	-0.00065	-0.11351	-54072.43823
30	NK: 32	-0.00182	-268.51701	-0.00285	-0.00065	-0.15236	-51448.44082
31	NJ: 32	-0.00192	-262.78632	-0.00832	-0.00063	-0.15236	-51448.44062
31	NK: 33	-0.00192	-262.78632	-0.00832	-0.00063	-0.03763	-48886.06127
32	NJ: 33	-0.00197	-257.16273	-0.01085	-0.00062	-0.03762	-48886.06106
32	NK: 34	-0.00197	-257.16273	-0.01085	-0.00062	-0.11467	-46385.03165
33	NJ: 34	-0.00171	-251.72207	-0.00206	-0.00060	-0.11467	-46385.03143
33	NK: 35	-0.00171	-251.72207	-0.00206	-0.00060	-0.14231	-43945.51332
34	NJ: 35	-0.00168	-246.52578	-0.00847	-0.00058	-0.14231	-43945.51310
34	NK: 36	-0.00168	-246.52578	-0.00847	-0.00058	-0.02495	-41568.48081
35	NJ: 36	-0.00134	-241.58092	-0.00995	-0.00057	-0.02495	-41568.48057
35	NK: 37	-0.00134	-241.58092	-0.00995	-0.00057	-0.11443	-39256.13170
36	NJ: 37	-0.00089	-236.81912	-0.00115	-0.00055	-0.11443	-39256.13145
36	NK: 38	-0.00089	-236.81912	-0.00115	-0.00055	-0.12762	-37012.04684
37	NJ: 38	-0.00108	-232.15567	-0.00837	-0.00053	-0.12762	-37012.04658
37	NK: 39	-0.00108	-232.15567	-0.00837	-0.00053	-0.01429	-34841.12339
38	NJ: 39	-0.00139	-227.45312	-0.00908	-0.00052	-0.01429	-34841.12312
38	NK: 40	-0.00139	-227.45312	-0.00908	-0.00052	-0.11528	-32748.82095
39	NJ: 40	-0.00137	-222.57164	-0.00098	-0.00050	-0.11528	-32748.82067
39	NK: 41	-0.00137	-222.57164	-0.00098	-0.00050	-0.11909	-30740.56873
40	NJ: 41	-0.00151	-217.41842	-0.00917	-0.00048	-0.11909	-30740.56845
40	NK: 42	-0.00151	-217.41842	-0.00917	-0.00048	-0.01001	-28821.63104
41	NJ: 42	-0.00166	-211.85576	-0.00802	-0.00046	-0.01002	-28821.63077
41	NK: 43	-0.00166	-211.85576	-0.00802	-0.00046	-0.12051	-26996.27071
42	NJ: 43	-0.00159	-205.73748	-0.00167	-0.00044	-0.12051	-26996.27044
42	NK: 44	-0.00159	-205.73748	-0.00167	-0.00044	-0.09911	-25266.47188
43	NJ: 44	-0.00126	-198.96786	-0.00914	-0.00042	-0.09911	-25266.47162
43	NK: 45	-0.00126	-198.96786	-0.00914	-0.00042	-0.02870	-23630.46997
44	NJ: 45	-0.00121	-191.51773	-0.00676	-0.00039	-0.02870	-23630.46973
44	NK: 46	-0.00121	-191.51773	-0.00676	-0.00039	-0.12235	-22081.39185
45	NJ: 46	-0.00157	-183.50446	-0.00319	-0.00037	-0.12235	-22081.39162
45	NK: 47	-0.00157	-183.50446	-0.00319	-0.00037	-0.07876	-20606.41057

46	NJ: 47	-0.00218	-175.21234	-0.00953	-0.00035	-0.07876	-20606.41031
46	NK: 48	-0.00218	-175.21234	-0.00953	-0.00035	-0.05424	-19187.03281
47	NJ: 48	-0.00262	-167.02040	-0.00471	-0.00032	-0.05424	-19187.03249
47	NK: 49	-0.00262	-167.02040	-0.00471	-0.00032	-0.11971	-17800.58097
48	NJ: 49	-0.00263	-159.36724	-0.00507	-0.00030	-0.11971	-17800.58055
48	NK: 50	-0.00263	-159.36724	-0.00507	-0.00030	-0.04917	-16422.56818
49	NJ: 50	-0.00268	-152.61890	-0.00905	-0.00028	-0.04917	-16422.56761
49	NK: 51	-0.00268	-152.61890	-0.00905	-0.00028	-0.07714	-15029.40446
50	NJ: 51	-0.00234	-146.95121	-0.00237	-0.00025	-0.07714	-15029.40368
50	NK: 52	-0.00234	-146.95121	-0.00237	-0.00025	-0.11003	-13600.79415
51	NJ: 52	-0.00155	-142.34760	-0.00691	-0.00023	-0.11003	-13600.79311
51	NK: 53	-0.00155	-142.34760	-0.00691	-0.00023	-0.01398	-12121.44736
52	NJ: 53	-0.00149	-138.60219	-0.00783	-0.00020	-0.01398	-12121.44599
52	NK: 54	-0.00149	-138.60219	-0.00783	-0.00020	-0.09539	-10582.09360
53	NJ: 54	-0.00199	-135.43161	-0.00067	-0.00018	-0.09539	-10582.09179
53	NK: 55	-0.00199	-135.43161	-0.00067	-0.00018	-0.08620	-8980.79864
54	NJ: 55	-0.00267	-132.43478	-0.00815	-0.00015	-0.08620	-8980.79621
54	NK: 56	-0.00267	-132.43478	-0.00815	-0.00015	-0.02755	-7326.74161
55	NJ: 56	-0.00320	-128.78239	-0.00549	-0.00013	-0.02755	-7326.73840
55	NK: 57	-0.00320	-128.78239	-0.00549	-0.00013	-0.10406	-5646.27702
56	NJ: 57	-0.00321	-122.92856	-0.00394	-0.00010	-0.10406	-5646.27283
56	NK: 58	-0.00321	-122.92856	-0.00394	-0.00010	-0.04916	-3991.03543
57	NJ: 58	-0.00271	-112.37712	-0.00840	-0.00008	-0.04916	-3991.03007
57	NK: 59	-0.00271	-112.37712	-0.00840	-0.00008	-0.06799	-2447.67773
58	NJ: 59	-0.00196	-93.80616	-0.00250	-0.00005	-0.06799	-2447.67118
58	NK: 60	-0.00196	-93.80616	-0.00250	-0.00005	-0.10285	-1145.42546
59	NJ: 60	-0.00108	-63.66914	-0.00572	-0.00003	-0.10284	-1145.41791
59	NK: 61	-0.00108	-63.66914	-0.00572	-0.00003	0.00000	-0.01169

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Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\826 FT LINER-DYNAMIC RESPONSE SPECTRUM ASCE 07-05 CLASS D.adv\

