ANALYSIS STATUS REPORT

Job name ..... Class 2
Location ..... D:\Temp

Length units	m
Section property units	mm
Material strength units	MPa
Mass density units	kg/cm^3
Temperature units	Celsius
Force units	kN
Moment units	kNm
Mass units	kg
Acceleration units	g's
Translation units	mm
Stress units	MPa

Nodes	38	(32765)
Members	71	(32765)
Plates	0	(32765)
Restrained nodes	3	(32765)
Nodes with spring restraints	0	(32765)
Section properties	5	(32765)
Material properties	1	(999)
Constrained nodes	0	(32765)
Member offsets	0	(32765)
Node loads	70	(250000)
Prescribed node displacements	0	(250000)
Member concentrated loads	6	(250000)
Member distributed forces	0	(250000)
Member distributed torsions	0	(250000)
Thermal loads	0	(250000)
Member prestress loads	0	(250000)
Plate pressure loads	0	(250000)
Self weight load cases	0	(10000)
Combination load cases	2	(10000)
Load cases with titles	5	(10000)
Lumped masses	0	(250000)
Spectral load cases	0	(10000)
Static analysis	Y	
Dynamic analysis	N	
Response analysis	N	
Buckling analysis	Y	
Ill-conditioned	N	
Non-linear convergence	Y	
Frontwidth	9	
Total degrees of freedom	110	
Static load cases	3	(10000)
Mass load cases	0	(10000)

STEEL DESIGN STATUS REPORT

Members with design data	39	(32765)
Member design or check	C	HK CP2011
Connections with design data	0	(32765)
Connection design	N	

NODE COORDINATES (m)

Node	X Coord	Y Coord	Z Coord
1	0.000	0.000	0.000
2	0.000	5.500	0.000
3	0.000	6.700	0.000
4	0.938	5.582	0.000
5	1.875	6.864	0.000
6	2.812	5.746	0.000
7	3.750	7.028	0.000
8	4.688	5.910	0.000
9	5.625	7.192	0.000
10	6.562	6.074	0.000
11	7.500	7.356	0.000
12	8.438	6.238	0.000
13	9.375	7.520	0.000
14	10.312	6.402	0.000
15	11.250	7.684	0.000
16	12.188	6.566	0.000
17	13.125	7.848	0.000
18	14.062	6.730	0.000
19	15.000	6.812	0.000
20	15.000	8.012	0.000
21	15.938	6.730	0.000
22	16.875	7.848	0.000
23	17.812	6.566	0.000
24	18.750	7.684	0.000
25	19.688	6.402	0.000
26	20.625	7.520	0.000
27	21.562	6.238	0.000
28	22.500	7.356	0.000
29	23.438	6.074	0.000
30	24.375	7.192	0.000
31	25.312	5.910	0.000
32	26.250	7.028	0.000
33	27.188	5.746	0.000
34	28.125	6.864	0.000
35	29.062	5.582	0.000
36	30.000	0.000	0.000
37	30.000	5.500	0.000
38	30.000	6.700	0.000

MEMBER DATA (deg,kNm/rad,m)
(F=Fixed, R=Released) (*=Cable length)

Memb	Dir Angle	Dir Node	Dir Axis	Memb Type	Node A	Node B	Sect	Node A Mat	Node A Fixity	Node B Fixity	Length
101	0.00			Norm	1	2	1	1	FFFFFF	FFFFFF	5.500
102	0.00			Norm	2	3	1	1	FFFFFF	FFFFFF	1.200
103	180.00			Norm	36	37	1	1	FFFFFF	FFFFFF	5.500
104	180.00			Norm	37	38	1	1	FFFFFF	FFFFFF	1.200
201	0.00			Norm	3	5	2	1	FFFFFF	FFFFFF	1.882
202	0.00			Norm	5	7	2	1	FFFFFF	FFFFFF	1.882
203	0.00			Norm	7	9	2	1	FFFFFF	FFFFFF	1.882
204	0.00			Norm	9	11	2	1	FFFFFF	FFFFFF	1.882
205	0.00			Norm	11	13	2	1	FFFFFF	FFFFFF	1.882
206	0.00			Norm	13	15	2	1	FFFFFF	FFFFFF	1.882
207	0.00			Norm	15	17	2	1	FFFFFF	FFFFFF	1.882
208	0.00			Norm	17	20	2	1	FFFFFF	FFFFFF	1.882
209	0.00			Norm	20	22	2	1	FFFFFF	FFFFFF	1.882
210	0.00			Norm	22	24	2	1	FFFFFF	FFFFFF	1.882
211	0.00			Norm	24	26	2	1	FFFFFF	FFFFFF	1.882
212	0.00			Norm	26	28	2	1	FFFFFF	FFFFFF	1.882
213	0.00			Norm	28	30	2	1	FFFFFF	FFFFFF	1.882
214	0.00			Norm	30	32	2	1	FFFFFF	FFFFFF	1.882
215	0.00			Norm	32	34	2	1	FFFFFF	FFFFFF	1.882
216	0.00			Norm	34	38	2	1	FFFFFF	FFFFFF	1.882
301	0.00			Norm	2	4	3	1	FFFFFF	FFFFFF	0.941
302	0.00			Norm	4	6	3	1	FFFFFF	FFFFFF	1.882
303	0.00			Norm	6	8	3	1	FFFFFF	FFFFFF	1.882
304	0.00			Norm	8	10	3	1	FFFFFF	FFFFFF	1.882
305	0.00			Norm	10	12	3	1	FFFFFF	FFFFFF	1.882
306	0.00			Norm	12	14	3	1	FFFFFF	FFFFFF	1.882
307	0.00			Norm	14	16	3	1	FFFFFF	FFFFFF	1.882
308	0.00			Norm	16	18	3	1	FFFFFF	FFFFFF	1.882
309	0.00			Norm	18	19	3	1	FFFFFF	FFFFFF	0.941
310	0.00			Norm	19	21	3	1	FFFFFF	FFFFFF	0.941
311	0.00			Norm	21	23	3	1	FFFFFF	FFFFFF	1.882
312	0.00			Norm	23	25	3	1	FFFFFF	FFFFFF	1.882
313	0.00			Norm	25	27	3	1	FFFFFF	FFFFFF	1.882
314	0.00			Norm	27	29	3	1	FFFFFF	FFFFFF	1.882
315	0.00			Norm	29	31	3	1	FFFFFF	FFFFFF	1.882
316	0.00			Norm	31	33	3	1	FFFFFF	FFFFFF	1.882
317	0.00			Norm	33	35	3	1	FFFFFF	FFFFFF	1.882
318	0.00			Norm	35	37	3	1	FFFFFF	FFFFFF	0.941
401	0.00			Norm	3	4	4	1	FFFFFR	FFFFFR	1.459
402	0.00			Norm	4	5	4	1	FFFFFR	FFFFFR	1.588
403	0.00			Norm	5	6	4	1	FFFFFR	FFFFFR	1.459
404	0.00			Norm	6	7	4	1	FFFFFR	FFFFFR	1.588
405	0.00			Norm	7	8	4	1	FFFFFR	FFFFFR	1.459
406	0.00			Norm	8	9	4	1	FFFFFR	FFFFFR	1.588
407	0.00			Norm	9	10	4	1	FFFFFR	FFFFFR	1.459
408	0.00			Norm	10	11	4	1	FFFFFR	FFFFFR	1.588
409	0.00			Norm	11	12	4	1	FFFFFR	FFFFFR	1.459
410	0.00			Norm	12	13	4	1	FFFFFR	FFFFFR	1.588
411	0.00			Norm	13	14	4	1	FFFFFR	FFFFFR	1.459
412	0.00			Norm	14	15	4	1	FFFFFR	FFFFFR	1.588
413	0.00			Norm	15	16	4	1	FFFFFR	FFFFFR	1.459
414	0.00			Norm	16	17	4	1	FFFFFR	FFFFFR	1.588
415	0.00			Norm	17	18	4	1	FFFFFR	FFFFFR	1.459
416	0.00			Norm	18	20	4	1	FFFFFR	FFFFFR	1.588
417	0.00			Norm	21	20	4	1	FFFFFR	FFFFFR	1.588
418	0.00			Norm	22	21	4	1	FFFFFR	FFFFFR	1.459
419	0.00			Norm	23	22	4	1	FFFFFR	FFFFFR	1.588
420	0.00			Norm	24	23	4	1	FFFFFR	FFFFFR	1.459
421	0.00			Norm	25	24	4	1	FFFFFR	FFFFFR	1.588
422	0.00			Norm	26	25	4	1	FFFFFR	FFFFFR	1.459
423	0.00			Norm	27	26	4	1	FFFFFR	FFFFFR	1.588
424	0.00			Norm	28	27	4	1	FFFFFR	FFFFFR	1.459
425	0.00			Norm	29	28	4	1	FFFFFR	FFFFFR	1.588
426	0.00			Norm	30	29	4	1	FFFFFR	FFFFFR	1.459
427	0.00			Norm	31	30	4	1	FFFFFR	FFFFFR	1.588
428	0.00			Norm	32	31	4	1	FFFFFR	FFFFFR	1.459
429	0.00			Norm	33	32	4	1	FFFFFR	FFFFFR	1.588
430	0.00			Norm	34	33	4	1	FFFFFR	FFFFFR	1.459
431	0.00			Norm	35	34	4	1	FFFFFR	FFFFFR	1.588
432	0.00			Norm	38	35	4	1	FFFFFR	FFFFFR	1.459
501	0.00			Norm	19	20	5	1	FFFFFR	FFFFFR	1.200

NODE RESTRAINTS (kN/m,kNm/rad)
(F=Fixed, R=Released, S=Spring, *=General)

Node	Rest Code	X Axial Stiffness	Y Axial Stiffness	Z Axial Stiffness	X Rotation Stiffness	Y Rotation Stiffness	Z Rotation Stiffness
1	FFFFFR						
20	RRFFFR*						
36	FFFFFR						

SECTION PROPERTIES (mm,mm^2,mm^4,deg)

Sect	Name	Mark	Shape	Source
1	457x191 UB 89	R1	I shape	British
2	120x80x5.0RHS	C1	Rect tube	British
3	120x60x5.0RHS	S3	Rect tube	British
4	60x40x5.0RHS	S4	Rect tube	British
5	60x40x5.0RHS	S5	Rect tube	British

Sect	Area of Section	Torsion Constant	Y-Axis Mom of In	Z-Axis Mom of In	Y-Axis Shr Area	Z-Axis Shr Area	Princ Angle
1	1.1400E+04	9.0700E+05	2.0890E+07	4.1020E+08	Infinite	Infinite	0.00
2	1.8700E+03	4.0100E+06	1.9300E+06	3.6500E+06	Infinite	Infinite	0.00
3	1.6700E+03	2.4200E+06	9.8800E+05	2.9900E+06	Infinite	Infinite	0.00
4	8.7300E+02	4.3000E+05	1.9500E+05	3.8100E+05	Infinite	Infinite	0.00
5	8.7300E+02	4.3000E+05	1.9500E+05	3.8100E+05	Infinite	Infinite	0.00

Sect	Shape	Trans	Mir	Rotate	D	Bt/Bb	Btw/Bbw	Tt/Tb	Tw/Rr
1	I shape	No	No	0.00	463.40	191.90	0.00	17.70	10.50
						191.90	0.00	17.70	10.20
2	Rect tube	No	No	0.00	120.00	80.00	0.00	0.00	5.00
						0.00	0.00	0.00	0.00
3	Rect tube	No	No	0.00	120.00	60.00	0.00	0.00	5.00
						0.00	0.00	0.00	0.00
4	Rect tube	No	No	0.00	60.00	40.00	0.00	0.00	5.00
						0.00	0.00	0.00	0.00
5	Rect tube	No	No	0.00	60.00	40.00	0.00	0.00	5.00
						0.00	0.00	0.00	0.00

MATERIAL PROPERTIES (MPa,kg/cm^3,strain/degC)

Matl	Material Name	Young's Modulus	Poisson's Ratio	Mass Density	Coeff of Expansion	Concrete Strength
1	STEEL	2.0000E+05	0.25	7.8500E-03	1.170E-05	

NODE LOADS (kN,kNm)

Load Case	Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
1	3	0.000	-3.440	0.000	0.000	0.000	0.000
	5	0.000	-6.870	0.000	0.000	0.000	0.000
	7	0.000	-6.870	0.000	0.000	0.000	0.000
	9	0.000	-6.870	0.000	0.000	0.000	0.000
	11	0.000	-6.870	0.000	0.000	0.000	0.000
	13	0.000	-6.870	0.000	0.000	0.000	0.000
	15	0.000	-6.870	0.000	0.000	0.000	0.000
	17	0.000	-6.870	0.000	0.000	0.000	0.000
	20	0.000	-6.870	0.000	0.000	0.000	0.000
	22	0.000	-6.870	0.000	0.000	0.000	0.000
	24	0.000	-6.870	0.000	0.000	0.000	0.000
	26	0.000	-6.870	0.000	0.000	0.000	0.000
	28	0.000	-6.870	0.000	0.000	0.000	0.000
	30	0.000	-6.870	0.000	0.000	0.000	0.000
	32	0.000	-6.870	0.000	0.000	0.000	0.000
	34	0.000	-6.870	0.000	0.000	0.000	0.000
	38	0.000	-3.440	0.000	0.000	0.000	0.000
2	3	0.000	-2.220	0.000	0.000	0.000	0.000
	5	0.000	-4.440	0.000	0.000	0.000	0.000
	7	0.000	-4.440	0.000	0.000	0.000	0.000
	9	0.000	-4.440	0.000	0.000	0.000	0.000
	11	0.000	-4.440	0.000	0.000	0.000	0.000
	13	0.000	-4.440	0.000	0.000	0.000	0.000
	15	0.000	-4.440	0.000	0.000	0.000	0.000
	17	0.000	-4.440	0.000	0.000	0.000	0.000
	20	0.000	-4.440	0.000	0.000	0.000	0.000
	22	0.000	-4.440	0.000	0.000	0.000	0.000
	24	0.000	-4.440	0.000	0.000	0.000	0.000
	26	0.000	-4.440	0.000	0.000	0.000	0.000
	28	0.000	-4.440	0.000	0.000	0.000	0.000
	30	0.000	-4.440	0.000	0.000	0.000	0.000
	32	0.000	-4.440	0.000	0.000	0.000	0.000
	34	0.000	-4.440	0.000	0.000	0.000	0.000
	38	0.000	-2.220	0.000	0.000	0.000	0.000
3	2	1.920	0.000	0.000	0.000	0.000	0.000
	3	1.340	3.690	0.000	0.000	0.000	0.000
	5	-0.640	7.370	0.000	0.000	0.000	0.000
	7	-0.640	7.370	0.000	0.000	0.000	0.000
	9	-0.640	7.370	0.000	0.000	0.000	0.000
	11	-0.640	7.370	0.000	0.000	0.000	0.000
	13	-0.640	7.370	0.000	0.000	0.000	0.000
	15	-0.640	7.370	0.000	0.000	0.000	0.000
	17	-0.640	7.370	0.000	0.000	0.000	0.000
	20	-0.150	5.700	0.000	0.000	0.000	0.000
	22	0.350	4.020	0.000	0.000	0.000	0.000
	24	0.350	4.020	0.000	0.000	0.000	0.000
	26	0.350	4.020	0.000	0.000	0.000	0.000
	28	0.350	4.020	0.000	0.000	0.000	0.000
	30	0.350	4.020	0.000	0.000	0.000	0.000
	32	0.350	4.020	0.000	0.000	0.000	0.000
	34	0.350	4.020	0.000	0.000	0.000	0.000
	37	1.730	0.000	0.000	0.000	0.000	0.000
	38	1.540	2.010	0.000	0.000	0.000	0.000

MEMBER CONCENTRATED LOADS (m,kN,kNm)

