

# [1] PP+CM 1: Modal, Dirección X, Factor = 1

a) Code data

Code: FEMA 440 (Equivalent Linear)  
Demand spectrum: ASCE 7-10

Effective damping calculation parameters					
A	B	C	D	E	F
4.900	-1.100	14.000	0.320	19.000	0.640

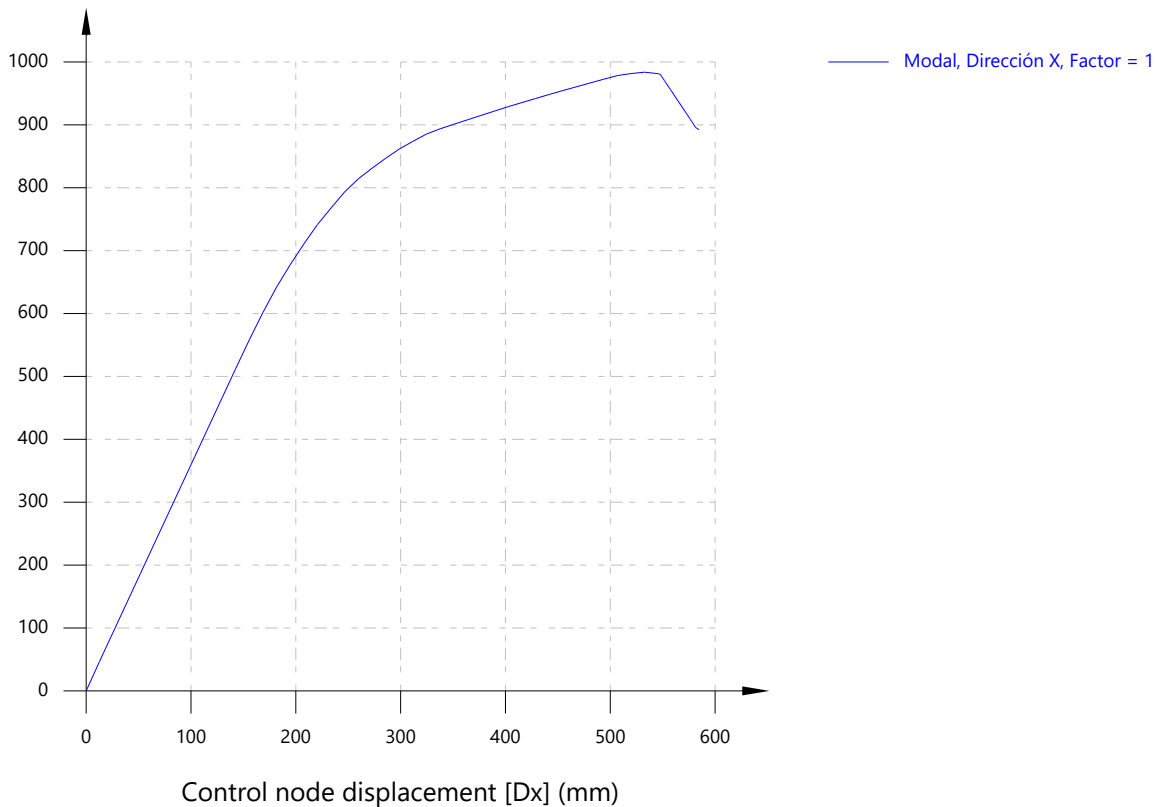
Effective period calculation parameters					
G	H	I	J	K	L
0.200	-0.038	0.280	0.130	0.890	0.050

b) Analysis parameters

Limit displacement (mm)	Monitored displacement	Control node
650	Dx	N74

c) Capacity curve

Total shear [Vx] (kN)



Behavior of step hinges											
Step	Control node displacement (mm)	Total shear (kN)	AB	BC	CD	DE	EF	Elastic behaviour	Immediate occupancy	Life safety	Collapse prevention
1	12.7	46.59750	352	0	0	0	0	352	0	0	0
2	25.7	93.19500	352	0	0	0	0	352	0	0	0
3	38.7	139.80231	352	0	0	0	0	352	0	0	0
4	51.7	186.39981	352	0	0	0	0	352	0	0	0
5	64.7	232.99731	352	0	0	0	0	352	0	0	0