## Geometry data

### GLOSSARY

Cb22, Cb33 : Moment gradient coefficients  
 Cm22, Cm33 : Coefficients applied to bending term in interaction formula  
 d0 : Tapered member section depth at J end of member  
 DJX : Rigid end offset distance measured from J node in axis X  
 DJY : Rigid end offset distance measured from J node in axis Y  
 DJZ : Rigid end offset distance measured from J node in axis Z  
 DKX : Rigid end offset distance measured from K node in axis X  
 DKY : Rigid end offset distance measured from K node in axis Y  
 DKZ : Rigid end offset distance measured from K node in axis Z  
 dL : Tapered member section depth at K end of member  
 Ig factor : Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members  
 K22 : Effective length factor about axis 2  
 K33 : Effective length factor about axis 3  
 L22 : Member length for calculation of axial capacity  
 L33 : Member length for calculation of axial capacity  
 LB pos : Lateral unbraced length of the compression flange in the positive side of local axis 2  
 LB neg : Lateral unbraced length of the compression flange in the negative side of local axis 2  
 RX : Rotation about X  
 RY : Rotation about Y  
 RZ : Rotation about Z  
 TO : 1 = Tension only member 0 = Normal member  
 TX : Translation in X  
 TY : Translation in Y  
 TZ : Translation in Z

### Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
3	0.00	13.9428	0.00	0
4	0.00	27.8855	0.00	0
5	0.00	41.8283	0.00	0
6	0.00	55.771	0.00	0
7	0.00	69.7138	0.00	0
8	0.00	83.6566	0.00	0
9	0.00	97.5993	0.00	0
10	0.00	111.5421	0.00	0
11	0.00	125.4848	0.00	0
12	0.00	139.4276	0.00	0
13	0.00	153.3703	0.00	0
14	0.00	167.3131	0.00	0
15	0.00	181.2559	0.00	0
16	0.00	195.1986	0.00	0
17	0.00	209.1414	0.00	0
18	0.00	223.0841	0.00	0
19	0.00	237.0269	0.00	0
20	0.00	250.9697	0.00	0
21	0.00	264.9124	0.00	0
22	0.00	278.8552	0.00	0

23	0.00	292.7979	0.00	0
24	0.00	306.7407	0.00	0
25	0.00	320.6834	0.00	0
26	0.00	334.6262	0.00	0
27	0.00	348.569	0.00	0
28	0.00	362.5117	0.00	0
29	0.00	376.4545	0.00	0
30	0.00	390.3972	0.00	0
31	0.00	404.34	0.00	0
32	0.00	418.2828	0.00	0
33	0.00	432.2255	0.00	0
34	0.00	446.1683	0.00	0
35	0.00	460.111	0.00	0
36	0.00	474.0538	0.00	0
37	0.00	487.9966	0.00	0
38	0.00	501.9393	0.00	0
39	0.00	515.8821	0.00	0
40	0.00	529.8248	0.00	0
41	0.00	543.7676	0.00	0
42	0.00	557.7103	0.00	0
43	0.00	571.6531	0.00	0
44	0.00	585.5959	0.00	0
45	0.00	599.5386	0.00	0
46	0.00	613.4814	0.00	0
47	0.00	627.4241	0.00	0
48	0.00	641.3669	0.00	0
49	0.00	655.3097	0.00	0
50	0.00	669.2524	0.00	0
51	0.00	683.1952	0.00	0
52	0.00	697.1379	0.00	0
53	0.00	711.0807	0.00	0
54	0.00	725.0234	0.00	0
55	0.00	738.9662	0.00	0
56	0.00	752.909	0.00	0
57	0.00	766.8517	0.00	0
58	0.00	780.7945	0.00	0
59	0.00	794.7372	0.00	0
60	0.00	808.68	0.00	0
61	0.00	826.67	0.00	0

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## Restraints

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Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

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## Members

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Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	1	3		PIPE 42	C 3-60	0.00	0.00	0.00
2	3	4		PIPE 42	C 3-60	0.00	0.00	0.00
3	4	5		PIPE 42	C 3-60	0.00	0.00	0.00
4	5	6		PIPE 42	C 3-60	0.00	0.00	0.00
5	6	7		PIPE 42	C 3-60	0.00	0.00	0.00
6	7	8		PIPE 41	C 3-60	0.00	0.00	0.00
7	8	9		PIPE 41	C 3-60	0.00	0.00	0.00
8	9	10		PIPE 41	C 3-60	0.00	0.00	0.00
9	10	11		PIPE 40	C 3-60	0.00	0.00	0.00
10	11	12		PIPE 40	C 3-60	0.00	0.00	0.00
11	12	13		PIPE 39	C 3-60	0.00	0.00	0.00
12	13	14		PIPE 39	C 3-60	0.00	0.00	0.00
13	14	15		PIPE 39	C 3-60	0.00	0.00	0.00
14	15	16		PIPE 38	C 3-60	0.00	0.00	0.00
15	16	17		PIPE 38	C 3-60	0.00	0.00	0.00
16	17	18		PIPE 38	C 3-60	0.00	0.00	0.00
17	18	19		PIPE 37	C 3-60	0.00	0.00	0.00
18	19	20		PIPE 37	C 3-60	0.00	0.00	0.00
19	20	21		PIPE 36	C 3-60	0.00	0.00	0.00
20	21	22		PIPE 36	C 3-60	0.00	0.00	0.00
21	22	23		PIPE 36	C 3-60	0.00	0.00	0.00
22	23	24		PIPE 35	C 3-60	0.00	0.00	0.00
23	24	25		PIPE 35	C 3-60	0.00	0.00	0.00
24	25	26		PIPE 35	C 3-60	0.00	0.00	0.00
25	26	27		PIPE 34	C 3-60	0.00	0.00	0.00
26	27	28		PIPE 34	C 3-60	0.00	0.00	0.00
27	28	29		PIPE 33	C 3-60	0.00	0.00	0.00
28	29	30		PIPE 33	C 3-60	0.00	0.00	0.00
29	30	31		PIPE 33	C 3-60	0.00	0.00	0.00
30	31	32		PIPE 32	C 3-60	0.00	0.00	0.00
31	32	33		PIPE 32	C 3-60	0.00	0.00	0.00
32	33	34		PIPE 31	C 3-60	0.00	0.00	0.00
33	34	35		PIPE 31	C 3-60	0.00	0.00	0.00
34	35	36		PIPE 31	C 3-60	0.00	0.00	0.00
35	36	37		PIPE 30	C 3-60	0.00	0.00	0.00
36	37	38		PIPE 30	C 3-60	0.00	0.00	0.00
37	38	39		PIPE 30	C 3-60	0.00	0.00	0.00
38	39	40		PIPE 29	C 3-60	0.00	0.00	0.00
39	40	41		PIPE 29	C 3-60	0.00	0.00	0.00
40	41	42		PIPE 28	C 3-60	0.00	0.00	0.00
41	42	43		PIPE 28	C 3-60	0.00	0.00	0.00
42	43	44		PIPE 28	C 3-60	0.00	0.00	0.00
43	44	45		PIPE 27	C 3-60	0.00	0.00	0.00
44	45	46		PIPE 27	C 3-60	0.00	0.00	0.00
45	46	47		PIPE 26	C 3-60	0.00	0.00	0.00
46	47	48		PIPE 26	C 3-60	0.00	0.00	0.00
47	48	49		PIPE 26	C 3-60	0.00	0.00	0.00
48	49	50		PIPE 25	C 3-60	0.00	0.00	0.00
49	50	51		PIPE 25	C 3-60	0.00	0.00	0.00
50	51	52		PIPE 25	C 3-60	0.00	0.00	0.00
51	52	53		PIPE 24	C 3-60	0.00	0.00	0.00
52	53	54		PIPE 24	C 3-60	0.00	0.00	0.00
53	54	55		PIPE 23	C 3-60	0.00	0.00	0.00
54	55	56		PIPE 23	C 3-60	0.00	0.00	0.00
55	56	57		PIPE 23	C 3-60	0.00	0.00	0.00
56	57	58		PIPE 22	C 3-60	0.00	0.00	0.00
57	58	59		PIPE 22	C 3-60	0.00	0.00	0.00
58	59	60		PIPE 21	C 3-60	0.00	0.00	0.00
59	60	61		PIPE 21	C 3-60	0.00	0.00	0.00