Load Case	Memb	Sub Load	Axes Sys	Load Position	X Force/ Moment	Y Force/ Moment	Z Force/ Moment
3	101	1	G	1.000	1.920	0.000	0.000
					0.000	0.000	0.000
	101	2	G	2.500	2.240	0.000	0.000
					0.000	0.000	0.000
	101	3	G	4.000	2.480	0.000	0.000
					0.000	0.000	0.000
	103	1	G	1.000	1.730	0.000	0.000
					0.000	0.000	0.000
	103	2	G	2.500	2.050	0.000	0.000
					0.000	0.000	0.000
	103	3	G	4.000	2.360	0.000	0.000
					0.000	0.000	0.000

COMBINATION LOAD CASES

Load case 11: 1.4D+1.6L

1.400 * Load case 1: DL
1.600 * Load case 2: LL

Load case 12: 1.2D+1.2L+1.2W

1.200 * Load case 1: DL
1.200 * Load case 2: LL
1.200 * Load case 3: W

LOAD CASE TITLES

Load Case	Title
1	DL
2	LL
3	W
11	1.4D+1.6L
12	1.2D+1.2L+1.2W

NODE DISPLACEMENTS (mm,rad)

Load case 1 (Linear): DL

Node	X-Axis Transl'n	Y-Axis Transl'n	Z-Axis Transl'n	X-Axis Rotation	Y-Axis Rotation	Z-Axis Rotation
1	0.000	0.000	0.000	0.000	0.000	0.003
2	-6.758	-0.133	0.000	0.000	0.000	-0.003
3	-2.560	-0.151	0.000	0.000	0.000	-0.004
4	-6.880	-4.363	0.000	0.000	0.000	-0.005
5	-1.225	-9.221	0.000	0.000	0.000	-0.005
6	-6.584	-14.272	0.000	0.000	0.000	-0.005
7	-0.134	-19.610	0.000	0.000	0.000	-0.006
8	-5.857	-24.869	0.000	0.000	0.000	-0.006
9	0.668	-30.161	0.000	0.000	0.000	-0.005
10	-4.847	-35.157	0.000	0.000	0.000	-0.005
11	1.157	-39.966	0.000	0.000	0.000	-0.005
12	-3.689	-44.310	0.000	0.000	0.000	-0.004
13	1.321	-48.289	0.000	0.000	0.000	-0.004
14	-2.499	-51.682	0.000	0.000	0.000	-0.003
15	1.166	-54.576	0.000	0.000	0.000	-0.003
16	-1.378	-56.807	0.000	0.000	0.000	-0.002
17	0.714	-58.451	0.000	0.000	0.000	-0.001
18	-0.411	-59.406	0.000	0.000	0.000	-0.001
19	0.000	-59.857	0.000	0.000	0.000	0.000
20	0.000	-59.708	0.000	0.000	0.000	0.000
21	0.411	-59.406	0.000	0.000	0.000	0.001
22	-0.714	-58.451	0.000	0.000	0.000	0.001
23	1.378	-56.807	0.000	0.000	0.000	0.002
24	-1.166	-54.576	0.000	0.000	0.000	0.003
25	2.499	-51.682	0.000	0.000	0.000	0.003
26	-1.321	-48.289	0.000	0.000	0.000	0.004
27	3.689	-44.310	0.000	0.000	0.000	0.004
28	-1.157	-39.966	0.000	0.000	0.000	0.005
29	4.847	-35.157	0.000	0.000	0.000	0.005
30	-0.668	-30.161	0.000	0.000	0.000	0.005
31	5.857	-24.869	0.000	0.000	0.000	0.006
32	0.134	-19.610	0.000	0.000	0.000	0.006
33	6.584	-14.272	0.000	0.000	0.000	0.005
34	1.225	-9.221	0.000	0.000	0.000	0.005
35	6.880	-4.363	0.000	0.000	0.000	0.005
36	0.000	0.000	0.000	0.000	0.000	-0.003
37	6.758	-0.133	0.000	0.000	0.000	0.003
38	2.560	-0.151	0.000	0.000	0.000	0.004

Load case 2 (Linear): LL

Node	X-Axis Transl'n	Y-Axis Transl'n	Z-Axis Transl'n	X-Axis Rotation	Y-Axis Rotation	Z-Axis Rotation
1	0.000	0.000	0.000	0.000	0.000	0.002
2	-4.368	-0.086	0.000	0.000	0.000	-0.002
3	-1.654	-0.098	0.000	0.000	0.000	-0.003
4	-4.447	-2.819	0.000	0.000	0.000	-0.003
5	-0.792	-5.959	0.000	0.000	0.000	-0.004
6	-4.255	-9.224	0.000	0.000	0.000	-0.004
7	-0.087	-12.674	0.000	0.000	0.000	-0.004
8	-3.785	-16.073	0.000	0.000	0.000	-0.004
9	0.432	-19.492	0.000	0.000	0.000	-0.004
10	-3.133	-22.722	0.000	0.000	0.000	-0.003
11	0.748	-25.829	0.000	0.000	0.000	-0.003
12	-2.384	-28.637	0.000	0.000	0.000	-0.003
13	0.854	-31.209	0.000	0.000	0.000	-0.003
14	-1.615	-33.402	0.000	0.000	0.000	-0.002
15	0.754	-35.272	0.000	0.000	0.000	-0.002
16	-0.890	-36.714	0.000	0.000	0.000	-0.001
17	0.462	-37.776	0.000	0.000	0.000	-0.001
18	-0.266	-38.393	0.000	0.000	0.000	-0.001
19	0.000	-38.685	0.000	0.000	0.000	0.000
20	0.000	-38.589	0.000	0.000	0.000	0.000
21	0.266	-38.393	0.000	0.000	0.000	0.001
22	-0.462	-37.776	0.000	0.000	0.000	0.001
23	0.890	-36.714	0.000	0.000	0.000	0.001
24	-0.754	-35.272	0.000	0.000	0.000	0.002
25	1.615	-33.402	0.000	0.000	0.000	0.002
26	-0.854	-31.209	0.000	0.000	0.000	0.003
27	2.384	-28.637	0.000	0.000	0.000	0.003
28	-0.748	-25.829	0.000	0.000	0.000	0.003
29	3.133	-22.722	0.000	0.000	0.000	0.003
30	-0.432	-19.492	0.000	0.000	0.000	0.004
31	3.785	-16.073	0.000	0.000	0.000	0.004
32	0.087	-12.674	0.000	0.000	0.000	0.004
33	4.255	-9.224	0.000	0.000	0.000	0.004
34	0.792	-5.959	0.000	0.000	0.000	0.004
35	4.447	-2.819	0.000	0.000	0.000	0.003
36	0.000	0.000	0.000	0.000	0.000	-0.002
37	4.368	-0.086	0.000	0.000	0.000	0.002
38	1.654	-0.098	0.000	0.000	0.000	0.003

Load case 3 (Linear): W

Node	X-Axis Transl'n	Y-Axis Transl'n	Z-Axis Transl'n	X-Axis Rotation	Y-Axis Rotation	Z-Axis Rotation
1	0.000	0.000	0.000	0.000	0.000	-0.004
2	11.251	0.131	0.000	0.000	0.000	0.002
3	7.909	0.149	0.000	0.000	0.000	0.003
4	11.417	3.673	0.000	0.000	0.000	0.005
5	6.689	7.846	0.000	0.000	0.000	0.005
6	11.214	12.185	0.000	0.000	0.000	0.005
7	5.714	16.813	0.000	0.000	0.000	0.005
8	10.593	21.343	0.000	0.000	0.000	0.005
9	5.023	25.912	0.000	0.000	0.000	0.005
10	9.705	30.182	0.000	0.000	0.000	0.004
11	4.634	34.276	0.000	0.000	0.000	0.004
12	8.683	37.917	0.000	0.000	0.000	0.004
13	4.548	41.217	0.000	0.000	0.000	0.003
14	7.646	43.962	0.000	0.000	0.000	0.003
15	4.749	46.246	0.000	0.000	0.000	0.002
16	6.693	47.924	0.000	0.000	0.000	0.002
17	5.206	49.068	0.000	0.000	0.000	0.001
18	5.906	49.608	0.000	0.000	0.000	0.000
19	5.595	49.695	0.000	0.000	0.000	0.000
20	5.869	49.574	0.000	0.000	0.000	0.000
21	5.236	49.054	0.000	0.000	0.000	-0.001
22	6.410	48.013	0.000	0.000	0.000	-0.001
23	4.438	46.447	0.000	0.000	0.000	-0.002
24	6.721	44.423	0.000	0.000	0.000	-0.002
25	3.544	41.918	0.000	0.000	0.000	-0.003
26	6.792	39.032	0.000	0.000	0.000	-0.003
27	2.615	35.734	0.000	0.000	0.000	-0.004
28	6.619	32.161	0.000	0.000	0.000	-0.004
29	1.718	28.274	0.000	0.000	0.000	-0.004

Node	X-Axis Transl'n	Y-Axis Transl'n	Z-Axis Transl'n	X-Axis Rotation	Y-Axis Rotation	Z-Axis Rotation
30	6.208	24.240	0.000	0.000	0.000	-0.004
31	0.933	20.019	0.000	0.000	0.000	-0.005
32	5.573	15.807	0.000	0.000	0.000	-0.005
33	0.345	11.561	0.000	0.000	0.000	-0.004
34	4.738	7.497	0.000	0.000	0.000	-0.004
35	0.052	3.587	0.000	0.000	0.000	-0.004
36	0.000	0.000	0.000	0.000	0.000	0.001
37	0.086	0.089	0.000	0.000	0.000	-0.002
38	3.740	0.102	0.000	0.000	0.000	-0.003

Load case 11 (Linear): 1.4D+1.6L

Node	X-Axis Transl'n	Y-Axis Transl'n	Z-Axis Transl'n	X-Axis Rotation	Y-Axis Rotation	Z-Axis Rotation
1	0.000	0.000	0.000	0.000	0.000	0.008
2	-16.449	-0.323	0.000	0.000	0.000	-0.006
3	-6.230	-0.369	0.000	0.000	0.000	-0.010
4	-16.747	-10.619	0.000	0.000	0.000	-0.013
5	-2.983	-22.445	0.000	0.000	0.000	-0.013
6	-16.026	-34.740	0.000	0.000	0.000	-0.013
7	-0.327	-47.733	0.000	0.000	0.000	-0.014
8	-14.255	-60.533	0.000	0.000	0.000	-0.014
9	1.627	-73.413	0.000	0.000	0.000	-0.013
10	-11.799	-85.575	0.000	0.000	0.000	-0.013
11	2.816	-97.279	0.000	0.000	0.000	-0.012
12	-8.980	-107.852	0.000	0.000	0.000	-0.011
13	3.215	-117.539	0.000	0.000	0.000	-0.010
14	-6.082	-125.798	0.000	0.000	0.000	-0.008
15	2.838	-132.841	0.000	0.000	0.000	-0.007
16	-3.354	-138.273	0.000	0.000	0.000	-0.005
17	1.738	-142.273	0.000	0.000	0.000	-0.003
18	-1.001	-144.597	0.000	0.000	0.000	-0.002
19	0.000	-145.696	0.000	0.000	0.000	0.000
20	0.000	-145.333	0.000	0.000	0.000	0.000
21	1.001	-144.597	0.000	0.000	0.000	0.002
22	-1.738	-142.273	0.000	0.000	0.000	0.003
23	3.354	-138.273	0.000	0.000	0.000	0.005
24	-2.838	-132.841	0.000	0.000	0.000	0.007
25	6.082	-125.798	0.000	0.000	0.000	0.008
26	-3.215	-117.539	0.000	0.000	0.000	0.010
27	8.980	-107.852	0.000	0.000	0.000	0.011
28	-2.816	-97.279	0.000	0.000	0.000	0.012
29	11.799	-85.575	0.000	0.000	0.000	0.013
30	-1.627	-73.413	0.000	0.000	0.000	0.013
31	14.255	-60.533	0.000	0.000	0.000	0.014
32	0.327	-47.733	0.000	0.000	0.000	0.014
33	16.026	-34.740	0.000	0.000	0.000	0.013
34	2.983	-22.445	0.000	0.000	0.000	0.013
35	16.747	-10.619	0.000	0.000	0.000	0.013
36	0.000	0.000	0.000	0.000	0.000	-0.008
37	16.449	-0.323	0.000	0.000	0.000	0.006
38	6.230	-0.369	0.000	0.000	0.000	0.010

Load case 12 (Linear): 1.2D+1.2L+1.2W

Node	X-Axis Transl'n	Y-Axis Transl'n	Z-Axis Transl'n	X-Axis Rotation	Y-Axis Rotation	Z-Axis Rotation
1	0.000	0.000	0.000	0.000	0.000	0.001
2	0.150	-0.105	0.000	0.000	0.000	-0.003
3	4.434	-0.120	0.000	0.000	0.000	-0.004
4	0.108	-4.211	0.000	0.000	0.000	-0.005
5	5.606	-8.801	0.000	0.000	0.000	-0.005
6	0.450	-13.574	0.000	0.000	0.000	-0.005
7	6.592	-18.566	0.000	0.000	0.000	-0.005
8	1.141	-23.518	0.000	0.000	0.000	-0.005
9	7.348	-28.489	0.000	0.000	0.000	-0.005
10	2.069	-33.237	0.000	0.000	0.000	-0.005
11	7.846	-37.823	0.000	0.000	0.000	-0.005
12	3.132	-42.036	0.000	0.000	0.000	-0.004
13	8.067	-45.937	0.000	0.000	0.000	-0.004
14	4.239	-49.346	0.000	0.000	0.000	-0.003
15	8.003	-52.322	0.000	0.000	0.000	-0.003
16	5.309	-54.717	0.000	0.000	0.000	-0.002
17	7.658	-56.591	0.000	0.000	0.000	-0.002
18	6.274	-57.830	0.000	0.000	0.000	-0.001
19	6.714	-58.616	0.000	0.000	0.000	0.000
20	7.043	-58.468	0.000	0.000	0.000	0.000
21	7.095	-58.493	0.000	0.000	0.000	0.001
22	6.281	-57.857	0.000	0.000	0.000	0.001
23	8.047	-56.490	0.000	0.000	0.000	0.002
24	5.762	-54.509	0.000	0.000	0.000	0.002
25	9.190	-51.799	0.000	0.000	0.000	0.003
26	5.541	-48.559	0.000	0.000	0.000	0.004
27	10.426	-44.655	0.000	0.000	0.000	0.004
28	5.658	-40.361	0.000	0.000	0.000	0.005
29	11.639	-35.526	0.000	0.000	0.000	0.005
30	6.129	-30.495	0.000	0.000	0.000	0.006
31	12.689	-25.107	0.000	0.000	0.000	0.006
32	6.952	-19.773	0.000	0.000	0.000	0.006
33	13.421	-14.323	0.000	0.000	0.000	0.006
34	8.106	-9.220	0.000	0.000	0.000	0.005
35	13.654	-4.314	0.000	0.000	0.000	0.005
36	0.000	0.000	0.000	0.000	0.000	-0.005
37	13.454	-0.155	0.000	0.000	0.000	0.002
38	9.545	-0.177	0.000	0.000	0.000	0.004

MEMBER FORCES AND MOMENTS (kN,kNm)

