

9. 層間変形角と剛性率の検討

(1) 層間変形角の確認

2階 X左加力方向

偏心率 0.211 = $h * Q_e / D_i$

通し	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
Y10	1.000	27.614	4355.880	286.5	1.82	1/158	OK
Y8	1.000	31.830	5021.040	286.5	1.82	1/158	OK
Y5	1.152	19.211	2630.520	286.5	2.09	1/137	OK
Y3	1.195	8.123	1072.320	286.5	2.17	1/132	OK

2階 X右加力方向

偏心率 0.214 = $h * Q_e / D_i$

通し	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
Y10	1.000	27.855	4413.120	286.5	1.81	1/158	OK
Y8	1.000	31.692	5021.040	286.5	1.81	1/158	OK
Y5	1.154	19.160	2630.520	286.5	2.09	1/137	OK
Y3	1.198	8.108	1072.320	286.5	2.17	1/132	OK

2階 Y下加力方向

偏心率 0.054(0.15) = $h * Q_e / D_i$

通し	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
X3	1.000	24.779	3672.840	286.5	1.93	1/148	OK
X6	1.000	10.108	1498.200	286.5	1.93	1/148	OK
X9	1.000	5.040	747.000	286.5	1.93	1/148	OK
X10	1.000	5.040	747.000	286.5	1.93	1/148	OK
X11	1.000	12.813	1899.120	286.5	1.93	1/148	OK
X12.5	1.000	25.139	3726.240	286.5	1.93	1/148	OK

2階 Y上加力方向

偏心率 0.061(0.15) = $h * Q_e / D_i$

通し	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
X3	1.000	24.372	3668.520	286.5	1.90	1/151	OK
X6	1.000	9.953	1498.200	286.5	1.90	1/151	OK
X9	1.000	4.963	747.000	286.5	1.90	1/151	OK
X10	1.000	4.963	747.000	286.5	1.90	1/151	OK
X11	1.000	14.039	2113.200	286.5	1.90	1/151	OK
X12.5	1.000	24.628	3707.040	286.5	1.90	1/151	OK

1階 X左加力方向

偏心率 $0.104(0.15) = h * Q_e / D_i$

通口	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
Y11	1.000	55.007	7058.640	292.8	2.28	1/128	OK
Y9	1.000	28.856	3702.840	292.8	2.28	1/128	OK
Y8	1.000	11.643	1494.000	292.8	2.28	1/128	OK
Y7	1.000	23.352	2996.520	292.8	2.28	1/128	OK
Y6.5	1.000	5.821	747.000	292.8	2.28	1/128	OK
Y6	1.000	12.264	1573.680	292.8	2.28	1/128	OK
Y5	1.000	11.643	1494.000	292.8	2.28	1/128	OK
Y4	1.000	11.675	1498.200	292.8	2.28	1/128	OK
Y2	1.000	11.675	1498.200	292.8	2.28	1/128	OK
Y1	1.000	22.517	2889.360	292.8	2.28	1/128	OK

1階 X右加力方向

偏心率 $0.104(0.15) = h * Q_e / D_i$

通口	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
Y11	1.000	54.654	6953.760	292.8	2.30	1/127	OK
Y9	1.000	29.103	3702.840	292.8	2.30	1/127	OK
Y8	1.000	11.742	1494.000	292.8	2.30	1/127	OK
Y7	1.000	23.552	2996.520	292.8	2.30	1/127	OK
Y6.5	1.000	5.871	747.000	292.8	2.30	1/127	OK
Y6	1.000	12.369	1573.680	292.8	2.30	1/127	OK
Y5	1.000	11.742	1494.000	292.8	2.30	1/127	OK
Y4	1.000	11.775	1498.200	292.8	2.30	1/127	OK
Y2	1.000	10.934	1391.160	292.8	2.30	1/127	OK
Y1	1.000	22.709	2889.360	292.8	2.30	1/127	OK

1階 Y下加力方向

偏心率 0.099(0.15) = $h * Q_e / D_i$

通口	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
X1	1.000	44.058	5778.720	292.8	2.23	1/131	OK
X4	1.000	20.562	2696.880	292.8	2.23	1/131	OK
X5	1.000	11.409	1496.400	292.8	2.23	1/131	OK
X6	1.000	10.281	1348.440	292.8	2.23	1/131	OK
X7	1.000	10.281	1348.440	292.8	2.23	1/131	OK
X8	1.000	20.562	2696.880	292.8	2.23	1/131	OK
X9	1.000	15.339	2011.920	292.8	2.23	1/131	OK
X11	1.000	17.918	2350.080	292.8	2.23	1/131	OK
X12	1.000	5.695	747.000	292.8	2.23	1/131	OK
X13	1.000	38.347	5029.680	292.8	2.23	1/131	OK

1階 Y上加力方向

偏心率 0.099(0.15) = $h * Q_e / D_i$

通口	割増 係数 Ce	水平力 Qe (kN)	剛性 Di (kN/rad)	h (cm)	(cm)	/h	判定 1/120
X1	1.000	44.058	5778.720	292.8	2.23	1/131	OK
X4	1.000	20.562	2696.880	292.8	2.23	1/131	OK
X5	1.000	11.409	1496.400	292.8	2.23	1/131	OK
X6	1.000	10.281	1348.440	292.8	2.23	1/131	OK
X7	1.000	10.281	1348.440	292.8	2.23	1/131	OK
X8	1.000	20.562	2696.880	292.8	2.23	1/131	OK
X9	1.000	15.339	2011.920	292.8	2.23	1/131	OK
X11	1.000	17.918	2350.080	292.8	2.23	1/131	OK
X12	1.000	5.695	747.000	292.8	2.23	1/131	OK
X13	1.000	38.347	5029.680	292.8	2.23	1/131	OK

(2) 剛性率の確認

$$= h \times Q_i / D_i$$

$$r_s = h /$$

$$R_s = r_s / \text{平均}r_s$$

方向	階	Q _i (kN)	D _i (kN/rad)	h (cm)	 (cm)	r _s	r _s 120	平均r _s	R _s	R _s 0.60
X左加力	2	82.918	13079.760	286.5	1.82	157	OK	142	1.10	OK
	1	194.452	24952.440	292.8	2.28	128	OK		0.90	OK
X右加力	2	82.918	13137.000	286.5	1.81	158	OK	142	1.11	OK
	1	194.452	24740.520	292.8	2.30	127	OK		0.89	OK
Y下加力	2	82.918	12290.400	286.5	1.93	148	OK	139	1.06	OK
	1	194.452	25504.440	292.8	2.23	131	OK		0.94	OK
Y上加力	2	82.918	12480.960	286.5	1.90	150	OK	140	1.07	OK
	1	194.452	25504.440	292.8	2.23	131	OK		0.93	OK