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## Load data

### GLOSSARY

Comb : Indicates if load condition is a load combination

### Load conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
EL	Earthquake	No	EQ
id0	1.4DL	Yes	
id1	1.2DL+EL	Yes	
id2	0.9DL+EL	Yes	

### Masses

Node	TX [Kip]	TY [Kip]	TZ [Kip]	RX [Kip*in2]	RY [Kip*in2]	RZ [Kip*in2]
3	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
4	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
5	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
6	638.354	638.3544	638.3544	638.3544	638.3544	638.3544
7	516.766	516.7659	516.7659	516.7659	516.7659	516.7659
8	368.314	368.314	368.314	368.314	368.314	368.314
9	321.78	321.7801	321.7801	321.7801	321.7801	321.7801
10	275.502	275.5022	275.5022	275.5022	275.5022	275.5022
11	249.119	249.1187	249.1187	249.1187	249.1187	249.1187
12	241.794	241.7937	241.7937	241.7937	241.7937	241.7937
13	235.145	235.1449	235.1449	235.1449	235.1449	235.1449
14	229.215	229.2151	229.2151	229.2151	229.2151	229.2151
15	224.845	224.8448	224.8448	224.8448	224.8448	224.8448
16	222.546	222.5463	222.5463	222.5463	222.5463	222.5463
17	220.285	220.2849	220.2849	220.2849	220.2849	220.2849
18	218.023	218.0234	218.0234	218.0234	218.0234	218.0234
19	213.724	213.7241	213.7241	213.7241	213.7241	213.7241
20	207.522	207.5219	207.5219	207.5219	207.5219	207.5219
21	201.401	201.4011	201.4011	201.4011	201.4011	201.4011
22	195.327	195.3269	195.3269	195.3269	195.3269	195.3269
23	190.332	190.3319	190.3319	190.3319	190.3319	190.3319
24	186.351	186.3514	186.3514	186.3514	186.3514	186.3514
25	182.38	182.3796	182.3796	182.3796	182.3796	182.3796
26	178.484	178.4836	178.4836	178.4836	178.4836	178.4836
27	174.63	174.6297	174.6297	174.6297	174.6297	174.6297
28	170.786	170.7856	170.7856	170.7856	170.7856	170.7856
29	167.016	167.0161	167.0161	167.0161	167.0161	167.0161
30	163.226	163.2256	163.2256	163.2256	163.2256	163.2256
31	159.51	159.5098	159.5098	159.5098	159.5098	159.5098
32	155.929	155.9293	155.9293	155.9293	155.9293	155.9293

33	152.328	152.3285	152.3285	152.3285	152.3285	152.3285
34	148.74	148.7395	148.7395	148.7395	148.7395	148.7395
35	145.223	145.2232	145.2232	145.2232	145.2232	145.2232
36	141.749	141.7489	141.7489	141.7489	141.7489	141.7489
37	138.288	138.2876	138.2876	138.2876	138.2876	138.2876
38	134.898	134.8978	134.8978	134.8978	134.8978	134.8978
39	132.349	132.3489	132.3489	132.3489	132.3489	132.3489
40	130.581	130.5808	130.5808	130.5808	130.5808	130.5808
41	128.813	128.8127	128.8127	128.8127	128.8127	128.8127
42	127.045	127.0446	127.0446	127.0446	127.0446	127.0446
43	125.277	125.2766	125.2766	125.2766	125.2766	125.2766
44	123.508	123.5085	123.5085	123.5085	123.5085	123.5085
45	121.74	121.7404	121.7404	121.7404	121.7404	121.7404
46	119.972	119.9724	119.9724	119.9724	119.9724	119.9724
47	118.233	118.2328	118.2328	118.2328	118.2328	118.2328
48	116.493	116.4932	116.4932	116.4932	116.4932	116.4932
49	114.725	114.7252	114.7252	114.7252	114.7252	114.7252
50	112.986	112.9856	112.9856	112.9856	112.9856	112.9856
51	111.246	111.2461	111.2461	111.2461	111.2461	111.2461
52	109.478	109.478	109.478	109.478	109.478	109.478
53	107.738	107.7384	107.7384	107.7384	107.7384	107.7384
54	105.999	105.9989	105.9989	105.9989	105.9989	105.9989
55	104.231	104.2308	104.2308	104.2308	104.2308	104.2308
56	102.491	102.4912	102.4912	102.4912	102.4912	102.4912
57	100.752	100.7517	100.7517	100.7517	100.7517	100.7517
58	98.9836	98.9836	98.9836	98.9836	98.9836	98.9836
59	97.244	97.244	97.244	97.244	97.244	97.244
60	95.5045	95.5045	95.5045	95.5045	95.5045	95.5045
61	120.651	120.6511	120.6511	120.6511	120.6511	120.6511