Load case 1 (Linear): DL

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
101	1	54.965	-31.671	0.000	0.000	0.000	0.000
	2	54.965	-31.671	0.000	0.000	0.000	-174.192
102	2	35.901	141.368	0.000	0.000	0.000	-170.674
	3	35.901	141.368	0.000	0.000	0.000	-1.032
103	36	54.965	-31.671	0.000	0.000	0.000	0.000
	37	54.965	-31.671	0.000	0.000	0.000	-174.192
104	37	35.901	141.368	0.000	0.000	0.000	-170.674
	38	35.901	141.368	0.000	0.000	0.000	-1.032
201	3	-107.090	0.480	0.000	0.000	0.000	-1.032
	5	-107.090	0.480	0.000	0.000	0.000	-0.129
202	5	-36.112	0.040	0.000	0.000	0.000	-0.129
	7	-36.112	0.040	0.000	0.000	0.000	-0.053
203	7	23.798	0.120	0.000	0.000	0.000	-0.053
	9	23.798	0.120	0.000	0.000	0.000	0.173
204	9	73.091	0.075	0.000	0.000	0.000	0.173
	11	73.091	0.075	0.000	0.000	0.000	0.314
205	11	111.633	0.063	0.000	0.000	0.000	0.314
	13	111.633	0.063	0.000	0.000	0.000	0.433
206	13	139.483	0.035	0.000	0.000	0.000	0.433
	15	139.483	0.035	0.000	0.000	0.000	0.498
207	15	156.538	0.042	0.000	0.000	0.000	0.498
	17	156.538	0.042	0.000	0.000	0.000	0.577
208	17	163.153	-0.069	0.000	0.000	0.000	0.577
	20	163.153	-0.069	0.000	0.000	0.000	0.448
209	20	163.153	0.069	0.000	0.000	0.000	0.448
	22	163.153	0.069	0.000	0.000	0.000	0.577
210	22	156.538	-0.042	0.000	0.000	0.000	0.577
	24	156.538	-0.042	0.000	0.000	0.000	0.498
211	24	139.483	-0.035	0.000	0.000	0.000	0.498
	26	139.483	-0.035	0.000	0.000	0.000	0.433
212	26	111.633	-0.063	0.000	0.000	0.000	0.433
	28	111.633	-0.063	0.000	0.000	0.000	0.314
213	28	73.091	-0.075	0.000	0.000	0.000	0.314
	30	73.091	-0.075	0.000	0.000	0.000	0.173
214	30	23.798	-0.120	0.000	0.000	0.000	0.173
	32	23.798	-0.120	0.000	0.000	0.000	-0.053
215	32	-36.112	-0.040	0.000	0.000	0.000	-0.053
	34	-36.112	-0.040	0.000	0.000	0.000	-0.129
216	34	-107.090	-0.480	0.000	0.000	0.000	-0.129
	38	-107.090	-0.480	0.000	0.000	0.000	-1.032
301	2	174.042	3.914	0.000	0.000	0.000	-3.518
	4	174.042	3.914	0.000	0.000	0.000	0.165
302	4	100.876	-0.218	0.000	0.000	0.000	0.165
	6	100.876	-0.218	0.000	0.000	0.000	-0.246
303	6	35.247	0.177	0.000	0.000	0.000	-0.246
	8	35.247	0.177	0.000	0.000	0.000	0.087
304	8	-19.316	0.051	0.000	0.000	0.000	0.087
	10	-19.316	0.051	0.000	0.000	0.000	0.184
305	10	-63.247	0.067	0.000	0.000	0.000	0.184
	12	-63.247	0.067	0.000	0.000	0.000	0.309
306	12	-96.441	0.033	0.000	0.000	0.000	0.309
	14	-96.441	0.033	0.000	0.000	0.000	0.371
307	14	-118.907	0.058	0.000	0.000	0.000	0.371
	16	-118.907	0.058	0.000	0.000	0.000	0.480
308	16	-130.715	-0.110	0.000	0.000	0.000	0.480
	18	-130.715	-0.110	0.000	0.000	0.000	0.273
309	18	-131.409	0.610	0.000	0.000	0.000	0.273
	19	-131.409	0.610	0.000	0.000	0.000	0.847
310	19	-131.409	-0.610	0.000	0.000	0.000	0.847
	21	-131.409	-0.610	0.000	0.000	0.000	0.273
311	21	-130.715	0.110	0.000	0.000	0.000	0.273
	23	-130.715	0.110	0.000	0.000	0.000	0.480
312	23	-118.907	-0.058	0.000	0.000	0.000	0.480
	25	-118.907	-0.058	0.000	0.000	0.000	0.371
313	25	-96.441	-0.033	0.000	0.000	0.000	0.371
	27	-96.441	-0.033	0.000	0.000	0.000	0.309
314	27	-63.247	-0.067	0.000	0.000	0.000	0.309
	29	-63.247	-0.067	0.000	0.000	0.000	0.184
315	29	-19.316	-0.051	0.000	0.000	0.000	0.184
	31	-19.316	-0.051	0.000	0.000	0.000	0.087
316	31	35.247	-0.177	0.000	0.000	0.000	0.087
	33	35.247	-0.177	0.000	0.000	0.000	-0.246
317	33	100.876	0.218	0.000	0.000	0.000	-0.246
	35	100.876	0.218	0.000	0.000	0.000	0.165
318	35	174.042	-3.914	0.000	0.000	0.000	0.165
	37	174.042	-3.914	0.000	0.000	0.000	-3.518
401	3	-53.917	0.000	0.000	0.000	0.000	0.000
	4	-53.917	0.000	0.000	0.000	0.000	0.000
402	4	64.180	0.000	0.000	0.000	0.000	0.000
	5	64.180	0.000	0.000	0.000	0.000	0.000
403	5	-51.144	0.000	0.000	0.000	0.000	0.000
	6	-51.144	0.000	0.000	0.000	0.000	0.000
404	6	55.146	0.000	0.000	0.000	0.000	0.000
	7	55.146	0.000	0.000	0.000	0.000	0.000
405	7	-42.212	0.000	0.000	0.000	0.000	0.000
	8	-42.212	0.000	0.000	0.000	0.000	0.000
406	8	46.115	0.000	0.000	0.000	0.000	0.000
	9	46.115	0.000	0.000	0.000	0.000	0.000
407	9	-34.066	0.000	0.000	0.000	0.000	0.000
	10	-34.066	0.000	0.000	0.000	0.000	0.000

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
408	10	37.062	0.000	0.000	0.000	0.000	0.000
	11	37.062	0.000	0.000	0.000	0.000	0.000
409	11	-25.709	0.000	0.000	0.000	0.000	0.000
	12	-25.709	0.000	0.000	0.000	0.000	0.000
410	12	28.030	0.000	0.000	0.000	0.000	0.000
	13	28.030	0.000	0.000	0.000	0.000	0.000
411	13	-17.432	0.000	0.000	0.000	0.000	0.000
	14	-17.432	0.000	0.000	0.000	0.000	0.000
412	14	18.942	0.000	0.000	0.000	0.000	0.000
	15	18.942	0.000	0.000	0.000	0.000	0.000
413	15	-9.040	0.000	0.000	0.000	0.000	0.000
	16	-9.040	0.000	0.000	0.000	0.000	0.000
414	16	10.063	0.000	0.000	0.000	0.000	0.000
	17	10.063	0.000	0.000	0.000	0.000	0.000
415	17	-1.026	0.000	0.000	0.000	0.000	0.000
	18	-1.026	0.000	0.000	0.000	0.000	0.000
416	18	0.161	0.000	0.000	0.000	0.000	0.000
	20	0.161	0.000	0.000	0.000	0.000	0.000
417	21	0.161	0.000	0.000	0.000	0.000	0.000
	20	0.161	0.000	0.000	0.000	0.000	0.000
418	22	-1.026	0.000	0.000	0.000	0.000	0.000
	21	-1.026	0.000	0.000	0.000	0.000	0.000
419	23	10.063	0.000	0.000	0.000	0.000	0.000
	22	10.063	0.000	0.000	0.000	0.000	0.000
420	24	-9.040	0.000	0.000	0.000	0.000	0.000
	23	-9.040	0.000	0.000	0.000	0.000	0.000
421	25	18.942	0.000	0.000	0.000	0.000	0.000
	24	18.942	0.000	0.000	0.000	0.000	0.000
422	26	-17.432	0.000	0.000	0.000	0.000	0.000
	25	-17.432	0.000	0.000	0.000	0.000	0.000
423	27	28.030	0.000	0.000	0.000	0.000	0.000
	26	28.030	0.000	0.000	0.000	0.000	0.000
424	28	-25.709	0.000	0.000	0.000	0.000	0.000
	27	-25.709	0.000	0.000	0.000	0.000	0.000
425	29	37.062	0.000	0.000	0.000	0.000	0.000
	28	37.062	0.000	0.000	0.000	0.000	0.000
426	30	-34.066	0.000	0.000	0.000	0.000	0.000
	29	-34.066	0.000	0.000	0.000	0.000	0.000
427	31	46.115	0.000	0.000	0.000	0.000	0.000
	30	46.115	0.000	0.000	0.000	0.000	0.000
428	32	-42.212	0.000	0.000	0.000	0.000	0.000
	31	-42.212	0.000	0.000	0.000	0.000	0.000
429	33	55.146	0.000	0.000	0.000	0.000	0.000
	32	55.146	0.000	0.000	0.000	0.000	0.000
430	34	-51.144	0.000	0.000	0.000	0.000	0.000
	33	-51.144	0.000	0.000	0.000	0.000	0.000
431	35	64.180	0.000	0.000	0.000	0.000	0.000
	34	64.180	0.000	0.000	0.000	0.000	0.000
432	38	-53.917	0.000	0.000	0.000	0.000	0.000
	35	-53.917	0.000	0.000	0.000	0.000	0.000
501	19	-21.685	0.000	0.000	0.000	0.000	0.000
	20	-21.685	0.000	0.000	0.000	0.000	0.000

Load case 2 (Linear): LL

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
101	1	35.520	-20.469	0.000	0.000	0.000	0.000
	2	35.520	-20.469	0.000	0.000	0.000	-112.578
102	2	23.199	91.365	0.000	0.000	0.000	-110.305
	3	23.199	91.365	0.000	0.000	0.000	-0.667
103	36	35.520	-20.469	0.000	0.000	0.000	0.000
	37	35.520	-20.469	0.000	0.000	0.000	-112.578
104	37	23.199	91.365	0.000	0.000	0.000	-110.305
	38	23.199	91.365	0.000	0.000	0.000	-0.667
201	3	-69.211	0.310	0.000	0.000	0.000	-0.667
	5	-69.211	0.310	0.000	0.000	0.000	-0.083
202	5	-23.339	0.026	0.000	0.000	0.000	-0.083
	7	-23.339	0.026	0.000	0.000	0.000	-0.034
203	7	15.380	0.077	0.000	0.000	0.000	-0.034
	9	15.380	0.077	0.000	0.000	0.000	0.112
204	9	47.238	0.048	0.000	0.000	0.000	0.112
	11	47.238	0.048	0.000	0.000	0.000	0.203
205	11	72.147	0.041	0.000	0.000	0.000	0.203
	13	72.147	0.041	0.000	0.000	0.000	0.280
206	13	90.146	0.022	0.000	0.000	0.000	0.280
	15	90.146	0.022	0.000	0.000	0.000	0.322
207	15	101.169	0.027	0.000	0.000	0.000	0.322
	17	101.169	0.027	0.000	0.000	0.000	0.373
208	17	105.444	-0.044	0.000	0.000	0.000	0.373
	20	105.444	-0.044	0.000	0.000	0.000	0.289
209	20	105.444	0.044	0.000	0.000	0.000	0.289
	22	105.444	0.044	0.000	0.000	0.000	0.373
210	22	101.169	-0.027	0.000	0.000	0.000	0.373
	24	101.169	-0.027	0.000	0.000	0.000	0.322
211	24	90.146	-0.022	0.000	0.000	0.000	0.322
	26	90.146	-0.022	0.000	0.000	0.000	0.280
212	26	72.147	-0.041	0.000	0.000	0.000	0.280
	28	72.147	-0.041	0.000	0.000	0.000	0.203
213	28	47.238	-0.048	0.000	0.000	0.000	0.203
	30	47.238	-0.048	0.000	0.000	0.000	0.112
214	30	15.380	-0.077	0.000	0.000	0.000	0.112
	32	15.380	-0.077	0.000	0.000	0.000	-0.034
215	32	-23.339	-0.026	0.000	0.000	0.000	-0.034
	34	-23.339	-0.026	0.000	0.000	0.000	-0.083
216	34	-69.211	-0.310	0.000	0.000	0.000	-0.083
	38	-69.211	-0.310	0.000	0.000	0.000	-0.667
301	2	112.482	2.529	0.000	0.000	0.000	-2.274
	4	112.482	2.529	0.000	0.000	0.000	0.106
302	4	65.195	-0.141	0.000	0.000	0.000	0.106
	6	65.195	-0.141	0.000	0.000	0.000	-0.159
303	6	22.780	0.114	0.000	0.000	0.000	-0.159
	8	22.780	0.114	0.000	0.000	0.000	0.056
304	8	-12.483	0.033	0.000	0.000	0.000	0.056
	10	-12.483	0.033	0.000	0.000	0.000	0.119
305	10	-40.876	0.043	0.000	0.000	0.000	0.119
	12	-40.876	0.043	0.000	0.000	0.000	0.200
306	12	-62.329	0.021	0.000	0.000	0.000	0.200
	14	-62.329	0.021	0.000	0.000	0.000	0.240
307	14	-76.848	0.037	0.000	0.000	0.000	0.240
	16	-76.848	0.037	0.000	0.000	0.000	0.310
308	16	-84.479	-0.071	0.000	0.000	0.000	0.310
	18	-84.479	-0.071	0.000	0.000	0.000	0.177
309	18	-84.928	0.394	0.000	0.000	0.000	0.177
	19	-84.928	0.394	0.000	0.000	0.000	0.547
310	19	-84.928	-0.394	0.000	0.000	0.000	0.547
	21	-84.928	-0.394	0.000	0.000	0.000	0.177
311	21	-84.479	0.071	0.000	0.000	0.000	0.177
	23	-84.479	0.071	0.000	0.000	0.000	0.310
312	23	-76.848	-0.037	0.000	0.000	0.000	0.310
	25	-76.848	-0.037	0.000	0.000	0.000	0.240
313	25	-62.329	-0.021	0.000	0.000	0.000	0.240
	27	-62.329	-0.021	0.000	0.000	0.000	0.200
314	27	-40.876	-0.043	0.000	0.000	0.000	0.200
	29	-40.876	-0.043	0.000	0.000	0.000	0.119
315	29	-12.483	-0.033	0.000	0.000	0.000	0.119
	31	-12.483	-0.033	0.000	0.000	0.000	0.056
316	31	22.780	-0.114	0.000	0.000	0.000	0.056
	33	22.780	-0.114	0.000	0.000	0.000	-0.159
317	33	65.195	0.141	0.000	0.000	0.000	-0.159
	35	65.195	0.141	0.000	0.000	0.000	0.106
318	35	112.482	-2.529	0.000	0.000	0.000	0.106
	37	112.482	-2.529	0.000	0.000	0.000	-2.274
401	3	-34.846	0.000	0.000	0.000	0.000	0.000
	4	-34.846	0.000	0.000	0.000	0.000	0.000
402	4	41.479	0.000	0.000	0.000	0.000	0.000
	5	41.479	0.000	0.000	0.000	0.000	0.000
403	5	-33.054	0.000	0.000	0.000	0.000	0.000
	6	-33.054	0.000	0.000	0.000	0.000	0.000
404	6	35.641	0.000	0.000	0.000	0.000	0.000
	7	35.641	0.000	0.000	0.000	0.000	0.000
405	7	-27.281	0.000	0.000	0.000	0.000	0.000
	8	-27.281	0.000	0.000	0.000	0.000	0.000
406	8	29.804	0.000	0.000	0.000	0.000	0.000
	9	29.804	0.000	0.000	0.000	0.000	0.000
407	9	-22.017	0.000	0.000	0.000	0.000	0.000
	10	-22.017	0.000	0.000	0.000	0.000	0.000
408	10	23.953	0.000	0.000	0.000	0.000	0.000
	11	23.953	0.000	0.000	0.000	0.000	0.000
409	11	-16.615	0.000	0.000	0.000	0.000	0.000
	12	-16.615	0.000	0.000	0.000	0.000	0.000
410	12	18.115	0.000	0.000	0.000	0.000	0.000
	13	18.115	0.000	0.000	0.000	0.000	0.000
411	13	-11.266	0.000	0.000	0.000	0.000	0.000
	14	-11.266	0.000	0.000	0.000	0.000	0.000
412	14	12.242	0.000	0.000	0.000	0.000	0.000
	15	12.242	0.000	0.000	0.000	0.000	0.000
413	15	-5.842	0.000	0.000	0.000	0.000	0.000
	16	-5.842	0.000	0.000	0.000	0.000	0.000
414	16	6.503	0.000	0.000	0.000	0.000	0.000
	17	6.503	0.000	0.000	0.000	0.000	0.000
415	17	-0.663	0.000	0.000	0.000	0.000	0.000
	18	-0.663	0.000	0.000	0.000	0.000	0.000