Behavior of step hinges											
Step	Control node displacement (mm)	Total shear (kN)	AB	BC	CD	DE	EF	Elastic behaviour	Immediate occupancy	Life safety	Collapse prevention
6	77.7	279.59481	352	0	0	0	0	352	0	0	0
7	90.7	326.19231	352	0	0	0	0	352	0	0	0
8	103.7	372.78981	352	0	0	0	0	352	0	0	0
9	116.7	419.39712	352	0	0	0	0	352	0	0	0
10	129.7	465.99462	352	0	0	0	0	352	0	0	0
11	142.7	512.59212	352	0	0	0	0	352	0	0	0
12	155.7	558.33615	352	0	0	0	0	352	0	0	0
13	168.7	601.84350	348	4	0	0	0	352	0	0	0
14	181.7	642.23127	346	6	0	0	0	352	0	0	0
15	194.7	677.72385	342	10	0	0	0	352	0	0	0
16	207.7	710.71488	342	10	0	0	0	352	0	0	0
17	220.7	741.54771	338	14	0	0	0	352	0	0	0
18	233.7	767.94642	334	18	0	0	0	352	0	0	0
19	246.7	793.62900	332	20	0	0	0	352	0	0	0
20	259.7	814.24962	326	26	0	0	0	352	0	0	0
21	272.7	830.99529	318	34	0	0	0	352	0	0	0
22	285.7	846.82863	318	34	0	0	0	352	0	0	0
23	298.7	861.50439	312	40	0	0	0	352	0	0	0
24	311.7	873.79632	312	40	0	0	0	352	0	0	0
25	324.7	885.39174	308	44	0	0	0	352	0	0	0
26	337.7	893.72043	306	46	0	0	0	352	0	0	0
27	350.7	900.93078	304	48	0	0	0	350	2	0	0
28	363.7	907.98417	304	48	0	0	0	348	4	0	0
29	376.7	915.00813	304	48	0	0	0	346	6	0	0
30	389.7	922.00266	304	48	0	0	0	346	6	0	0
31	402.7	928.95795	302	50	0	0	0	344	8	0	0
32	415.7	935.43255	302	50	0	0	0	342	10	0	0
33	428.7	941.87772	302	50	0	0	0	334	18	0	0
34	441.7	948.28365	300	52	0	0	0	332	20	0	0
35	454.7	954.52281	300	52	0	0	0	332	20	0	0
36	467.7	960.53634	298	54	0	0	0	330	22	0	0
37	480.7	966.54006	298	54	0	0	0	330	22	0	0
38	493.7	972.55359	298	54	0	0	0	326	26	0	0
39	506.7	978.29244	296	56	0	0	0	326	26	0	0
40	519.7	981.57879	294	56	2	0	0	324	28	0	0
41	532.7	983.72718	294	56	2	0	0	324	28	0	0
42	545.7	981.39240	294	54	4	0	0	318	34	0	0
43	546.9	980.84304	294	54	4	0	0	316	36	0	0
44	548.1	979.37154	294	52	6	0	0	316	36	0	0
45	549.2	976.42854	294	52	6	0	0	316	36	0	0
46	550.4	973.48554	294	52	6	0	0	316	36	0	0
47	551.6	970.54254	294	52	6	0	0	316	36	0	0
48	552.8	967.59954	294	52	6	0	0	316	36	0	0
49	554.0	964.66635	294	52	6	0	0	316	36	0	0
50	555.1	961.72335	294	52	6	0	0	316	36	0	0
51	556.3	958.78035	294	52	6	0	0	316	36	0	0
52	557.5	955.83735	294	52	6	0	0	316	36	0	0
53	558.7	952.89435	294	52	6	0	0	316	36	0	0
54	571.7	920.51154	294	52	6	0	0	316	30	6	0
55	572.9	917.53911	292	54	6	0	0	316	30	6	0

Behavior of step hinges											
Step	Control node displacement (mm)	Total shear (kN)	AB	BC	CD	DE	EF	Elastic behaviour	Immediate occupancy	Life safety	Collapse prevention
56	574.1	914.55687	292	54	6	0	0	316	30	6	0
57	575.2	911.58444	292	54	6	0	0	316	30	6	0
58	576.4	908.61201	292	54	6	0	0	316	30	6	0
59	577.6	905.62977	292	54	6	0	0	316	30	6	0
60	578.8	902.65734	292	54	6	0	0	316	30	6	0
61	580.0	899.58681	292	54	6	0	0	316	30	6	0
62	581.1	896.51628	292	54	6	0	0	316	30	6	0
63	582.3	894.58371	292	54	4	2	0	316	30	4	2
64	583.5	893.61252	292	54	4	2	0	316	30	4	2
65	584.7	892.63152	292	54	4	2	0	316	30	4	2
66	584.7	892.64133	292	54	4	2	0	316	30	4	2

d) Performance point

Total shear (kN)	Control node displacement (mm)	Sa (g)	Sd (mm)	Teff (s)	Ductility ratio	Beff (%)
800.21151	250.8	0.535	190.7	1.199	1.654	6.788
Used abbreviations						
Sa	<i>Spectral acceleration</i>			Teff	<i>Effective period</i>	
Sd	<i>Spectral displacement</i>			Beff	<i>Effective damping</i>	

Spectral acceleration, g