**Load on nodes**

Condition	Node	FX [Kip]	FY [Kip]	FZ [Kip]	MX [Kip*ft]	MY [Kip*ft]	MZ [Kip*ft]
EL	3	1.71	0.00	0.00	0.00	0.00	0.00
	4	2.84	0.00	0.00	0.00	0.00	0.00
	5	3.98	0.00	0.00	0.00	0.00	0.00
	6	4.58	0.00	0.00	0.00	0.00	0.00
	7	4.27	0.00	0.00	0.00	0.00	0.00
	8	3.97	0.00	0.00	0.00	0.00	0.00
	9	3.97	0.00	0.00	0.00	0.00	0.00
	10	3.96	0.00	0.00	0.00	0.00	0.00
	11	4.15	0.00	0.00	0.00	0.00	0.00
	12	4.46	0.00	0.00	0.00	0.00	0.00
	13	4.75	0.00	0.00	0.00	0.00	0.00
	14	5.05	0.00	0.00	0.00	0.00	0.00
	15	5.38	0.00	0.00	0.00	0.00	0.00
	16	5.72	0.00	0.00	0.00	0.00	0.00
	17	6.05	0.00	0.00	0.00	0.00	0.00
	18	6.34	0.00	0.00	0.00	0.00	0.00
	19	6.56	0.00	0.00	0.00	0.00	0.00
	20	6.74	0.00	0.00	0.00	0.00	0.00
	21	6.89	0.00	0.00	0.00	0.00	0.00
	22	7.04	0.00	0.00	0.00	0.00	0.00
	23	7.21	0.00	0.00	0.00	0.00	0.00
	24	7.39	0.00	0.00	0.00	0.00	0.00

25	7.55	0.00	0.00	0.00	0.00	0.00	0.00
26	7.70	0.00	0.00	0.00	0.00	0.00	0.00
27	7.84	0.00	0.00	0.00	0.00	0.00	0.00
28	7.97	0.00	0.00	0.00	0.00	0.00	0.00
29	8.09	0.00	0.00	0.00	0.00	0.00	0.00
30	8.19	0.00	0.00	0.00	0.00	0.00	0.00
31	8.29	0.00	0.00	0.00	0.00	0.00	0.00
32	8.37	0.00	0.00	0.00	0.00	0.00	0.00
33	8.45	0.00	0.00	0.00	0.00	0.00	0.00
34	8.51	0.00	0.00	0.00	0.00	0.00	0.00
35	8.56	0.00	0.00	0.00	0.00	0.00	0.00
36	8.60	0.00	0.00	0.00	0.00	0.00	0.00
37	8.64	0.00	0.00	0.00	0.00	0.00	0.00
38	8.69	0.00	0.00	0.00	0.00	0.00	0.00
39	8.78	0.00	0.00	0.00	0.00	0.00	0.00
40	8.89	0.00	0.00	0.00	0.00	0.00	0.00
41	9.00	0.00	0.00	0.00	0.00	0.00	0.00
42	9.10	0.00	0.00	0.00	0.00	0.00	0.00
43	9.20	0.00	0.00	0.00	0.00	0.00	0.00
44	9.28	0.00	0.00	0.00	0.00	0.00	0.00
45	9.36	0.00	0.00	0.00	0.00	0.00	0.00
46	9.44	0.00	0.00	0.00	0.00	0.00	0.00
47	9.51	0.00	0.00	0.00	0.00	0.00	0.00
48	9.58	0.00	0.00	0.00	0.00	0.00	0.00
49	9.63	0.00	0.00	0.00	0.00	0.00	0.00
50	9.69	0.00	0.00	0.00	0.00	0.00	0.00
51	9.73	0.00	0.00	0.00	0.00	0.00	0.00
52	9.77	0.00	0.00	0.00	0.00	0.00	0.00
53	9.80	0.00	0.00	0.00	0.00	0.00	0.00
54	9.83	0.00	0.00	0.00	0.00	0.00	0.00
55	9.85	0.00	0.00	0.00	0.00	0.00	0.00
56	9.87	0.00	0.00	0.00	0.00	0.00	0.00
57	9.87	0.00	0.00	0.00	0.00	0.00	0.00
58	9.87	0.00	0.00	0.00	0.00	0.00	0.00
59	9.87	0.00	0.00	0.00	0.00	0.00	0.00
60	11.31	0.00	0.00	0.00	0.00	0.00	0.00
61	6.37	0.00	0.00	0.00	0.00	0.00	0.00

**Self weight multipliers for load conditions**

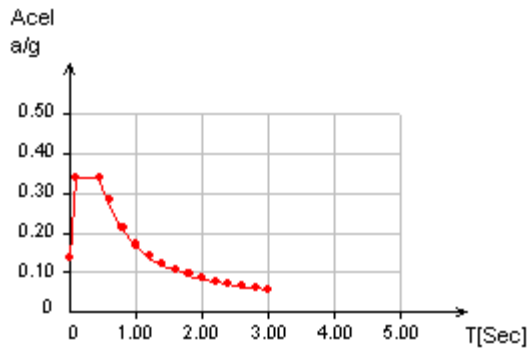
Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	0.00	0.00
EL	Earthquake	No	0.00	0.00	0.00
id0	1.4DL	Yes	0.00	0.00	0.00
id1	1.2DL+EL	Yes	0.00	0.00	0.00
id2	0.9DL+EL	Yes	0.00	0.00	0.00

**Earthquake (Dynamic analysis only)**

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
EL	0.8333	0.00	5.00
id0	0.00	0.00	0.00
id1	0.00	0.00	0.00
id2	0.00	0.00	0.00

## Response spectrum

T [Sec]	a/g
0.001	0.1372
0.0902	0.338
0.4508	0.338
0.60	0.28
0.80	0.21
1.00	0.168
1.20	0.14
1.40	0.12
1.60	0.105
1.80	0.0933
2.00	0.084
2.20	0.0764
2.40	0.07
2.60	0.0646
2.80	0.06
3.00	0.056







Current Date: 11/9/2012 3:18 AM

Units system: English

File name: Y:\Wright & Dalbin\Save The Stack\Ram Advanse\11-6-12 Dynamic resposne spectrum analysis\826 FT LINER-DYNAMIC RESPONSE SPECTRUM ASCE 07-05 CLASS D.adv\