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
416	18	0.104	0.000	0.000	0.000	0.000	0.000
	20	0.104	0.000	0.000	0.000	0.000	0.000
417	21	0.104	0.000	0.000	0.000	0.000	0.000
	20	0.104	0.000	0.000	0.000	0.000	0.000
418	22	-0.663	0.000	0.000	0.000	0.000	0.000
	21	-0.663	0.000	0.000	0.000	0.000	0.000
419	23	6.503	0.000	0.000	0.000	0.000	0.000
	22	6.503	0.000	0.000	0.000	0.000	0.000
420	24	-5.842	0.000	0.000	0.000	0.000	0.000
	23	-5.842	0.000	0.000	0.000	0.000	0.000
421	25	12.242	0.000	0.000	0.000	0.000	0.000
	24	12.242	0.000	0.000	0.000	0.000	0.000
422	26	-11.266	0.000	0.000	0.000	0.000	0.000
	25	-11.266	0.000	0.000	0.000	0.000	0.000
423	27	18.115	0.000	0.000	0.000	0.000	0.000
	26	18.115	0.000	0.000	0.000	0.000	0.000
424	28	-16.615	0.000	0.000	0.000	0.000	0.000
	27	-16.615	0.000	0.000	0.000	0.000	0.000
425	29	23.953	0.000	0.000	0.000	0.000	0.000
	28	23.953	0.000	0.000	0.000	0.000	0.000
426	30	-22.017	0.000	0.000	0.000	0.000	0.000
	29	-22.017	0.000	0.000	0.000	0.000	0.000
427	31	29.804	0.000	0.000	0.000	0.000	0.000
	30	29.804	0.000	0.000	0.000	0.000	0.000
428	32	-27.281	0.000	0.000	0.000	0.000	0.000
	31	-27.281	0.000	0.000	0.000	0.000	0.000
429	33	35.641	0.000	0.000	0.000	0.000	0.000
	32	35.641	0.000	0.000	0.000	0.000	0.000
430	34	-33.054	0.000	0.000	0.000	0.000	0.000
	33	-33.054	0.000	0.000	0.000	0.000	0.000
431	35	41.479	0.000	0.000	0.000	0.000	0.000
	34	41.479	0.000	0.000	0.000	0.000	0.000
432	38	-34.846	0.000	0.000	0.000	0.000	0.000
	35	-34.846	0.000	0.000	0.000	0.000	0.000
501	19	-14.015	0.000	0.000	0.000	0.000	0.000
	20	-14.015	0.000	0.000	0.000	0.000	0.000

Load case 3 (Linear): W

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
101	1	-54.167	35.008	0.000	0.000	0.000	0.000
	2	-54.167	28.368	0.000	0.000	0.000	173.466
102	2	-35.656	-140.809	0.000	0.000	0.000	169.989
	3	-35.656	-140.809	0.000	0.000	0.000	1.019
103	36	-36.963	17.878	0.000	0.000	0.000	0.000
	37	-36.963	24.018	0.000	0.000	0.000	115.806
104	37	-23.856	-93.960	0.000	0.000	0.000	113.444
	38	-23.856	-93.960	0.000	0.000	0.000	0.693
201	3	108.207	-0.479	0.000	0.000	0.000	1.019
	5	108.207	-0.479	0.000	0.000	0.000	0.118
202	5	37.775	-0.038	0.000	0.000	0.000	0.118
	7	37.775	-0.038	0.000	0.000	0.000	0.047
203	7	-20.737	-0.116	0.000	0.000	0.000	0.047
	9	-20.737	-0.116	0.000	0.000	0.000	-0.171
204	9	-67.762	-0.069	0.000	0.000	0.000	-0.171
	11	-67.762	-0.069	0.000	0.000	0.000	-0.302
205	11	-103.169	-0.056	0.000	0.000	0.000	-0.302
	13	-103.169	-0.056	0.000	0.000	0.000	-0.407
206	13	-127.012	-0.026	0.000	0.000	0.000	-0.407
	15	-127.012	-0.026	0.000	0.000	0.000	-0.456
207	15	-139.209	-0.030	0.000	0.000	0.000	-0.456
	17	-139.209	-0.030	0.000	0.000	0.000	-0.514
208	17	-140.041	0.080	0.000	0.000	0.000	-0.514
	20	-140.041	0.080	0.000	0.000	0.000	-0.364
209	20	-134.053	-0.044	0.000	0.000	0.000	-0.364
	22	-134.053	-0.044	0.000	0.000	0.000	-0.447
210	22	-123.795	0.040	0.000	0.000	0.000	-0.447
	24	-123.795	0.040	0.000	0.000	0.000	-0.371
211	24	-107.440	0.030	0.000	0.000	0.000	-0.371
	26	-107.440	0.030	0.000	0.000	0.000	-0.314
212	26	-84.705	0.049	0.000	0.000	0.000	-0.314
	28	-84.705	0.049	0.000	0.000	0.000	-0.222
213	28	-55.671	0.055	0.000	0.000	0.000	-0.222
	30	-55.671	0.055	0.000	0.000	0.000	-0.118
214	30	-20.293	0.083	0.000	0.000	0.000	-0.118
	32	-20.293	0.083	0.000	0.000	0.000	0.038
215	32	21.332	0.030	0.000	0.000	0.000	0.038
	34	21.332	0.030	0.000	0.000	0.000	0.094
216	34	69.524	0.318	0.000	0.000	0.000	0.094
	38	69.524	0.318	0.000	0.000	0.000	0.693
301	2	-168.234	-3.867	0.000	0.000	0.000	3.477
	4	-168.234	-3.867	0.000	0.000	0.000	-0.162
302	4	-95.782	0.211	0.000	0.000	0.000	-0.162
	6	-95.782	0.211	0.000	0.000	0.000	0.235
303	6	-31.766	-0.172	0.000	0.000	0.000	0.235
	8	-31.766	-0.172	0.000	0.000	0.000	-0.089
304	8	20.320	-0.048	0.000	0.000	0.000	-0.089
	10	20.320	-0.048	0.000	0.000	0.000	-0.180
305	10	60.908	-0.061	0.000	0.000	0.000	-0.180
	12	60.908	-0.061	0.000	0.000	0.000	-0.294
306	12	89.889	-0.028	0.000	0.000	0.000	-0.294
	14	89.889	-0.028	0.000	0.000	0.000	-0.347
307	14	107.280	-0.043	0.000	0.000	0.000	-0.347
	16	107.280	-0.043	0.000	0.000	0.000	-0.427
308	16	113.124	0.091	0.000	0.000	0.000	-0.427
	18	113.124	0.091	0.000	0.000	0.000	-0.257
309	18	107.116	-0.446	0.000	0.000	0.000	-0.257
	19	107.116	-0.446	0.000	0.000	0.000	-0.677
310	19	107.112	0.492	0.000	0.000	0.000	-0.677
	21	107.112	0.492	0.000	0.000	0.000	-0.214
311	21	100.810	-0.081	0.000	0.000	0.000	-0.214
	23	100.810	-0.081	0.000	0.000	0.000	-0.365
312	23	87.878	0.050	0.000	0.000	0.000	-0.365
	25	87.878	0.050	0.000	0.000	0.000	-0.272
313	25	68.674	0.027	0.000	0.000	0.000	-0.272
	27	68.674	0.027	0.000	0.000	0.000	-0.221
314	27	43.143	0.049	0.000	0.000	0.000	-0.221
	29	43.143	0.049	0.000	0.000	0.000	-0.128
315	29	11.279	0.037	0.000	0.000	0.000	-0.128
	31	11.279	0.037	0.000	0.000	0.000	-0.058
316	31	-26.845	0.122	0.000	0.000	0.000	-0.058
	33	-26.845	0.122	0.000	0.000	0.000	0.171
317	33	-71.523	-0.150	0.000	0.000	0.000	0.171
	35	-71.523	-0.150	0.000	0.000	0.000	-0.111
318	35	-120.395	2.627	0.000	0.000	0.000	-0.111
	37	-120.395	2.627	0.000	0.000	0.000	2.362
401	3	53.400	0.000	0.000	0.000	0.000	0.000
	4	53.400	0.000	0.000	0.000	0.000	0.000
402	4	-63.545	0.000	0.000	0.000	0.000	0.000
	5	-63.545	0.000	0.000	0.000	0.000	0.000
403	5	49.885	0.000	0.000	0.000	0.000	0.000
	6	49.885	0.000	0.000	0.000	0.000	0.000
404	6	-53.792	0.000	0.000	0.000	0.000	0.000
	7	-53.792	0.000	0.000	0.000	0.000	0.000
405	7	40.294	0.000	0.000	0.000	0.000	0.000
	8	40.294	0.000	0.000	0.000	0.000	0.000
406	8	-44.025	0.000	0.000	0.000	0.000	0.000
	9	-44.025	0.000	0.000	0.000	0.000	0.000
407	9	31.472	0.000	0.000	0.000	0.000	0.000
	10	31.472	0.000	0.000	0.000	0.000	0.000
408	10	-34.242	0.000	0.000	0.000	0.000	0.000
	11	-34.242	0.000	0.000	0.000	0.000	0.000
409	11	22.444	0.000	0.000	0.000	0.000	0.000
	12	22.444	0.000	0.000	0.000	0.000	0.000
410	12	-24.474	0.000	0.000	0.000	0.000	0.000
	13	-24.474	0.000	0.000	0.000	0.000	0.000
411	13	13.491	0.000	0.000	0.000	0.000	0.000
	14	13.491	0.000	0.000	0.000	0.000	0.000
412	14	-14.667	0.000	0.000	0.000	0.000	0.000
	15	-14.667	0.000	0.000	0.000	0.000	0.000
413	15	4.440	0.000	0.000	0.000	0.000	0.000
	16	4.440	0.000	0.000	0.000	0.000	0.000
414	16	-5.009	0.000	0.000	0.000	0.000	0.000
	17	-5.009	0.000	0.000	0.000	0.000	0.000
415	17	-4.293	0.000	0.000	0.000	0.000	0.000
	18	-4.293	0.000	0.000	0.000	0.000	0.000
416	18	5.386	0.000	0.000	0.000	0.000	0.000
	20	5.386	0.000	0.000	0.000	0.000	0.000
417	21	-4.980	0.000	0.000	0.000	0.000	0.000
	20	-4.980	0.000	0.000	0.000	0.000	0.000
418	22	5.274	0.000	0.000	0.000	0.000	0.000
	21	5.274	0.000	0.000	0.000	0.000	0.000
419	23	-10.990	0.000	0.000	0.000	0.000	0.000
	22	-10.990	0.000	0.000	0.000	0.000	0.000
420	24	9.937	0.000	0.000	0.000	0.000	0.000
	23	9.937	0.000	0.000	0.000	0.000	0.000
421	25	-16.191	0.000	0.000	0.000	0.000	0.000
	24	-16.191	0.000	0.000	0.000	0.000	0.000
422	26	14.902	0.000	0.000	0.000	0.000	0.000
	25	14.902	0.000	0.000	0.000	0.000	0.000
423	27	-21.558	0.000	0.000	0.000	0.000	0.000
	26	-21.558	0.000	0.000	0.000	0.000	0.000

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
424	28	19.777	0.000	0.000	0.000	0.000	0.000
	27	19.777	0.000	0.000	0.000	0.000	0.000
425	29	-26.880	0.000	0.000	0.000	0.000	0.000
	28	-26.880	0.000	0.000	0.000	0.000	0.000
426	30	24.709	0.000	0.000	0.000	0.000	0.000
	29	24.709	0.000	0.000	0.000	0.000	0.000
427	31	-32.220	0.000	0.000	0.000	0.000	0.000
	30	-32.220	0.000	0.000	0.000	0.000	0.000
428	32	29.497	0.000	0.000	0.000	0.000	0.000
	31	29.497	0.000	0.000	0.000	0.000	0.000
429	33	-37.540	0.000	0.000	0.000	0.000	0.000
	32	-37.540	0.000	0.000	0.000	0.000	0.000
430	34	34.819	0.000	0.000	0.000	0.000	0.000
	33	34.819	0.000	0.000	0.000	0.000	0.000
431	35	-42.879	0.000	0.000	0.000	0.000	0.000
	34	-42.879	0.000	0.000	0.000	0.000	0.000
432	38	36.002	0.000	0.000	0.000	0.000	0.000
	35	36.002	0.000	0.000	0.000	0.000	0.000
501	19	17.732	0.000	0.000	0.000	0.000	0.000
	20	17.732	0.000	0.000	0.000	0.000	0.000

Load case 11 (Linear): 1.4D+1.6L

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
101	1	133.783	-77.090	0.000	0.000	0.000	0.000
	2	133.783	-77.090	0.000	0.000	0.000	-423.995
102	2	87.380	344.099	0.000	0.000	0.000	-415.431
	3	87.380	344.099	0.000	0.000	0.000	-2.513
103	36	133.783	-77.090	0.000	0.000	0.000	0.000
	37	133.783	-77.090	0.000	0.000	0.000	-423.995
104	37	87.380	344.099	0.000	0.000	0.000	-415.431
	38	87.380	344.099	0.000	0.000	0.000	-2.513
201	3	-260.663	1.169	0.000	0.000	0.000	-2.513
	5	-260.663	1.169	0.000	0.000	0.000	-0.313
202	5	-87.898	0.098	0.000	0.000	0.000	-0.313
	7	-87.898	0.098	0.000	0.000	0.000	-0.128
203	7	57.925	0.291	0.000	0.000	0.000	-0.128
	9	57.925	0.291	0.000	0.000	0.000	0.420
204	9	177.909	0.182	0.000	0.000	0.000	0.420
	11	177.909	0.182	0.000	0.000	0.000	0.763
205	11	271.722	0.154	0.000	0.000	0.000	0.763
	13	271.722	0.154	0.000	0.000	0.000	1.054
206	13	339.510	0.084	0.000	0.000	0.000	1.054
	15	339.510	0.084	0.000	0.000	0.000	1.213
207	15	381.024	0.102	0.000	0.000	0.000	1.213
	17	381.024	0.102	0.000	0.000	0.000	1.404
208	17	397.124	-0.167	0.000	0.000	0.000	1.404
	20	397.124	-0.167	0.000	0.000	0.000	1.089
209	20	397.124	0.167	0.000	0.000	0.000	1.089
	22	397.124	0.167	0.000	0.000	0.000	1.404
210	22	381.024	-0.102	0.000	0.000	0.000	1.404
	24	381.024	-0.102	0.000	0.000	0.000	1.213
211	24	339.510	-0.084	0.000	0.000	0.000	1.213
	26	339.510	-0.084	0.000	0.000	0.000	1.054
212	26	271.722	-0.154	0.000	0.000	0.000	1.054
	28	271.722	-0.154	0.000	0.000	0.000	0.763
213	28	177.909	-0.182	0.000	0.000	0.000	0.763
	30	177.909	-0.182	0.000	0.000	0.000	0.420
214	30	57.925	-0.291	0.000	0.000	0.000	0.420
	32	57.925	-0.291	0.000	0.000	0.000	-0.128
215	32	-87.898	-0.098	0.000	0.000	0.000	-0.128
	34	-87.898	-0.098	0.000	0.000	0.000	-0.313
216	34	-260.663	-1.169	0.000	0.000	0.000	-0.313
	38	-260.663	-1.169	0.000	0.000	0.000	-2.513
301	2	423.630	9.526	0.000	0.000	0.000	-8.564
	4	423.630	9.526	0.000	0.000	0.000	0.401
302	4	245.538	-0.531	0.000	0.000	0.000	0.401
	6	245.538	-0.531	0.000	0.000	0.000	-0.598
303	6	85.793	0.431	0.000	0.000	0.000	-0.598
	8	85.793	0.431	0.000	0.000	0.000	0.212
304	8	-47.015	0.125	0.000	0.000	0.000	0.212
	10	-47.015	0.125	0.000	0.000	0.000	0.448
305	10	-153.948	0.162	0.000	0.000	0.000	0.448
	12	-153.948	0.162	0.000	0.000	0.000	0.753
306	12	-234.744	0.080	0.000	0.000	0.000	0.753
	14	-234.744	0.080	0.000	0.000	0.000	0.903
307	14	-289.426	0.140	0.000	0.000	0.000	0.903
	16	-289.426	0.140	0.000	0.000	0.000	1.168
308	16	-318.167	-0.267	0.000	0.000	0.000	1.168
	18	-318.167	-0.267	0.000	0.000	0.000	0.665
309	18	-319.857	1.484	0.000	0.000	0.000	0.665
	19	-319.857	1.484	0.000	0.000	0.000	2.062
310	19	-319.857	-1.484	0.000	0.000	0.000	2.062
	21	-319.857	-1.484	0.000	0.000	0.000	0.665
311	21	-318.167	0.267	0.000	0.000	0.000	0.665
	23	-318.167	0.267	0.000	0.000	0.000	1.168
312	23	-289.426	-0.140	0.000	0.000	0.000	1.168
	25	-289.426	-0.140	0.000	0.000	0.000	0.903
313	25	-234.744	-0.080	0.000	0.000	0.000	0.903
	27	-234.744	-0.080	0.000	0.000	0.000	0.753
314	27	-153.948	-0.162	0.000	0.000	0.000	0.753
	29	-153.948	-0.162	0.000	0.000	0.000	0.448
315	29	-47.015	-0.125	0.000	0.000	0.000	0.448
	31	-47.015	-0.125	0.000	0.000	0.000	0.212
316	31	85.793	-0.431	0.000	0.000	0.000	0.212
	33	85.793	-0.431	0.000	0.000	0.000	-0.598
317	33	245.538	0.531	0.000	0.000	0.000	-0.598
	35	245.538	0.531	0.000	0.000	0.000	0.401
318	35	423.630	-9.526	0.000	0.000	0.000	0.401
	37	423.630	-9.526	0.000	0.000	0.000	-8.564
401	3	-131.237	0.000	0.000	0.000	0.000	0.000
	4	-131.237	0.000	0.000	0.000	0.000	0.000
402	4	156.217	0.000	0.000	0.000	0.000	0.000
	5	156.217	0.000	0.000	0.000	0.000	0.000
403	5	-124.487	0.000	0.000	0.000	0.000	0.000
	6	-124.487	0.000	0.000	0.000	0.000	0.000
404	6	134.230	0.000	0.000	0.000	0.000	0.000
	7	134.230	0.000	0.000	0.000	0.000	0.000
405	7	-102.746	0.000	0.000	0.000	0.000	0.000
	8	-102.746	0.000	0.000	0.000	0.000	0.000
406	8	112.247	0.000	0.000	0.000	0.000	0.000
	9	112.247	0.000	0.000	0.000	0.000	0.000
407	9	-82.919	0.000	0.000	0.000	0.000	0.000
	10	-82.919	0.000	0.000	0.000	0.000	0.000
408	10	90.211	0.000	0.000	0.000	0.000	0.000
	11	90.211	0.000	0.000	0.000	0.000	0.000
409	11	-62.577	0.000	0.000	0.000	0.000	0.000
	12	-62.577	0.000	0.000	0.000	0.000	0.000
410	12	68.226	0.000	0.000	0.000	0.000	0.000
	13	68.226	0.000	0.000	0.000	0.000	0.000
411	13	-42.431	0.000	0.000	0.000	0.000	0.000
	14	-42.431	0.000	0.000	0.000	0.000	0.000
412	14	46.106	0.000	0.000	0.000	0.000	0.000
	15	46.106	0.000	0.000	0.000	0.000	0.000
413	15	-22.004	0.000	0.000	0.000	0.000	0.000
	16	-22.004	0.000	0.000	0.000	0.000	0.000
414	16	24.493	0.000	0.000	0.000	0.000	0.000
	17	24.493	0.000	0.000	0.000	0.000	0.000
415	17	-2.497	0.000	0.000	0.000	0.000	0.000
	18	-2.497	0.000	0.000	0.000	0.000	0.000
416	18	0.392	0.000	0.000	0.000	0.000	0.000
	20	0.392	0.000	0.000	0.000	0.000	0.000
417	21	0.392	0.000	0.000	0.000	0.000	0.000
	20	0.392	0.000	0.000	0.000	0.000	0.000
418	22	-2.497	0.000	0.000	0.000	0.000	0.000
	21	-2.497	0.000	0.000	0.000	0.000	0.000
419	23	24.493	0.000	0.000	0.000	0.000	0.000
	22	24.493	0.000	0.000	0.000	0.000	0.000
420	24	-22.004	0.000	0.000	0.000	0.000	0.000
	23	-22.004	0.000	0.000	0.000	0.000	0.000
421	25	46.106	0.000	0.000	0.000	0.000	0.000
	24	46.106	0.000	0.000	0.000	0.000	0.000
422	26	-42.431	0.000	0.000	0.000	0.000	0.000
	25	-42.431	0.000	0.000	0.000	0.000	0.000
423	27	68.226	0.000	0.000	0.000	0.000	0.000
	26	68.226	0.000	0.000	0.000	0.000	0.000
424	28	-62.577	0.000	0.000	0.000	0.000	0.000
	27	-62.577	0.000	0.000	0.000	0.000	0.000
425	29	90.211	0.000	0.000	0.000	0.000	0.000
	28	90.211	0.000	0.000	0.000	0.000	0.000
426	30	-82.919	0.000	0.000	0.000	0.000	0.000
	29	-82.919	0.000	0.000	0.000	0.000	0.000
427	31	112.247	0.000	0.000	0.000	0.000	0.000
	30	112.247	0.000	0.000	0.000	0.000	0.000
428	32	-102.746	0.000	0.000	0.000	0.000	0.000
	31	-102.746	0.000	0.000	0.000	0.000	0.000
429	33	134.230	0.000	0.000	0.000	0.000	0.000
	32	134.230	0.000	0.000	0.000	0.000	0.000
430	34	-124.487	0.000	0.000	0.000	0.000	0.000
	33	-124.487	0.000	0.000	0.000	0.000	0.000
431	35	156.217	0.000	0.000	0.000	0.000	0.000
	34	156.217	0.000	0.000	0.000	0.000	0.000

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
432	38	-131.237	0.000	0.000	0.000	0.000	0.000
	35	-131.237	0.000	0.000	0.000	0.000	0.000
501	19	-52.784	0.000	0.000	0.000	0.000	0.000
	20	-52.784	0.000	0.000	0.000	0.000	0.000

Load case 12 (Linear): 1.2D+1.2L+1.2W

Memb	Node	Axial Force	Y-Axis Shear	Z-Axis Shear	X-Axis Torsion	Y-Axis Moment	Z-Axis Moment
101	1	43.582	-20.558	0.000	0.000	0.000	0.000
	2	43.582	-28.526	0.000	0.000	0.000	-135.966
102	2	28.134	110.308	0.000	0.000	0.000	-133.187
	3	28.134	110.308	0.000	0.000	0.000	-0.817
103	36	64.226	-41.114	0.000	0.000	0.000	0.000
	37	64.226	-33.746	0.000	0.000	0.000	-205.158
104	37	42.294	166.528	0.000	0.000	0.000	-201.041
	38	42.294	166.528	0.000	0.000	0.000	-1.208
201	3	-81.712	0.374	0.000	0.000	0.000	-0.817
	5	-81.712	0.374	0.000	0.000	0.000	-0.112
202	5	-26.010	0.034	0.000	0.000	0.000	-0.112
	7	-26.010	0.034	0.000	0.000	0.000	-0.048
203	7	22.129	0.098	0.000	0.000	0.000	-0.048
	9	22.129	0.098	0.000	0.000	0.000	0.136
204	9	63.082	0.065	0.000	0.000	0.000	0.136
	11	63.082	0.065	0.000	0.000	0.000	0.258
205	11	96.734	0.058	0.000	0.000	0.000	0.258
	13	96.734	0.058	0.000	0.000	0.000	0.367
206	13	123.140	0.037	0.000	0.000	0.000	0.367
	15	123.140	0.037	0.000	0.000	0.000	0.437
207	15	142.198	0.046	0.000	0.000	0.000	0.437
	17	142.198	0.046	0.000	0.000	0.000	0.523
208	17	154.267	-0.040	0.000	0.000	0.000	0.523
	20	154.267	-0.040	0.000	0.000	0.000	0.447
209	20	161.453	0.083	0.000	0.000	0.000	0.447
	22	161.453	0.083	0.000	0.000	0.000	0.603
210	22	160.694	-0.034	0.000	0.000	0.000	0.603
	24	160.694	-0.034	0.000	0.000	0.000	0.539
211	24	146.627	-0.032	0.000	0.000	0.000	0.539
	26	146.627	-0.032	0.000	0.000	0.000	0.478
212	26	118.890	-0.066	0.000	0.000	0.000	0.478
	28	118.890	-0.066	0.000	0.000	0.000	0.354
213	28	77.590	-0.082	0.000	0.000	0.000	0.354
	30	77.590	-0.082	0.000	0.000	0.000	0.199
214	30	22.662	-0.137	0.000	0.000	0.000	0.199
	32	22.662	-0.137	0.000	0.000	0.000	-0.058
215	32	-45.742	-0.044	0.000	0.000	0.000	-0.058
	34	-45.742	-0.044	0.000	0.000	0.000	-0.141
216	34	-128.132	-0.567	0.000	0.000	0.000	-0.141
	38	-128.132	-0.567	0.000	0.000	0.000	-1.208
301	2	141.948	3.092	0.000	0.000	0.000	-2.779
	4	141.948	3.092	0.000	0.000	0.000	0.131
302	4	84.346	-0.178	0.000	0.000	0.000	0.131
	6	84.346	-0.178	0.000	0.000	0.000	-0.203
303	6	31.512	0.143	0.000	0.000	0.000	-0.203
	8	31.512	0.143	0.000	0.000	0.000	0.066
304	8	-13.774	0.044	0.000	0.000	0.000	0.066
	10	-13.774	0.044	0.000	0.000	0.000	0.148
305	10	-51.858	0.059	0.000	0.000	0.000	0.148
	12	-51.858	0.059	0.000	0.000	0.000	0.258
306	12	-82.657	0.031	0.000	0.000	0.000	0.258
	14	-82.657	0.031	0.000	0.000	0.000	0.317
307	14	-106.169	0.063	0.000	0.000	0.000	0.317
	16	-106.169	0.063	0.000	0.000	0.000	0.435
308	16	-122.484	-0.108	0.000	0.000	0.000	0.435
	18	-122.484	-0.108	0.000	0.000	0.000	0.232
309	18	-131.064	0.669	0.000	0.000	0.000	0.232
	19	-131.064	0.669	0.000	0.000	0.000	0.861
310	19	-131.069	-0.614	0.000	0.000	0.000	0.861
	21	-131.069	-0.614	0.000	0.000	0.000	0.283
311	21	-137.261	0.120	0.000	0.000	0.000	0.283
	23	-137.261	0.120	0.000	0.000	0.000	0.509
312	23	-129.452	-0.054	0.000	0.000	0.000	0.509
	25	-129.452	-0.054	0.000	0.000	0.000	0.407
313	25	-108.115	-0.033	0.000	0.000	0.000	0.407
	27	-108.115	-0.033	0.000	0.000	0.000	0.346
314	27	-73.177	-0.072	0.000	0.000	0.000	0.346
	29	-73.177	-0.072	0.000	0.000	0.000	0.210
315	29	-24.624	-0.057	0.000	0.000	0.000	0.210
	31	-24.624	-0.057	0.000	0.000	0.000	0.103
316	31	37.417	-0.204	0.000	0.000	0.000	0.103
	33	37.417	-0.204	0.000	0.000	0.000	-0.280
317	33	113.457	0.251	0.000	0.000	0.000	-0.280
	35	113.457	0.251	0.000	0.000	0.000	0.192
318	35	199.355	-4.579	0.000	0.000	0.000	0.192
	37	199.355	-4.579	0.000	0.000	0.000	-4.117
401	3	-42.436	0.000	0.000	0.000	0.000	0.000
	4	-42.436	0.000	0.000	0.000	0.000	0.000
402	4	50.536	0.000	0.000	0.000	0.000	0.000
	5	50.536	0.000	0.000	0.000	0.000	0.000
403	5	-41.174	0.000	0.000	0.000	0.000	0.000
	6	-41.174	0.000	0.000	0.000	0.000	0.000
404	6	44.394	0.000	0.000	0.000	0.000	0.000
	7	44.394	0.000	0.000	0.000	0.000	0.000
405	7	-35.039	0.000	0.000	0.000	0.000	0.000
	8	-35.039	0.000	0.000	0.000	0.000	0.000
406	8	38.272	0.000	0.000	0.000	0.000	0.000
	9	38.272	0.000	0.000	0.000	0.000	0.000
407	9	-29.533	0.000	0.000	0.000	0.000	0.000
	10	-29.533	0.000	0.000	0.000	0.000	0.000
408	10	32.128	0.000	0.000	0.000	0.000	0.000
	11	32.128	0.000	0.000	0.000	0.000	0.000
409	11	-23.856	0.000	0.000	0.000	0.000	0.000
	12	-23.856	0.000	0.000	0.000	0.000	0.000
410	12	26.005	0.000	0.000	0.000	0.000	0.000
	13	26.005	0.000	0.000	0.000	0.000	0.000
411	13	-18.249	0.000	0.000	0.000	0.000	0.000
	14	-18.249	0.000	0.000	0.000	0.000	0.000
412	14	19.821	0.000	0.000	0.000	0.000	0.000
	15	19.821	0.000	0.000	0.000	0.000	0.000
413	15	-12.532	0.000	0.000	0.000	0.000	0.000
	16	-12.532	0.000	0.000	0.000	0.000	0.000
414	16	13.868	0.000	0.000	0.000	0.000	0.000
	17	13.868	0.000	0.000	0.000	0.000	0.000
415	17	-7.178	0.000	0.000	0.000	0.000	0.000
	18	-7.178	0.000	0.000	0.000	0.000	0.000
416	18	6.781	0.000	0.000	0.000	0.000	0.000
	20	6.781	0.000	0.000	0.000	0.000	0.000
417	21	-5.658	0.000	0.000	0.000	0.000	0.000
	20	-5.658	0.000	0.000	0.000	0.000	0.000
418	22	4.302	0.000	0.000	0.000	0.000	0.000
	21	4.302	0.000	0.000	0.000	0.000	0.000
419	23	6.692	0.000	0.000	0.000	0.000	0.000
	22	6.692	0.000	0.000	0.000	0.000	0.000
420	24	-5.935	0.000	0.000	0.000	0.000	0.000
	23	-5.935	0.000	0.000	0.000	0.000	0.000
421	25	17.993	0.000	0.000	0.000	0.000	0.000
	24	17.993	0.000	0.000	0.000	0.000	0.000
422	26	-16.556	0.000	0.000	0.000	0.000	0.000
	25	-16.556	0.000	0.000	0.000	0.000	0.000
423	27	29.505	0.000	0.000	0.000	0.000	0.000
	26	29.505	0.000	0.000	0.000	0.000	0.000
424	28	-27.057	0.000	0.000	0.000	0.000	0.000
	27	-27.057	0.000	0.000	0.000	0.000	0.000
425	29	40.961	0.000	0.000	0.000	0.000	0.000
	28	40.961	0.000	0.000	0.000	0.000	0.000
426	30	-37.649	0.000	0.000	0.000	0.000	0.000
	29	-37.649	0.000	0.000	0.000	0.000	0.000
427	31	52.438	0.000	0.000	0.000	0.000	0.000
	30	52.438	0.000	0.000	0.000	0.000	0.000
428	32	-47.995	0.000	0.000	0.000	0.000	0.000
	31	-47.995	0.000	0.000	0.000	0.000	0.000
429	33	63.896	0.000	0.000	0.000	0.000	0.000
	32	63.896	0.000	0.000	0.000	0.000	0.000
430	34	-59.255	0.000	0.000	0.000	0.000	0.000
	33	-59.255	0.000	0.000	0.000	0.000	0.000
431	35	75.335	0.000	0.000	0.000	0.000	0.000
	34	75.335	0.000	0.000	0.000	0.000	0.000
432	38	-63.313	0.000	0.000	0.000	0.000	0.000
	35	-63.313	0.000	0.000	0.000	0.000	0.000
501	19	-21.563	0.000	0.000	0.000	0.000	0.000
	20	-21.563	0.000	0.000	0.000	0.000	0.000