## Seismic analysis

### Modal analysis

#### MASSSES:

Node	Mass X [Kip]	Mass Y [Kip]	Mass Z [Kip]	MMI.xx [Kip*in2]	MMI.yy [Kip*in2]	MMI.zz [Kip*in2]
3	638.35	638.35	638.35	638.35	638.35	638.35
4	638.35	638.35	638.35	638.35	638.35	638.35
5	638.35	638.35	638.35	638.35	638.35	638.35
6	638.35	638.35	638.35	638.35	638.35	638.35
7	516.77	516.77	516.77	516.77	516.77	516.77
8	368.31	368.31	368.31	368.31	368.31	368.31
9	321.78	321.78	321.78	321.78	321.78	321.78
10	275.50	275.50	275.50	275.50	275.50	275.50
11	249.12	249.12	249.12	249.12	249.12	249.12
12	241.79	241.79	241.79	241.79	241.79	241.79
13	235.15	235.14	235.14	235.14	235.14	235.14
14	229.22	229.22	229.22	229.22	229.22	229.22
15	224.85	224.84	224.84	224.84	224.84	224.84
16	222.55	222.55	222.55	222.55	222.55	222.55
17	220.29	220.28	220.28	220.28	220.28	220.28
18	218.02	218.02	218.02	218.02	218.02	218.02
19	213.72	213.72	213.72	213.72	213.72	213.72
20	207.52	207.52	207.52	207.52	207.52	207.52
21	201.40	201.40	201.40	201.40	201.40	201.40
22	195.33	195.33	195.33	195.33	195.33	195.33
23	190.33	190.33	190.33	190.33	190.33	190.33
24	186.35	186.35	186.35	186.35	186.35	186.35
25	182.38	182.38	182.38	182.38	182.38	182.38
26	178.48	178.48	178.48	178.48	178.48	178.48
27	174.63	174.63	174.63	174.63	174.63	174.63
28	170.79	170.79	170.79	170.79	170.79	170.79
29	167.02	167.02	167.02	167.02	167.02	167.02
30	163.23	163.23	163.23	163.23	163.23	163.23
31	159.51	159.51	159.51	159.51	159.51	159.51
32	155.93	155.93	155.93	155.93	155.93	155.93
33	152.33	152.33	152.33	152.33	152.33	152.33
34	148.74	148.74	148.74	148.74	148.74	148.74
35	145.22	145.22	145.22	145.22	145.22	145.22
36	141.75	141.75	141.75	141.75	141.75	141.75
37	138.29	138.29	138.29	138.29	138.29	138.29
38	134.90	134.90	134.90	134.90	134.90	134.90
39	132.35	132.35	132.35	132.35	132.35	132.35
40	130.58	130.58	130.58	130.58	130.58	130.58
41	128.81	128.81	128.81	128.81	128.81	128.81
42	127.05	127.04	127.04	127.04	127.04	127.04
43	125.28	125.28	125.28	125.28	125.28	125.28
44	123.51	123.51	123.51	123.51	123.51	123.51
45	121.74	121.74	121.74	121.74	121.74	121.74
46	119.97	119.97	119.97	119.97	119.97	119.97
47	118.23	118.23	118.23	118.23	118.23	118.23
48	116.49	116.49	116.49	116.49	116.49	116.49
49	114.73	114.73	114.73	114.73	114.73	114.73

50	112.99	112.99	112.99	112.99	112.99	112.99
51	111.25	111.25	111.25	111.25	111.25	111.25
52	109.48	109.48	109.48	109.48	109.48	109.48
53	107.74	107.74	107.74	107.74	107.74	107.74
54	106.00	106.00	106.00	106.00	106.00	106.00
55	104.23	104.23	104.23	104.23	104.23	104.23
56	102.49	102.49	102.49	102.49	102.49	102.49
57	100.75	100.75	100.75	100.75	100.75	100.75
58	98.98	98.98	98.98	98.98	98.98	98.98
59	97.24	97.24	97.24	97.24	97.24	97.24
60	95.50	95.50	95.50	95.50	95.50	95.50
61	120.65	120.65	120.65	120.65	120.65	120.65

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**MODE FREQUENCIES**

MODE	W [RAD/SEC]	T [SEC]
1	0.82	7.66419
2	0.82	7.66419
3	3.52	1.78514
4	3.52	1.78514
5	8.72	0.72066
6	8.72	0.72066
7	16.13	0.38946
8	16.13	0.38946
9	24.45	0.25703
10	25.47	0.24671
11	25.47	0.24671
12	36.80	0.17075
13	36.80	0.17075
14	49.72	0.12638
15	49.72	0.12638
16	60.05	0.10463
17	63.85	0.09840
18	63.85	0.09840
19	79.90	0.07864
20	79.90	0.07864
21	97.18	0.06465
22	97.18	0.06465
23	98.35	0.06389
24	115.13	0.05457
25	115.13	0.05457
26	134.54	0.04670
27	134.54	0.04670
28	135.39	0.04641
29	154.75	0.04060
30	154.75	0.04060
31	168.75	0.03723
32	175.16	0.03587
33	175.16	0.03587
34	196.22	0.03202
35	196.22	0.03202
36	203.01	0.03095
37	217.67	0.02887
38	217.67	0.02887
39	238.39	0.02636
40	239.37	0.02625
41	239.37	0.02625
42	261.05	0.02407
43	261.05	0.02407
44	272.76	0.02304
45	282.38	0.02225
46	282.38	0.02225

47	304.25	0.02065
48	304.25	0.02065
49	310.68	0.02022
50	325.51	0.01930

**MASS PARTICIPATION PERCENTAGE**

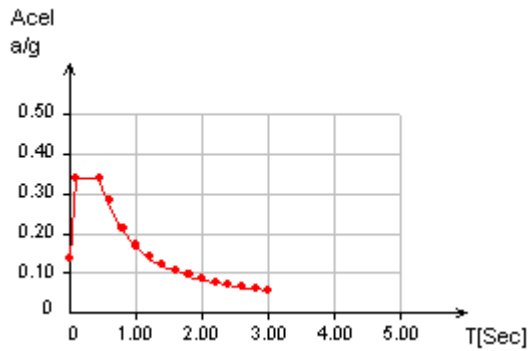
MODE	Modal participation					
	Part.X	Part.Y	Part.Z	Rot.X	Rot.Y	Rot.Z
1	36.30	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	36.30	0.00	0.00	0.00
3	17.87	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	17.87	0.00	0.00	0.00
5	9.34	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	9.34	0.00	0.00	0.00
7	0.00	0.00	6.71	0.00	0.00	0.00
8	6.71	0.00	0.00	0.00	0.00	0.00
9	0.00	55.43	0.00	0.00	0.00	0.00
10	5.21	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	5.21	0.00	0.00	0.00
12	0.00	0.00	4.22	0.00	0.00	0.00
13	4.22	0.00	0.00	0.00	0.00	0.00
14	3.77	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	3.77	0.00	0.00	0.00
16	0.00	14.14	0.00	0.00	0.00	0.00
17	2.99	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	2.99	0.00	0.00	0.00
19	2.21	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	2.21	0.00	0.00	0.00
21	1.85	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	1.85	0.00	0.00	0.00
23	0.00	6.77	0.00	0.00	0.00	0.00
24	1.46	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	1.46	0.00	0.00	0.00
26	0.01	0.00	1.08	0.00	0.00	0.00
27	1.08	0.00	0.01	0.00	0.00	0.00
28	0.00	6.05	0.00	0.00	0.00	0.00
29	0.94	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.94	0.00	0.00	0.00
31	0.00	5.74	0.00	0.00	0.00	0.00
32	0.81	0.00	0.00	0.00	0.00	0.00
33	0.00	0.00	0.81	0.00	0.00	0.00
34	0.00	0.00	0.67	0.00	0.00	0.00
35	0.67	0.00	0.00	0.00	0.00	0.00
36	0.00	3.31	0.00	0.00	0.00	0.00
37	0.00	0.00	0.57	0.00	0.00	0.00
38	0.57	0.00	0.00	0.00	0.00	0.00
39	0.00	2.25	0.00	0.00	0.00	0.00
40	0.28	0.00	0.22	0.00	0.00	0.00
41	0.22	0.00	0.28	0.00	0.00	0.00
42	0.46	0.00	0.00	0.00	0.00	0.00
43	0.00	0.00	0.46	0.00	0.00	0.00
44	0.00	1.25	0.00	0.00	0.00	0.00
45	0.40	0.00	0.00	0.00	0.00	0.00
46	0.00	0.00	0.40	0.00	0.00	0.00
47	0.35	0.00	0.00	0.00	0.00	0.00
48	0.00	0.00	0.35	0.00	0.00	0.00
49	0.00	0.65	0.00	0.00	0.00	0.00
50	0.34	0.00	0.00	0.00	0.00	0.00
TOTAL:	98.06	95.59	97.72	0.00	0.00	0.00