NODE REACTIONS (kN,kNm)

Load case 1 (Linear): DL

Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
1	31.671	54.965	0.000	0.000	0.000	0.000
36	-31.671	54.965	0.000	0.000	0.000	0.000

Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
Load	0.000	-109.930	0.000	0.000	0.000	0.000
Reac	0.000	109.930	0.000	0.000	0.000	0.000
Equil	8.377E-12	0.000E+00	0.000E+00			
Resid	1.734E-12	3.912E-12	0.000E+00	0.000E+00	0.000E+00	5.036E-13
YCntr	15.000	0.000	0.000			

Load case 2 (Linear): LL

Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
1	20.469	35.520	0.000	0.000	0.000	0.000
36	-20.469	35.520	0.000	0.000	0.000	0.000
Load	0.000	-71.040	0.000	0.000	0.000	0.000
Reac	0.000	71.040	0.000	0.000	0.000	0.000
Equil	5.436E-12	0.000E+00	0.000E+00			
Resid	9.237E-13	3.103E-12	0.000E+00	0.000E+00	0.000E+00	4.818E-13
YCntr	15.000	0.000	0.000			

Load case 3 (Linear): W

Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
1	-35.008	-54.167	0.000	0.000	0.000	0.000
36	17.878	-36.963	0.000	0.000	0.000	0.000
Load	17.130	91.130	0.000	0.000	0.000	-0.032
Reac	-17.130	-91.130	0.000	0.000	0.000	0.000
Equil	0.000E+00	0.000E+00	0.000E+00			
Resid	1.151E-12	3.002E-12	0.000E+00	0.000E+00	0.000E+00	3.491E-13
XCntr	-31.311	0.000	0.000			
YCntr	12.168	0.000	0.000			

Load case 11 (Linear): 1.4D+1.6L

Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
1	77.090	133.783	0.000	0.000	0.000	0.000
36	-77.090	133.783	0.000	0.000	0.000	0.000
Load	0.000	-267.566	0.000	0.000	0.000	0.000
Reac	0.000	267.566	0.000	0.000	0.000	0.000
Equil	2.034E-11	0.000E+00	0.000E+00			
Resid	5.059E-12	1.194E-11	0.000E+00	0.000E+00	0.000E+00	1.307E-12
YCntr	15.000	0.000	0.000			

Load case 12 (Linear): 1.2D+1.2L+1.2W

Node	X-Axis Force	Y-Axis Force	Z-Axis Force	X-Axis Moment	Y-Axis Moment	Z-Axis Moment
1	20.558	43.582	0.000	0.000	0.000	0.000
36	-41.114	64.226	0.000	0.000	0.000	0.000
Load	20.556	-107.808	0.000	0.000	0.000	-0.039
Reac	-20.556	107.808	0.000	0.000	0.000	0.000
Equil	0.000E+00	0.000E+00	0.000E+00			
Resid	3.617E-12	2.970E-12	0.000E+00	0.000E+00	0.000E+00	3.801E-13
XCntr	60.003	0.000	0.000			
YCntr	17.872	0.000	0.000			

BUCKLING LOAD FACTORS

Load Case	Mode	Load Factor	Tolerance	Iterations	Node at Max Trans	Node at Max Rotn
11	1	3.309	0.007812	11	30 (Y)	32 (Z)
12	1	9.277	0.007812	15	28 (Y)	31 (Z)

STEEL MEMBER DESIGN DATA (m)

Restraint codes are: F => Fixed restraint
P => Partial restraint
R => Fixed and rotational restraint
S => Partial and rotational restraint
L => Lateral restraint
U => Unrestrained
C => Continuous lateral restraint
I => Ignore segment

Group: 101 Left Column
Member list: 101,102
Compr'n eff lengths: Major axis => Calculate, Minor axis => 1.500
(Unbraced) (Braced)
Bending eff lengths: +ve bending => Calculate, -ve bending => Calculate
Top flange restr pos'ns: 1,2.5,4,5.5
Bot flange restr pos'ns: 5.5
Top flange restr types: FLLLPF
Bot flange restr types: FPF

Group: 103 Right Column
Member list: 103,104
Compr'n eff lengths: Major axis => Calculate, Minor axis => 1.500
(Unbraced) (Braced)
Bending eff lengths: +ve bending => Calculate, -ve bending => Calculate
Top flange restr pos'ns: 1,2.5,4,5.5
Bot flange restr pos'ns: 5.5
Top flange restr types: FLLLPF
Bot flange restr types: FPF

Group: 201 Top Left Boom
Member list: 201,202,203,204,205,206,207,208
Compr'n eff lengths: Major axis => Calculate, Minor axis => Calculate
(Braced) (Braced)
Bending eff lengths: +ve bending => Calculate, -ve bending => Calculate
Top flange restr pos'ns: 0.125,0.25,0.375,0.5,0.625,0.75,0.875
Bot flange restr pos'ns: 0.125,0.25,0.375,0.5,0.625,0.75,0.875
Top flange restr types: FLLLLLLF
Bot flange restr types: FLLLLLLF

Group: 209 Top Right Boom
Member list: 209,210,211,212,213,214,215,216
Compr'n eff lengths: Major axis => Calculate, Minor axis => Calculate
(Braced) (Braced)
Bending eff lengths: +ve bending => Calculate, -ve bending => Calculate
Top flange restr pos'ns: 0.125,0.25,0.375,0.5,0.625,0.75,0.875
Bot flange restr pos'ns: 0.125,0.25,0.375,0.5,0.625,0.75,0.875
Top flange restr types: FLLLLLLF
Bot flange restr types: FLLLLLLF

Group: 301 Bottom Left Boom
Member list: 301,302,303,304,305,306,307,308,309
Compr'n eff lengths: Major axis => Calculate, Minor axis => Calculate
(Braced) (Braced)
Bending eff lengths: +ve bending => Calculate, -ve bending => Calculate
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 310 Bottom Right Boom
Member list: 310,311,312,313,314,315,316,317,318
Compr'n eff lengths: Major axis => Calculate, Minor axis => Calculate
(Braced) (Braced)
Bending eff lengths: +ve bending => Calculate, -ve bending => Calculate
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 401 Diagonal
Member list: 401
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 402 Diagonal
Member list: 402
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 403 Diagonal
Member list: 403
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 404 Diagonal
Member list: 404
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 405 Diagonal
Member list: 405
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 406 Diagonal
Member list: 406
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 407 Diagonal
Member list: 407
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 408 Diagonal
Member list: 408
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 409 Diagonal
Member list: 409
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 410 Diagonal
Member list: 410
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 411 Diagonal
Member list: 411
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 412 Diagonal
Member list: 412
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 413 Diagonal
Member list: 413
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 414 Diagonal
Member list: 414
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 415 Diagonal
Member list: 415
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 416 Diagonal
Member list: 416
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 417 Diagonal
Member list: 417
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 418 Diagonal
Member list: 418
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 419 Diagonal
Member list: 419
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 420 Diagonal
Member list: 420
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 421 Diagonal
Member list: 421
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 422 Diagonal
Member list: 422
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 423 Diagonal
Member list: 423
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 424 Diagonal
Member list: 424
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 425 Diagonal
Member list: 425
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 426 Diagonal
Member list: 426
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 427 Diagonal
Member list: 427
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 428 Diagonal
Member list: 428
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 429 Diagonal
Member list: 429
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 430 Diagonal
Member list: 430
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 431 Diagonal
Member list: 431
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 432 Diagonal
Member list: 432
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group: 501 Strut
Member list: 501
Compr'n eff lengths: Major axis => 0.700, Minor axis => 0.700
(Braced) (Braced)
Bending eff lengths: +ve bending => 1.000, -ve bending => 1.000
Top flange restr pos'ns:
Bot flange restr pos'ns:
Top flange restr types: FF
Bot flange restr types: FF

Group	Str Grade	Load Units	Height Pos'n	Scan Code	Angle Type	End Conn	Ecc Eff	Design Crit	Bolts in Cross Section	IS or NZ Seismic Spec
101	Norm	Actual	Centre	A		Con	No	Weight	None	N/A
103	Norm	Actual	Centre	A		Con	No	Weight	None	N/A
201	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
209	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
301	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
310	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
401	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
402	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
403	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
404	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
405	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
406	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
407	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
408	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
409	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
410	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
411	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
412	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
413	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
414	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
415	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
416	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
417	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
418	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
419	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
420	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
421	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
422	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
423	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
424	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
425	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
426	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
427	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
428	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
429	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
430	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
431	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
432	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A
501	Norm	Ratio	Centre	H	Single	Con	No	Weight	None	N/A

HK CP2011 STEEL MEMBER DESIGN NOTES
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1. The sign convention used in this design report for cross section axes is shown below. Note that it is not the same as the sign convention used in the analysis.

   x - major geometric axis (or angle section short leg)
   y - minor geometric axis (or angle section long leg)
   u - major principal axis
   v - minor principal axis

2. Double angle sections are treated as solid Tee shapes.

3. Torsion moments are not considered.

4. Items that affect the end connection of members such as block shear, bearing, tearing, bolts, welds, stiffeners and the like are considered to be part of the connection design rather than the member design and, as such, are not considered here.

5. Cantilevers cannot be automatically detected. ALWAYS check that the bending effective lengths calculated by the program for cantilevered members are correct.

6. Initial frame imperfections are not automatically allowed for. When applicable, you should apply notional horizontal forces or initial deformations to the analysis model in accordance with the requirements of the design code.

7. A component that provides full, partial or lateral restraint to a member is not automatically checked to see if it is capable of resisting the force required to provide such restraint. To check this, the restraint forces should be added to the applied loads.

HK CP2011 STEEL MEMBER DESIGN SUMMARY (MPa,m) (*=Failure)

(#=Warning)

Group	Section Name	Yield Str	Total Length	Seg Length	Failure Mode	Crit Case	Load Factor
101*	457x191 UB 89	265	6.700	5.500	Member	11	1.00*
103*	457x191 UB 89	265	6.700	5.500	Member	11	1.00*
201*	120x80x5.0RHS	275	15.057	1.882	Member	11	0.95*
209*	120x80x5.0RHS	275	15.057	1.882	Member	11	0.95*
301*	120x60x5.0RHS	275	15.057	15.057	Member	11	0.33*
310*	120x60x5.0RHS	275	15.057	15.057	Member	11	0.33*
401#	60x40x5.0RHS	275	1.459	1.459	Section	11	1.83#
402*	60x40x5.0RHS	275	1.588	1.588	Member	11	0.96*
403#	60x40x5.0RHS	275	1.459	1.459	Section	11	1.93#
404#	60x40x5.0RHS	275	1.588	1.588	Member	11	1.12#
405#	60x40x5.0RHS	275	1.459	1.459	Section	11	2.34#
406#	60x40x5.0RHS	275	1.588	1.588	Member	11	1.34#
407#	60x40x5.0RHS	275	1.459	1.459	Section	11	2.90#
408#	60x40x5.0RHS	275	1.588	1.588	Member	11	1.67#
409#	60x40x5.0RHS	275	1.459	1.459	Section	11	3.84#
410#	60x40x5.0RHS	275	1.588	1.588	Member	11	2.21#
411#	60x40x5.0RHS	275	1.459	1.459	Section	11	5.66#
412#	60x40x5.0RHS	275	1.588	1.588	Member	11	3.26#
413#	60x40x5.0RHS	275	1.459	1.459	Section	11	10.91#
414#	60x40x5.0RHS	275	1.588	1.588	Member	11	6.14#
415#	60x40x5.0RHS	275	1.459	1.459	Section	12	33.44#
416#	60x40x5.0RHS	275	1.588	1.588	Member	12	22.19#
417#	60x40x5.0RHS	275	1.588	1.588	Section	12	42.43#
418#	60x40x5.0RHS	275	1.459	1.459	Member	12	37.45#
419#	60x40x5.0RHS	275	1.588	1.588	Member	11	6.14#
420#	60x40x5.0RHS	275	1.459	1.459	Section	11	10.91#
421#	60x40x5.0RHS	275	1.588	1.588	Member	11	3.26#
422#	60x40x5.0RHS	275	1.459	1.459	Section	11	5.66#
423#	60x40x5.0RHS	275	1.588	1.588	Member	11	2.21#
424#	60x40x5.0RHS	275	1.459	1.459	Section	11	3.84#
425#	60x40x5.0RHS	275	1.588	1.588	Member	11	1.67#
426#	60x40x5.0RHS	275	1.459	1.459	Section	11	2.90#
427#	60x40x5.0RHS	275	1.588	1.588	Member	11	1.34#
428#	60x40x5.0RHS	275	1.459	1.459	Section	11	2.34#
429#	60x40x5.0RHS	275	1.588	1.588	Member	11	1.12#
430#	60x40x5.0RHS	275	1.459	1.459	Section	11	1.93#
431*	60x40x5.0RHS	275	1.588	1.588	Member	11	0.96*
432#	60x40x5.0RHS	275	1.459	1.459	Section	11	1.83#
501#	60x40x5.0RHS	275	1.200	1.200	Section	11	4.55#

Group	Section Name	Yield Str	Total Length	Seg Length	Failure Mode	Crit Case	Load Factor

WEIGHTED AVERAGE LOAD FACTORS

Case	Mass	WALF
11	2.378	5.476
12	2.378	3.592

HK CP2011 CALCULATIONS FOR GROUP 101 (*=Failure)

Critical load case is 11, out of 11,12

Section: *457x191 UB 89 (I or H section, Rolled/SR)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	5.500		133.78	0.00	-77.09	-423.99	0.00	1.19
Member	11	0.000	5.500	133.78			-423.99	0.00	1.00*
Shear	11	5.500		87.38	0.00	344.10	-415.43	0.00	2.17
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.00*	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)
12	3.30	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)

py = 265.0 MPa			
pyw = 275.0 MPa		Us = 430.0 MPa	
Ltot = 6.700 m		Lseg = 5.500 m (FF Top-Bot)	
Le = 5.500 m (Bending)			
Lex = 33.500 m (Compression)		Ley = 1.500 m (Compression)	
Lex/rx = 176.6 (Compression)		Le/ry = 128.5 (Bending)	
Arf = 0.0 mm^2		Arw = 0.0 mm^2	
Ag = 11400.0 mm^2		Ae = 11400.0 mm^2 (7.6/8.6)	
Avx = 6113.9 mm^2		Avy = 4865.7 mm^2 (8.2.1)	
Ceffx = 95.95 mm		Ceffy = 231.70 mm (7.8)	
Zeffx = 1770.39x10^3 mm^3		Zeffy = 217.72x10^3 mm^3 (7.6)	
Seffx = 2014.00x10^3 mm^3		Seffy = 338.00x10^3 mm^3 (7.5)	
γm1 = 1.00 (3.1.2)		γm2 = 1.20 (3.1.2)	
mx = 0.73 (8.9.2)		my = 1.00 (8.9.2)	
mLT = 0.60 (8.3.5.2)		λLT = 94.57 (8.3.5.3/A8.2)	
u = 0.88 (8.3.5.3/A8.2)		v = 0.84 (8.3.5.3/A8.2)	
βw = 1.00 (8.3.5.3/A8.2)		x = 28.28 (8.3.5.3/A8.2)	
λx = 176.60 (8.7.4)		λy = 35.04 (8.7.4)	
qw = 0.00 MPa (8.4.6)		pb = 132.21 MPa (8.3.5.2/A8.1)	
pcx = 58.96 MPa (8.7.6/A8.4)		pcy = 247.13 MPa (8.7.6/A8.4)	
Kef = 1.20 (9.3.4.4)		Kew = 1.20 (9.3.4.4)	
F = 133.78 kN			
Fvx = 0.00 kN		Fvy = -77.09 kN	
Mx = 423.99 kNm (8.9.2)		My = 0.00 kNm (Semi-compact)	
MLT = -423.99 kNm (Plastic)			
Pt = 0.00 kN (8.6)		Vw = 0.00 kN (8.4.6)	
Pcx = 672.18 kN (8.7.5)		Pcy = 2817.24 kN (8.7.5)	
Pcxbar = 2898.33 kN (8.7.5)		Pcybar = 781.62 kN (8.7.5)	
Vcx = 935.42 kN (8.2.1)		Vcy = 744.44 kN (8.2.1)	
Mcx = 469.15 kNm (8.9.2)		Mcy = 57.70 kNm (8.9.2)	
Mb = 266.28 kNm (8.3.5.2)		Mp = 0.00 kNm (8.4.4.2b)	

Governing mode - Comp and bend/LT-buckling (8.9.2 eq 8.81) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 103 (*=Failure)

Critical load case is 11, out of 11,12

Section: *457x191 UB 89 (I or H section, Rolled/SR)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	5.500		133.78	0.00	-77.09	-423.99	0.00	1.19
Member	11	0.000	5.500	133.78			-423.99	0.00	1.00*
Shear	11	5.500		87.38	0.00	344.10	-415.43	0.00	2.17
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.00*	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)
12	1.99	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)

py = 265.0 MPa			
pyw = 275.0 MPa		Us = 430.0 MPa	
Ltot = 6.700 m		Lseg = 5.500 m (FF Top-Bot)	
Le = 5.500 m (Bending)			
Lex = 33.500 m (Compression)		Ley = 1.500 m (Compression)	
Lex/rx = 176.6 (Compression)		Le/ry = 128.5 (Bending)	
Arf = 0.0 mm^2		Arw = 0.0 mm^2	
Ag = 11400.0 mm^2		Ae = 11400.0 mm^2 (7.6/8.6)	
Avx = 6113.9 mm^2		Avy = 4865.7 mm^2 (8.2.1)	
Ceffx = 95.95 mm		Ceffy = 231.70 mm (7.8)	
Zeffx = 1770.39x10^3 mm^3		Zeffy = 217.72x10^3 mm^3 (7.6)	
Seffx = 2014.00x10^3 mm^3		Seffy = 338.00x10^3 mm^3 (7.5)	
γm1 = 1.00 (3.1.2)		γm2 = 1.20 (3.1.2)	
mx = 0.73 (8.9.2)		my = 1.00 (8.9.2)	
mLT = 0.60 (8.3.5.2)		λLT = 94.57 (8.3.5.3/A8.2)	
u = 0.88 (8.3.5.3/A8.2)		v = 0.84 (8.3.5.3/A8.2)	
βw = 1.00 (8.3.5.3/A8.2)		x = 28.28 (8.3.5.3/A8.2)	
λx = 176.60 (8.7.4)		λy = 35.04 (8.7.4)	
qw = 0.00 MPa (8.4.6)		pb = 132.21 MPa (8.3.5.2/A8.1)	
pcx = 58.96 MPa (8.7.6/A8.4)		pcy = 247.13 MPa (8.7.6/A8.4)	
Kef = 1.20 (9.3.4.4)		Kew = 1.20 (9.3.4.4)	

F = 133.78 kN
Fvx = 0.00 kN Fvy = -77.09 kN
Mx = 423.99 kNm (8.9.2) My = 0.00 kNm (Semi-compact)
MLT = -423.99 kNm (Plastic)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 672.18 kN (8.7.5) Pcy = 2817.24 kN (8.7.5)
Pcxbar = 2898.33 kN (8.7.5) Pcybar = 781.62 kN (8.7.5)
Vcx = 935.42 kN (8.2.1) Vcy = 744.44 kN (8.2.1)
Mcx = 469.15 kNm (8.9.2) Mcy = 57.70 kNm (8.9.2)
Mb = 266.28 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp and bend/LT-buckling (8.9.2 eq 8.81) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 201 (*=Failure)

Critical load case is 11, out of 11,12

Section: *120x80x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	13.175		397.12	0.00	-0.17	1.40	0.00	1.19
Member	11	13.175	15.057	397.12			1.40	0.00	0.95*
Shear	11	0.000		-260.66	0.00	1.17	-2.51	0.00	149.45 (1.00)

Load Case	Load Factor	Failure Mode
11	0.95*	Member - Comp and biaxial bending (8.9.2 eq 8.79)
12	2.49	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 15.057 m Lseg = 1.882 m (FF Top-Top)
Le = 1.882 m (Bending)
Lex = 2.342 m (Compression) Ley = 1.703 m (Compression)
Ley/ry = 53.0 (Compression) Le/ry = 58.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 1870.0 mm^2 Ae = 1870.0 mm^2 (7.6/8.6)
Avx = 550.0 mm^2 Avy = 1100.0 mm^2 (8.2.1)
Ceffx = 40.00 mm Ceffy = 60.00 mm (7.8)
Zeffx = 60.83x10^3 mm^3 Zeffy = 48.25x10^3 mm^3 (7.6)
Seffx = 74.60x10^3 mm^3 Seffy = 56.10x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.43 (8.9.2) my = 1.00 (8.9.2)
mLT = 0.91 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.00 (8.7.4) λy = 53.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.69 MPa (8.7.6/A8.4) pcy = 214.69 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 397.12 kN
Fvx = 0.00 kN Fvy = 0.10 kN
Mx = 2.51 kNm (8.9.2) My = 0.00 kNm (Semi-compact)
MLT = 1.40 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 401.48 kN (8.7.5) Pcy = 401.48 kN (8.7.5)
Pcxbar = 29.10 kN (8.7.5) Pcybar = 15.86 kN (8.7.5)
Vcx = 87.32 kN (8.2.1) Vcy = 174.65 kN (8.2.1)
Mcx = 16.73 kNm (8.9.2) Mcy = 13.27 kNm (8.9.2)
Mb = 20.08 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp and biaxial bending (8.9.2 eq 8.79) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 209 (*=Failure)

Critical load case is 11, out of 11,12

Section: *120x80x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	1.882		397.12	0.00	0.17	1.40	0.00	1.19
Member	11	0.000	1.882	397.12			1.40	0.00	0.95*
Shear	11	13.175		-260.66	0.00	-1.17	-0.31	0.00	149.45 (1.00)

Load Case	Load Factor	Failure Mode
11	0.95*	Member - Comp and biaxial bending (8.9.2 eq 8.79)
12	2.38	Member - Comp and biaxial bending (8.9.2 eq 8.79)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 15.057 m Lseg = 1.882 m (FF Top-Top)
Le = 1.882 m (Bending)
Lex = 2.342 m (Compression) Ley = 1.703 m (Compression)
Ley/ry = 53.0 (Compression) Le/ry = 58.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 1870.0 mm^2 Ae = 1870.0 mm^2 (7.6/8.6)
Avx = 550.0 mm^2 Avy = 1100.0 mm^2 (8.2.1)
Ceffx = 40.00 mm Ceffy = 60.00 mm (7.8)
Zeffx = 60.83x10^3 mm^3 Zeffy = 48.25x10^3 mm^3 (7.6)
Seffx = 74.60x10^3 mm^3 Seffy = 56.10x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.43 (8.9.2) my = 1.00 (8.9.2)
mLT = 0.91 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.00 (8.7.4) λy = 53.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.69 MPa (8.7.6/A8.4) pcy = 214.69 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 397.12 kN
Fvx = 0.00 kN Fvy = 0.17 kN
Mx = 2.51 kNm (8.9.2) My = 0.00 kNm (Semi-compact)
MLT = 1.40 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 401.48 kN (8.7.5) Pcy = 401.48 kN (8.7.5)
Pcxbar = 29.10 kN (8.7.5) Pcybar = 15.86 kN (8.7.5)
Vcx = 87.32 kN (8.2.1) Vcy = 174.65 kN (8.2.1)
Mcx = 16.73 kNm (8.9.2) Mcy = 13.27 kNm (8.9.2)
Mb = 20.08 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp and biaxial bending (8.9.2 eq 8.79) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 301 (*=Failure)

Critical load case is 11, out of 11,12

Section: *120x60x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		423.63	0.00	9.53	-8.56	0.00	0.70*
Member	11	0.000	15.057	423.63			-8.56	0.00	0.33*
Shear	11	0.000		423.63	0.00	9.53	-8.56	0.00	18.34 (1.00)

Load Case	Load Factor	Failure Mode
11	0.33*	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)
12	1.00*	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 15.057 m Lseg = 15.057 m (FF Bot-Top)
Le = 15.057 m (Bending)
Lex = 2.052 m (Compression) Ley = 1.180 m (Compression)
Ley/ry = 48.5 (Compression) Le/ry = 619.1 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 1670.0 mm^2 Ae = 1670.0 mm^2 (7.6/8.6)
Avx = 350.0 mm^2 Avy = 1100.0 mm^2 (8.2.1)
Ceffx = 30.00 mm Ceffy = 60.00 mm (7.8)
Zeffx = 49.83x10^3 mm^3 Zeffy = 32.93x10^3 mm^3 (7.6)
Seffx = 63.10x10^3 mm^3 Seffy = 38.40x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.25 (8.9.2) my = 1.00 (8.9.2)
mLT = 0.44 (8.3.5.2) λLT = 230.28 (8.3.5.3/A8.2)
u = 0.90 (8.3.5.3/A8.2) v = 0.41 (8.3.5.3/A8.2)
βw = 1.00 (8.3.5.3/A8.2) x = 24.00 (8.3.5.3/A8.2)
λx = 48.50 (8.7.4) λy = 48.50 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 31.41 MPa (8.3.5.2/A8.1)
pcx = 223.08 MPa (8.7.6/A8.4) pcy = 223.08 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 423.63 kN
Fvx = 0.00 kN Fvy = 9.53 kN
Mx = 8.56 kNm (8.9.2) My = 0.00 kNm (Semi-compact)
MLT = -8.56 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 372.55 kN (8.7.5) Pcy = 372.55 kN (8.7.5)
Pcxbar = 23.95 kN (8.7.5) Pcybar = 8.28 kN (8.7.5)
Vcx = 55.57 kN (8.2.1) Vcy = 174.65 kN (8.2.1)
Mcx = 13.70 kNm (8.9.2) Mcy = 9.06 kNm (8.9.2)
Mb = 1.98 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp and bend/LT-buckling (8.9.2 eq 8.81) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 310 (*=Failure)

Critical load case is 11, out of 11,12

Section: *120x60x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	15.057		423.63	0.00	-9.53	-8.56	0.00	0.70*
Member	11	0.000	15.057	423.63			-8.56	0.00	0.33*
Shear	11	14.116		423.63	0.00	-9.53	0.40	0.00	18.34 (1.00)

Load Case	Load Factor	Failure Mode
11	0.33*	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)
12	0.70*	Member - Comp and bend/LT-buckling (8.9.2 eq 8.81)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 15.057 m Lseg = 15.057 m (FF Bot-Bot)
Le = 15.057 m (Bending)
Lex = 2.052 m (Compression) Ley = 1.180 m (Compression)
Ley/ry = 48.5 (Compression) Le/ry = 619.1 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 1670.0 mm^2 Ae = 1670.0 mm^2 (7.6/8.6)
Avx = 350.0 mm^2 Avy = 1100.0 mm^2 (8.2.1)
Ceffx = 30.00 mm Ceffy = 60.00 mm (7.8)
Zeffx = 49.83x10^3 mm^3 Zeffy = 32.93x10^3 mm^3 (7.6)
Seffx = 63.10x10^3 mm^3 Seffy = 38.40x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.25 (8.9.2) my = 1.00 (8.9.2)
mLT = 0.44 (8.3.5.2) λLT = 230.28 (8.3.5.3/A8.2)
u = 0.90 (8.3.5.3/A8.2) v = 0.41 (8.3.5.3/A8.2)
βw = 1.00 (8.3.5.3/A8.2) x = 24.00 (8.3.5.3/A8.2)
λx = 48.50 (8.7.4) λy = 48.50 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 31.41 MPa (8.3.5.2/A8.1)
pcx = 223.08 MPa (8.7.6/A8.4) pcy = 223.08 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 423.63 kN
Fvx = 0.00 kN Fvy = -1.48 kN
Mx = 8.56 kNm (8.9.2) My = 0.00 kNm (Semi-compact)
MLT = -8.56 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 372.55 kN (8.7.5) Pcy = 372.55 kN (8.7.5)
Pcxbar = 23.95 kN (8.7.5) Pcybar = 8.28 kN (8.7.5)
Vcx = 55.57 kN (8.2.1) Vcy = 174.65 kN (8.2.1)
Mcx = 13.70 kNm (8.9.2) Mcy = 9.06 kNm (8.9.2)
Mb = 1.98 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp and bend/LT-buckling (8.9.2 eq 8.81) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 401 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-131.24	0.00	0.00	0.00	0.00	1.83
Member	11	0.000	1.459	-131.24			0.00	0.00	999.00
Shear	11	0.000		-131.24	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.83	Section - Axial tension (8.6.1 eq 8.66)
12	5.66	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -131.24 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 402 (*=Failure)

Critical load case is 11, out of 11,12

Section: *60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		156.22	0.00	0.00	0.00	0.00	1.54
Member	11	0.000	1.588	156.22			0.00	0.00	0.96*
Shear	11	0.000		156.22	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	0.96*	Member - Comp with minor axis buckling (8.7.5)
12	2.98	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 156.22 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 403 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-124.49	0.00	0.00	0.00	0.00	1.93
Member	11	0.000	1.459	-124.49			0.00	0.00	999.00
Shear	11	0.000		-124.49	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.93	Section - Axial tension (8.6.1 eq 8.66)
12	5.83	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -124.49 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 404 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		134.23	0.00	0.00	0.00	0.00	1.79
Member	11	0.000	1.588	134.23			0.00	0.00	1.12
Shear	11	0.000		134.23	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.12	Member - Comp with minor axis buckling (8.7.5)
12	3.39	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 134.23 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 405 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-102.75	0.00	0.00	0.00	0.00	2.34
Member	11	0.000	1.459	-102.75			0.00	0.00	999.00
Shear	11	0.000		-102.75	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	2.34	Section - Axial tension (8.6.1 eq 8.66)
12	6.85	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -102.75 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 406 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		112.25	0.00	0.00	0.00	0.00	2.14
Member	11	0.000	1.588	112.25			0.00	0.00	1.34
Shear	11	0.000		112.25	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.34	Member - Comp with minor axis buckling (8.7.5)
12	3.93	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 112.25 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 407 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-82.92	0.00	0.00	0.00	0.00	2.90
Member	11	0.000	1.459	-82.92			0.00	0.00	999.00
Shear	11	0.000		-82.92	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	2.90	Section - Axial tension (8.6.1 eq 8.66)
12	8.13	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -82.92 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 408 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		90.21	0.00	0.00	0.00	0.00	2.66
Member	11	0.000	1.588	90.21			0.00	0.00	1.67
Shear	11	0.000		90.21	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.67	Member - Comp with minor axis buckling (8.7.5)
12	4.69	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 90.21 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 409 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-62.58	0.00	0.00	0.00	0.00	3.84
Member	11	0.000	1.459	-62.58			0.00	0.00	999.00
Shear	11	0.000		-62.58	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	3.84	Section - Axial tension (8.6.1 eq 8.66)
12	10.07	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -62.58 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 410 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		68.23	0.00	0.00	0.00	0.00	3.52
Member	11	0.000	1.588	68.23			0.00	0.00	2.21
Shear	11	0.000		68.23	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	2.21	Member - Comp with minor axis buckling (8.7.5)
12	5.79	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 68.23 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 411 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-42.43	0.00	0.00	0.00	0.00	5.66
Member	11	0.000	1.459	-42.43			0.00	0.00	999.00
Shear	11	0.000		-42.43	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	5.66	Section - Axial tension (8.6.1 eq 8.66)
12	13.16	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -42.43 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 412 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		46.11	0.00	0.00	0.00	0.00	5.21
Member	11	0.000	1.588	46.11			0.00	0.00	3.26
Shear	11	0.000		46.11	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	3.26	Member - Comp with minor axis buckling (8.7.5)
12	7.59	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 46.11 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 413 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-22.00	0.00	0.00	0.00	0.00	10.91
Member	11	0.000	1.459	-22.00			0.00	0.00	999.00
Shear	11	0.000		-22.00	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	10.91	Section - Axial tension (8.6.1 eq 8.66)
12	19.16	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -22.00 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 414 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		24.49	0.00	0.00	0.00	0.00	9.80
Member	11	0.000	1.588	24.49			0.00	0.00	6.14
Shear	11	0.000		24.49	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	6.14	Member - Comp with minor axis buckling (8.7.5)
12	10.85	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 24.49 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 415 (*=Failure)