**TOTAL MASS**

DOF	Total mass [Kip/in*Sec2]
TX	30.87
TY	30.87
TZ	30.87
RX	30.87
RY	30.87
RZ	30.87

**SEISMIC RESPONSE SPECTRUM**

T[Sec]	a/g
0.00100	0.14
0.09015	0.34
0.45076	0.34
0.60000	0.28
0.80000	0.21
1.00000	0.17
1.20000	0.14
1.40000	0.12
1.60000	0.11
1.80000	0.09
2.00000	0.08
2.20000	0.08
2.40000	0.07
2.60000	0.06
2.80000	0.06
3.00000	0.06



Condition = **EL=Earthquake**  
 Scale Factor = 0.83  
 Damping factor = 5.00

**COMPUTED SPECTRAL VALUES**

MODE	W [RAD/SEC]	T [SEC]	a [in/Sec2]
1	0.82	7.66419	18.00
2	0.82	7.66419	18.00
3	3.52	1.78514	30.29
4	3.52	1.78514	30.29
5	8.72	0.72066	76.44

6	8.72	0.72066	76.44
7	16.13	0.38946	108.67
8	16.13	0.38946	108.67
9	24.45	0.25703	108.67
10	25.47	0.24671	108.67
11	25.47	0.24671	108.67
12	36.80	0.17075	108.67
13	36.80	0.17075	108.67
14	49.72	0.12638	108.67
15	49.72	0.12638	108.67
16	60.05	0.10463	108.67
17	63.85	0.09840	108.67
18	63.85	0.09840	108.67
19	79.90	0.07864	100.33
20	79.90	0.07864	100.33
21	97.18	0.06465	90.21
22	97.18	0.06465	90.21
23	98.35	0.06389	89.65
24	115.13	0.05457	82.91
25	115.13	0.05457	82.91
26	134.54	0.04670	77.21
27	134.54	0.04670	77.21
28	135.39	0.04641	77.00
29	154.75	0.04060	72.80
30	154.75	0.04060	72.80
31	168.75	0.03723	70.36
32	175.16	0.03587	69.37
33	175.16	0.03587	69.37
34	196.22	0.03202	66.58
35	196.22	0.03202	66.58
36	203.01	0.03095	65.81
37	217.67	0.02887	64.30
38	217.67	0.02887	64.30
39	238.39	0.02636	62.48
40	239.37	0.02625	62.40
41	239.37	0.02625	62.40
42	261.05	0.02407	60.83
43	261.05	0.02407	60.83
44	272.76	0.02304	60.08
45	282.38	0.02225	59.51
46	282.38	0.02225	59.51
47	304.25	0.02065	58.35
48	304.25	0.02065	58.35
49	310.68	0.02022	58.04
50	325.51	0.01930	57.37

**MODAL SHAPES**

Normalized displacements to  $\Phi^T M \Phi = 1$

**Modal shapes : 1**

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**W = 0.82 [RAD/SEC]                      PERIOD = 7.66419 [SEC]**

**DISPLACEMENTS**

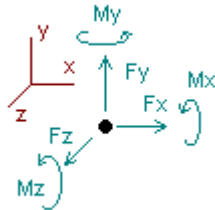
<b>Node</b>	<b>Trans.X</b> [phi]	<b>Trans.Y</b> [phi]	<b>Trans.Z</b> [phi]	<b>Rot.X</b> [phiRot]	<b>Rot.Y</b> [phiRot]	<b>Rot.Z</b> [phiRot]
3	9.33E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.02E-06
4	3.55E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.01E-06
5	7.80E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.98E-06
6	1.37E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.92E-06
7	2.13E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.03E-06

8	3.11E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.52E-06
9	4.35E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.18E-06
10	5.90E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.01E-05
11	7.78E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.22E-05
12	1.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.43E-05
13	1.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.64E-05
14	1.56E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.86E-05
15	1.89E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.08E-05
16	2.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.30E-05
17	2.66E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.52E-05
18	3.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.73E-05
19	3.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.95E-05
20	4.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.17E-05
21	4.65E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.39E-05
22	5.23E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.50E-05
23	5.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.73E-05
24	6.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.95E-05
25	7.16E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.18E-05
26	7.88E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.41E-05
27	8.64E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.63E-05
28	9.44E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.86E-05
29	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.08E-05
30	1.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.30E-05
31	1.21E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.52E-05
32	1.30E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.74E-05
33	1.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.95E-05
34	1.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.17E-05
35	1.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.38E-05
36	1.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.58E-05
37	1.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.78E-05
38	1.94E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.98E-05
39	2.06E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.17E-05
40	2.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.35E-05
41	2.31E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.53E-05
42	2.43E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.69E-05
43	2.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.85E-05
44	2.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.00E-05
45	2.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.14E-05
46	2.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.27E-05
47	3.11E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.40E-05
48	3.25E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.51E-05
49	3.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.61E-05
50	3.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.70E-05
51	3.69E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.78E-05
52	3.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.85E-05
53	3.98E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.92E-05
54	4.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.97E-05
55	4.28E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.01E-05
56	4.43E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.05E-05
57	4.59E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.07E-05
58	4.74E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.09E-05
59	4.89E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.10E-05
60	5.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.10E-05
61	5.24E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.11E-05

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## Analysis Results

### Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition <b>id2=0.9DL+EL</b>						
1	505.12098	0.00435	7.93467	119.12601	0.00061	134598.82000
SUM	505.12098	0.00435	7.93467	119.12601	0.00061	134598.82000

### Forces at member ends

- Notes.- Axial: Axial forces  
 V2: Shear force in 2  
 V3: Shear force in 3  
 Torsion: Torsional moment  
 M22: Bending moments 2  
 M33: Bending moments 3

CONDITION **id2=0.9DL+EL**

Member	End	Axial [Kip]	V2 [Kip]	V3 [Kip]	Torsion [Kip*ft]	M22 [Kip*ft]	M33 [Kip*ft]
1	NJ: 1	-0.00435	-505.12098	-7.93467	-0.00061	-119.12601	-134598.82008
1	NK: 3	-0.00435	-505.12098	-7.93467	-0.00061	-33.99579	-129625.90314
2	NJ: 3	-0.00339	-499.80706	-5.57020	-0.00060	-33.99578	-129625.90273
2	NK: 4	-0.00339	-499.80706	-5.57020	-0.00060	-76.41940	-124859.73789
3	NJ: 4	-0.00299	-487.07920	-2.44407	-0.00060	-76.41936	-124859.73730
3	NK: 5	-0.00299	-487.07920	-2.44407	-0.00060	-93.03808	-120322.69026
4	NJ: 5	-0.00251	-467.08875	-3.49635	-0.00060	-93.03769	-120322.68966
4	NK: 6	-0.00251	-467.08875	-3.49635	-0.00060	-71.39558	-116021.83387
5	NJ: 6	-0.00175	-441.49188	-4.49394	-0.00060	-71.39519	-116021.83334
5	NK: 7	-0.00175	-441.49188	-4.49394	-0.00060	-62.76916	-111946.93569

6	NJ: 7	-0.00162	-417.94604	-3.06975	-0.00059	-62.76937	-111946.93532
6	NK: 8	-0.00162	-417.94604	-3.06975	-0.00059	-71.14406	-108072.94139
7	NJ: 8	-0.00210	-399.71794	-2.27791	-0.00059	-71.14416	-108072.94116
7	NK: 9	-0.00210	-399.71794	-2.27791	-0.00059	-58.73547	-104377.33830
8	NJ: 9	-0.00188	-382.79627	-3.41629	-0.00059	-58.73529	-104377.33812
8	NK: 10	-0.00188	-382.79627	-3.41629	-0.00059	-35.86189	-100844.66890
9	NJ: 10	-0.00150	-367.73496	-3.46515	-0.00058	-35.86180	-100844.66876
9	NK: 11	-0.00150	-367.73496	-3.46515	-0.00058	-53.09792	-97461.10987
10	NJ: 11	-0.00143	-353.71622	-1.87078	-0.00058	-53.09812	-97461.10975
10	NK: 12	-0.00143	-353.71622	-1.87078	-0.00058	-70.65027	-94214.29327
11	NJ: 12	-0.00165	-339.88113	-1.09605	-0.00057	-70.65029	-94214.29318
11	NK: 13	-0.00165	-339.88113	-1.09605	-0.00057	-56.56160	-91090.93521
12	NJ: 13	-0.00185	-326.46774	-3.01031	-0.00057	-56.56133	-91090.93512
12	NK: 14	-0.00185	-326.46774	-3.01031	-0.00057	-15.50328	-88076.80198
13	NJ: 14	-0.00189	-313.73162	-3.44732	-0.00057	-15.50289	-88076.80190
13	NK: 15	-0.00189	-313.73162	-3.44732	-0.00057	-34.27010	-85157.34784
14	NJ: 15	-0.00164	-301.83185	-2.13450	-0.00056	-34.27048	-85157.34776
14	NK: 16	-0.00164	-301.83185	-2.13450	-0.00056	-63.07415	-82318.18456
15	NJ: 16	-0.00147	-290.89153	-1.01635	-0.00055	-63.07426	-82318.18448
15	NK: 17	-0.00147	-290.89153	-1.01635	-0.00055	-61.12864	-79545.36584
16	NJ: 17	-0.00136	-281.13907	-2.60502	-0.00055	-61.12848	-79545.36574
16	NK: 18	-0.00136	-281.13907	-2.60502	-0.00055	-40.87961	-76826.30662
17	NJ: 18	-0.00139	-272.73650	-3.06396	-0.00054	-40.87947	-76826.30650
17	NK: 19	-0.00139	-272.73650	-3.06396	-0.00054	-41.71473	-74150.47557
18	NJ: 19	-0.00136	-265.77972	-2.13862	-0.00053	-41.71490	-74150.47543
18	NK: 20	-0.00136	-265.77972	-2.13862	-0.00053	-53.02381	-71510.54669
19	NJ: 20	-0.00118	-260.09937	-1.81877	-0.00192	-53.02380	-71510.54653
19	NK: 21	-0.00118	-260.09937	-1.81877	-0.00192	-46.43990	-68902.70138
20	NJ: 21	-0.00098	-255.26931	-2.59748	-0.00054	-46.43965	-68902.70121
20	NK: 22	-0.00098	-255.26931	-2.59748	-0.00054	-37.75954	-66325.66939
21	NJ: 22	-0.00089	-251.22363	-2.71526	-0.00053	-37.75953	-66325.66925
21	NK: 23	-0.00089	-251.22363	-2.71526	-0.00053	-50.78636	-63779.45558
22	NJ: 23	-0.00092	-247.52398	-1.43068	-0.00052	-50.78656	-63779.45543
22	NK: 24	-0.00092	-247.52398	-1.43068	-0.00052	-58.90026	-61264.70234
23	NJ: 24	-0.00103	-244.03480	-1.46446	-0.00051	-58.90024	-61264.70217
23	NK: 25	-0.00103	-244.03480	-1.46446	-0.00051	-40.22265	-58782.76689
24	NJ: 25	-0.00118	-240.65290	-2.87319	-0.00050	-40.22233	-58782.76672
24	NK: 26	-0.00118	-240.65290	-2.87319	-0.00050	-4.63223	-56335.72180
25	NJ: 26	-0.00123	-237.31256	-2.81505	-0.00049	-4.63216	-56335.72163
25	NK: 27	-0.00123	-237.31256	-2.81505	-0.00049	-39.40426	-53926.13381