Critical load case is 12, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	12	0.000		-7.18	0.00	0.00	0.00	0.00	33.44
Member	11	0.000	1.459	-2.50			0.00	0.00	999.00
Shear	11	0.000		-2.50	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	96.13	Section - Axial tension (8.6.1 eq 8.66)
12	33.44	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -7.18 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 416 (*=Failure)

Critical load case is 12, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	12	0.000		6.78	0.00	0.00	0.00	0.00	35.40
Member	12	0.000	1.588	6.78			0.00	0.00	22.19
Shear	11	0.000		0.39	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	384.12	Member - Comp with minor axis buckling (8.7.5)
12	22.19	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 6.78 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 417 (*=Failure)

Critical load case is 12, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	12	0.000		-5.66	0.00	0.00	0.00	0.00	42.43
Member	11	0.000	1.588	0.39			0.00	0.00	384.12
Shear	11	0.000		0.39	0.00	0.00	0.00	0.00	999.00 (1.00)

Load Case	Load Factor	Failure Mode
11	384.12	Member - Comp with minor axis buckling (8.7.5)
12	42.43	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -5.66 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 418 (*=Failure)

Critical load case is 12, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	12	0.000		4.30	0.00	0.00	0.00	0.00	55.81
Member	12	0.000	1.459	4.30			0.00	0.00	37.45
Shear	11	0.000		-2.50	0.00	0.00	0.00	0.00	999.00 (1.00)

Load Case	Load Factor	Failure Mode
11	96.13	Section - Axial tension (8.6.1 eq 8.66)
12	37.45	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 48.89 (8.7.4) λy = 68.34 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 222.36 MPa (8.7.6/A8.4) pcy = 184.52 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 4.30 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 194.12 kN (8.7.5) Pcy = 161.09 kN (8.7.5)
Pcxbar = 158.44 kN (8.7.5) Pcybar = 112.73 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 419 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		24.49	0.00	0.00	0.00	0.00	9.80
Member	11	0.000	1.588	24.49			0.00	0.00	6.14
Shear	11	0.000		24.49	0.00	0.00	0.00	0.00	999.00 (1.00)

Load Case	Load Factor	Failure Mode
11	6.14	Member - Comp with minor axis buckling (8.7.5)
12	22.49	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 24.49 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 420 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-22.00	0.00	0.00	0.00	0.00	10.91
Member	11	0.000	1.459	-22.00			0.00	0.00	999.00
Shear	11	0.000		-22.00	0.00	0.00	0.00	0.00	999.00 (1.00)

Load Case	Load Factor	Failure Mode
11	10.91	Section - Axial tension (8.6.1 eq 8.66)
12	40.45	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -22.00 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 421 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		46.11	0.00	0.00	0.00	0.00	5.21
Member	11	0.000	1.588	46.11			0.00	0.00	3.26
Shear	11	0.000		46.11	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	3.26	Member - Comp with minor axis buckling (8.7.5)
12	8.36	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 46.11 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 422 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-42.43	0.00	0.00	0.00	0.00	5.66
Member	11	0.000	1.459	-42.43			0.00	0.00	999.00
Shear	11	0.000		-42.43	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	5.66	Section - Axial tension (8.6.1 eq 8.66)
12	14.50	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -42.43 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 423 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		68.23	0.00	0.00	0.00	0.00	3.52
Member	11	0.000	1.588	68.23			0.00	0.00	2.21
Shear	11	0.000		68.23	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	2.21	Member - Comp with minor axis buckling (8.7.5)
12	5.10	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 68.23 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 424 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-62.58	0.00	0.00	0.00	0.00	3.84
Member	11	0.000	1.459	-62.58			0.00	0.00	999.00
Shear	11	0.000		-62.58	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	3.84	Section - Axial tension (8.6.1 eq 8.66)
12	8.87	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -62.58 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 425 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		90.21	0.00	0.00	0.00	0.00	2.66
Member	11	0.000	1.588	90.21			0.00	0.00	1.67
Shear	11	0.000		90.21	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.67	Member - Comp with minor axis buckling (8.7.5)
12	3.67	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 90.21 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 426 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-82.92	0.00	0.00	0.00	0.00	2.90
Member	11	0.000	1.459	-82.92			0.00	0.00	999.00
Shear	11	0.000		-82.92	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	2.90	Section - Axial tension (8.6.1 eq 8.66)
12	6.38	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -82.92 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 427 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		112.25	0.00	0.00	0.00	0.00	2.14
Member	11	0.000	1.588	112.25			0.00	0.00	1.34
Shear	11	0.000		112.25	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.34	Member - Comp with minor axis buckling (8.7.5)
12	2.87	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 112.25 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 428 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-102.75	0.00	0.00	0.00	0.00	2.34
Member	11	0.000	1.459	-102.75			0.00	0.00	999.00
Shear	11	0.000		-102.75	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	2.34	Section - Axial tension (8.6.1 eq 8.66)
12	5.01	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -102.75 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 429 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		134.23	0.00	0.00	0.00	0.00	1.79
Member	11	0.000	1.588	134.23			0.00	0.00	1.12
Shear	11	0.000		134.23	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.12	Member - Comp with minor axis buckling (8.7.5)
12	2.36	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 134.23 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 430 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-124.49	0.00	0.00	0.00	0.00	1.93
Member	11	0.000	1.459	-124.49			0.00	0.00	999.00
Shear	11	0.000		-124.49	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.93	Section - Axial tension (8.6.1 eq 8.66)
12	4.05	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = -124.49 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Plastic) My = 0.00 kNm (Plastic)

Pt = 240.07 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 0.00 kN (8.7.5) Pcy = 0.00 kN (8.7.5)
Pcxbar = 0.00 kN (8.7.5) Pcybar = 0.00 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 4.19 kNm (8.2.2.1) Mcy = 3.22 kNm (8.2.2.1)
Mb = 0.00 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)

HK CP2011 CALCULATIONS FOR GROUP 431 (*=Failure)

Critical load case is 11, out of 11,12

Section: *60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Semi-compact

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		156.22	0.00	0.00	0.00	0.00	1.54
Member	11	0.000	1.588	156.22			0.00	0.00	0.96*
Shear	11	0.000		156.22	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	0.96*	Member - Comp with minor axis buckling (8.7.5)
12	2.00	Member - Comp with minor axis buckling (8.7.5)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.588 m Lseg = 1.588 m (FF Top-Top)
Le = 1.588 m (Bending)
Lex = 1.112 m (Compression) Ley = 1.112 m (Compression)
Ley/ry = 74.4 (Compression) Le/ry = 106.3 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 1.00 (8.9.2) my = 1.00 (8.9.2)
mLT = 1.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 53.22 (8.7.4) λy = 74.39 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 214.29 MPa (8.7.6/A8.4) pcy = 172.36 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

F = 156.22 kN
Fvx = 0.00 kN Fvy = 0.00 kN
Mx = 0.00 kNm (Semi-compact) My = 0.00 kNm (Semi-compact)

Pt = 0.00 kN (8.6) Vw = 0.00 kN (8.4.6)
Pcx = 187.07 kN (8.7.5) Pcy = 150.47 kN (8.7.5)
Pcxbar = 147.62 kN (8.7.5) Pcybar = 100.87 kN (8.7.5)
Vcx = 23.82 kN (8.2.1) Vcy = 79.39 kN (8.2.1)
Mcx = 3.49 kNm (8.9.2) Mcy = 2.68 kNm (8.9.2)
Mb = 4.19 kNm (8.3.5.2) Mp = 0.00 kNm (8.4.4.2b)

Governing mode - Comp with minor axis buckling (8.7.5) (Fail)*

HK CP2011 CALCULATIONS FOR GROUP 432 (*=Failure)

Critical load case is 11, out of 11,12

Section: 60x40x5.0RHS (Rectangular tube, Cold formed)
Class: Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Mode	Crit Case	Start Pos'n	Finish Pos'n	Axial Force	Major Shear	Minor Shear	Major Moment	Minor Moment	Load Factor
Section	11	0.000		-131.24	0.00	0.00	0.00	0.00	1.83
Member	11	0.000	1.459	-131.24			0.00	0.00	999.00
Shear	11	0.000		-131.24	0.00	0.00	0.00	0.00	999.00
									(1.00)

Load Case	Load Factor	Failure Mode
11	1.83	Section - Axial tension (8.6.1 eq 8.66)
12	3.79	Section - Axial tension (8.6.1 eq 8.66)

py = 275.0 MPa
pyw = 275.0 MPa Us = 430.0 MPa
Ltot = 1.459 m Lseg = 1.459 m (FF Top-Top)
Le = 1.459 m (Bending)
Lex = 1.021 m (Compression) Ley = 1.021 m (Compression)
Ley/ry = 68.3 (Compression) Le/ry = 97.6 (Bending)
Arf = 0.0 mm^2 Arw = 0.0 mm^2
Ag = 873.0 mm^2 Ae = 873.0 mm^2 (7.6/8.6)
Avx = 150.0 mm^2 Avy = 500.0 mm^2 (8.2.1)
Ceffx = 20.00 mm Ceffy = 30.00 mm (7.8)
Zeffx = 12.70x10^3 mm^3 Zeffy = 9.75x10^3 mm^3 (7.6)
Seffx = 16.40x10^3 mm^3 Seffy = 12.20x10^3 mm^3 (7.5)

γm1 = 1.00 (3.1.2) γm2 = 1.20 (3.1.2)
mx = 0.00 (8.9.2) my = 0.00 (8.9.2)
mLT = 0.00 (8.3.5.2) λLT = 0.00 (8.3.5.3/A8.2)
u = 0.00 (8.3.5.3/A8.2) v = 0.00 (8.3.5.3/A8.2)
βw = 0.00 (8.3.5.3/A8.2) x = 0.00 (8.3.5.3/A8.2)
λx = 0.00 (8.7.4) λy = 0.00 (8.7.4)
qw = 0.00 MPa (8.4.6) pb = 0.00 MPa (8.3.5.2/A8.1)
pcx = 0.00 MPa (8.7.6/A8.4) pcy = 0.00 MPa (8.7.6/A8.4)
Kef = 1.20 (9.3.4.4) Kew = 1.20 (9.3.4.4)

```
F      = -131.24 kN
Fvx    =    0.00 kN                  Fvy    =    0.00 kN
Mx     =    0.00 kNm (Plastic)       My     =    0.00 kNm (Plastic)

Pt     =  240.07 kN  (8.6)           Vw     =    0.00 kN  (8.4.6)
Pcx    =    0.00 kN  (8.7.5)         Pcy    =    0.00 kN  (8.7.5)
Pcxbar =    0.00 kN  (8.7.5)         Pcybar =    0.00 kN  (8.7.5)
Vcx    =   23.82 kN  (8.2.1)         Vcy    =   79.39 kN  (8.2.1)
Mcx    =    4.19 kNm (8.2.2.1)       Mcy    =    3.22 kNm (8.2.2.1)
Mb     =    0.00 kNm (8.3.5.2)       Mp     =    0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)


HK CP2011 CALCULATIONS FOR GROUP 501 (*=Failure)
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Critical load case is  11, out of 11,12

Section:  60x40x5.0RHS (Rectangular tube, Cold formed)
  Class:  Plastic

WARNING: Not all load cases were analysed non-linearly with P-Δ

Failure Crit  Start Finish    Axial    Major    Minor    Major    Minor   Load
   Mode Case  Pos'n  Pos'n    Force    Shear    Shear   Moment   Moment Factor

Section   11  0.000          -52.78     0.00     0.00     0.00     0.00   4.55
 Member   11  0.000  1.200   -52.78                       0.00     0.00 999.00
  Shear   11  0.000          -52.78     0.00     0.00     0.00     0.00 999.00
                                                                       (1.00)

 Load   Load  Failure
 Case Factor     Mode

   11   4.55  Section - Axial tension (8.6.1 eq 8.66)
   12  11.14  Section - Axial tension (8.6.1 eq 8.66)

py     =   275.0 MPa
pyw    =   275.0 MPa                 Us     =   430.0 MPa
Ltot   =   1.200 m                   Lseg   =   1.200 m  (FF Top-Top)
Le     =   1.200 m  (Bending)
Lex    =   0.840 m  (Compression)    Ley    =   0.840 m  (Compression)
Ley/ry =    56.2    (Compression)    Le/ry  =    80.3    (Bending)
Arf    =     0.0 mm^2                Arw    =     0.0 mm^2
Ag     =   873.0 mm^2                Ae     =   873.0 mm^2 (7.6/8.6)
Avx    =   150.0 mm^2                Avy    =   500.0 mm^2 (8.2.1)
Ceffx  =   20.00 mm                  Ceffy  =   30.00 mm   (7.8)
Zeffx  =   12.70x10^3 mm^3           Zeffy  =    9.75x10^3 mm^3 (7.6)
Seffx  =   16.40x10^3 mm^3           Seffy  =   12.20x10^3 mm^3 (7.5)

γm1    =    1.00 (3.1.2)             γm2    =    1.20 (3.1.2)
mx     =    0.00 (8.9.2)             my     =    0.00 (8.9.2)
mLT    =    0.00 (8.3.5.2)           λLT    =    0.00 (8.3.5.3/A8.2)
u      =    0.00 (8.3.5.3/A8.2)      v      =    0.00 (8.3.5.3/A8.2)
βw     =    0.00 (8.3.5.3/A8.2)      x      =    0.00 (8.3.5.3/A8.2)
λx     =    0.00 (8.7.4)             λy     =    0.00 (8.7.4)
qw     =    0.00 MPa (8.4.6)         pb     =    0.00 MPa (8.3.5.2/A8.1)
pcx    =    0.00 MPa (8.7.6/A8.4)    pcy    =    0.00 MPa (8.7.6/A8.4)
Kef    =    1.20 (9.3.4.4)           Kew    =    1.20 (9.3.4.4)

F      =  -52.78 kN
Fvx    =    0.00 kN                  Fvy    =    0.00 kN
Mx     =    0.00 kNm (Plastic)       My     =    0.00 kNm (Plastic)

Pt     =  240.07 kN  (8.6)           Vw     =    0.00 kN  (8.4.6)
Pcx    =    0.00 kN  (8.7.5)         Pcy    =    0.00 kN  (8.7.5)
Pcxbar =    0.00 kN  (8.7.5)         Pcybar =    0.00 kN  (8.7.5)
Vcx    =   23.82 kN  (8.2.1)         Vcy    =   79.39 kN  (8.2.1)
Mcx    =    4.19 kNm (8.2.2.1)       Mcy    =    3.22 kNm (8.2.2.1)
Mb     =    0.00 kNm (8.3.5.2)       Mp     =    0.00 kNm (8.4.4.2b)

Governing mode - Axial tension (8.6.1 eq 8.66) (Pass)
```