26	NJ: 27	-0.00128	-233.91533	-1.22734	-0.00048	-39.40457	-53926.13364
26	NK: 28	-0.00128	-233.91533	-1.22734	-0.00048	-56.31250	-51556.86339
27	NJ: 28	-0.00141	-230.36018	-1.19955	-0.00048	-56.31251	-51556.86322
27	NK: 29	-0.00141	-230.36018	-1.19955	-0.00048	-44.66537	-49230.72780
28	NJ: 29	-0.00151	-226.62894	-2.56914	-0.00047	-44.66513	-49230.72763
28	NK: 30	-0.00151	-226.62894	-2.56914	-0.00047	-25.03475	-46950.23145
29	NJ: 30	-0.00145	-222.74536	-2.44826	-0.00045	-25.03473	-46950.23128
29	NK: 31	-0.00145	-222.74536	-2.44826	-0.00045	-35.69787	-44717.56325
30	NJ: 31	-0.00140	-218.73233	-1.45670	-0.00044	-35.69807	-44717.56309
30	NK: 32	-0.00140	-218.73233	-1.45670	-0.00044	-42.23299	-42534.58976
31	NJ: 32	-0.00153	-214.63291	-1.89096	-0.00043	-42.23293	-42534.58960
31	NK: 33	-0.00153	-214.63291	-1.89096	-0.00043	-33.85442	-40402.90133
32	NJ: 33	-0.00149	-210.50584	-2.38729	-0.00042	-33.85429	-40402.90117
32	NK: 34	-0.00149	-210.50584	-2.38729	-0.00042	-36.60575	-38324.03304
33	NJ: 34	-0.00121	-206.40609	-1.61361	-0.00041	-36.60590	-38324.03287
33	NK: 35	-0.00121	-206.40609	-1.61361	-0.00041	-45.01218	-36299.69580
34	NJ: 35	-0.00117	-202.34872	-1.19476	-0.00040	-45.01222	-36299.69563
34	NK: 36	-0.00117	-202.34872	-1.19476	-0.00040	-33.72126	-34331.96858
35	NJ: 36	-0.00099	-198.30751	-2.34410	-0.00039	-33.72099	-34331.96841
35	NK: 37	-0.00099	-198.30751	-2.34410	-0.00039	-10.97967	-32423.35525
36	NJ: 37	-0.00091	-194.27588	-2.37898	-0.00037	-10.97959	-32423.35507
36	NK: 38	-0.00091	-194.27588	-2.37898	-0.00037	-34.19230	-30576.80933
37	NJ: 38	-0.00113	-190.21739	-0.94567	-0.00036	-34.19259	-30576.80915
37	NK: 39	-0.00113	-190.21739	-0.94567	-0.00036	-46.81853	-28795.75518
38	NJ: 39	-0.00125	-186.01841	-1.07144	-0.00035	-46.81851	-28795.75499
38	NK: 40	-0.00125	-186.01841	-1.07144	-0.00035	-33.32002	-27083.39731
39	NJ: 40	-0.00099	-181.63325	-2.32511	-0.00034	-33.31972	-27083.39712
39	NK: 41	-0.00099	-181.63325	-2.32511	-0.00034	-13.63904	-25442.21666
40	NJ: 41	-0.00089	-177.06875	-2.08689	-0.00032	-13.63914	-25442.21646
40	NK: 42	-0.00089	-177.06875	-2.08689	-0.00032	-31.30848	-23874.14658
41	NJ: 42	-0.00106	-172.24365	-1.06479	-0.00031	-31.30870	-23874.14639
41	NK: 43	-0.00106	-172.24365	-1.06479	-0.00031	-37.45155	-22380.17022
42	NJ: 43	-0.00120	-167.06844	-1.67643	-0.00030	-37.45146	-22380.17003
42	NK: 44	-0.00120	-167.06844	-1.67643	-0.00030	-28.96839	-20959.49412
43	NJ: 44	-0.00110	-161.49024	-2.03753	-0.00028	-28.96827	-20959.49394
43	NK: 45	-0.00110	-161.49024	-2.03753	-0.00028	-30.75790	-19608.64891
44	NJ: 45	-0.00102	-155.50016	-1.29755	-0.00027	-30.75805	-19608.64872
44	NK: 46	-0.00102	-155.50016	-1.29755	-0.00027	-34.07829	-18320.67270
45	NJ: 46	-0.00105	-149.20227	-1.47469	-0.00025	-34.07825	-18320.67250
45	NK: 47	-0.00105	-149.20227	-1.47469	-0.00025	-21.13544	-17084.69309

46	NJ: 47	-0.00137	-142.81762	-2.18633	-0.00023	-21.13514	-17084.69286
46	NK: 48	-0.00137	-142.81762	-2.18633	-0.00023	-20.94812	-15886.30424
47	NJ: 48	-0.00176	-136.65338	-1.56397	-0.00022	-20.94837	-15886.30397
47	NK: 49	-0.00176	-136.65338	-1.56397	-0.00022	-37.75736	-14708.85818
48	NJ: 49	-0.00191	-131.00217	-0.36121	-0.00020	-37.75750	-14708.85781
48	NK: 50	-0.00191	-131.00217	-0.36121	-0.00020	-33.74012	-13535.37718
49	NJ: 50	-0.00210	-126.03157	-1.84579	-0.00019	-33.73987	-13535.37669
49	NK: 51	-0.00210	-126.03157	-1.84579	-0.00019	-9.26222	-12350.22310
50	NJ: 51	-0.00189	-121.83586	-2.11837	-0.00017	-9.26186	-12350.22245
50	NK: 52	-0.00189	-121.83586	-2.11837	-0.00017	-22.30773	-11140.62123
51	NJ: 52	-0.00126	-118.31537	-1.00957	-0.00015	-22.30809	-11140.62038
51	NK: 53	-0.00126	-118.31537	-1.00957	-0.00015	-34.57188	-9897.97717
52	NJ: 53	-0.00107	-115.15644	-1.14536	-0.00014	-34.57187	-9897.97606
52	NK: 54	-0.00107	-115.15644	-1.14536	-0.00014	-26.03468	-8617.87684
53	NJ: 54	-0.00141	-112.14774	-1.90502	-0.00012	-26.03445	-8617.87540
53	NK: 55	-0.00141	-112.14774	-1.90502	-0.00012	-20.34584	-7300.23664
54	NJ: 55	-0.00196	-109.04748	-1.40798	-0.00010	-20.34600	-7300.23473
54	NK: 56	-0.00196	-109.04748	-1.40798	-0.00010	-26.90768	-5952.01556
55	NJ: 56	-0.00237	-105.34576	-1.24248	-0.00009	-26.90772	-5952.01304
55	NK: 57	-0.00237	-105.34576	-1.24248	-0.00009	-21.69748	-4591.50946
56	NJ: 57	-0.00237	-100.07978	-1.86244	-0.00007	-21.69727	-4591.50613
56	NK: 58	-0.00237	-100.07978	-1.86244	-0.00007	-22.93093	-3255.29618
57	NJ: 58	-0.00198	-91.37291	-1.32839	-0.00005	-22.93111	-3255.29185
57	NK: 59	-0.00198	-91.37291	-1.32839	-0.00005	-33.47337	-2007.31575
58	NJ: 59	-0.00142	-76.59205	-0.60380	-0.00004	-33.47340	-2007.31031
58	NK: 60	-0.00142	-76.59205	-0.60380	-0.00004	-26.91857	-946.22781
59	NJ: 60	-0.00079	-52.59658	-1.49623	-0.00002	-26.91812	-946.22130
59	NK: 61	-0.00079	-52.59658	-1.49623	-0.00002	-0.00098	-0.01054

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