

Alexandra Park

Item 8

Weak Story Investigation

WEAK STORY INVESTIGATION

Alexandra Park	2nd FLOOR	GROUND FLOOR
	$f'_c = 30$	$f'_c = 35$
DIRECTION	E-W	E-W
TOTAL SHEAR CAPACITY kN	110601	112672

The total shear capacity of the Ground floor in E-W direction is larger than the total shear capacity of the 2nd floor.

Wall Mark	Length	Width	Ac	$V_c = 0.18 \phi_c f_c^{1/2} A_c$	Reinf.		S	$V_s = (\phi_s A_s F_y dv \cot \theta) / s$
	mm	mm	mm ²	kN	bars		mm	kN
A-9	700	300	210000	145	15	@	200	398
A-8	700	300	210000	145	15	@	200	398
A-6	600	250	150000	104	15	@	200	337
A-3y	600	250	150000	104	15	@	200	337
A.2-A.3	3200	250	800000	554	15	@	300	1285
Ax-3	2800	200	560000	388	15	@	300	1122
B.8-Ax.3y	7200	250	1800000	1246	15	@	300	2917
C.9-C.13	8550	250	2137500	1480	15	@	250	4162
C.2-C.3y	5150	250	1287500	891	15	@	300	2081
D.9-D.13	8550	250	2137500	1480	15	@	250	4162
D-2	800	400	320000	221	15	@	200	459
E.9-E.13	8550	250	2137500	1480	15	@	250	4162
E-2	800	400	320000	221	15	@	200	459
Ex.4-Ex.8	6600	250	1650000	1142	15	@	300	2672
F.9-F.13	8550	250	2137500	1480	15	@	250	4162
F-2	800	400	320000	221	15	@	200	459
Fx-13	800	500	400000	277	15	@	200	459
Fx-10	800	500	400000	277	15	@	200	459
Fx-4	800	500	400000	277	15	@	200	459
G-3y	500	800	400000	277	15	@	200	275
G-2	D700		384845	266	15	@	200	398
Gx-10	800	500	400000	277	15	@	200	459
H-13	D700		384845	266	15	@	200	398
H-10	800	500	400000	277	15	@	200	459
H-7	D700		384845	266	15	@	200	398
H-3	D700		384845	266	15	@	200	398
H-2	D700		384845	266	15	@	200	398
J.10-J.14	8100	200	1620000	1121	15	@	300	3284
J/H.10-J/H.14	8100	250	2025000	1402	15	@	300	3284
J/K.10-J/K.14	8100	250	2025000	1402	15	@	300	3284
J.7-J.8	2600	300	780000	540	15	@	300	1040
J.1-J.4	10500	250	2625000	1817	15	@	300	4264
K.13-K.14	1500	250	375000	260	15	@	300	592
K-12	800	300	240000	166	15	@	200	459
K-11	800	300	240000	166	15	@	200	459
Kx.7-Kx.8	2600	300	780000	540	15	@	300	1040
K/J-3/4	3900	200	780000	540	15	@	300	1571
K-4	800	300	240000	166	15	@	200	459
K-3	800	300	240000	166	15	@	200	459
K-1	800	300	240000	166	15	@	200	459
L-14	500	800	400000	277	15	@	200	275
L-7	800	300	240000	166	15	@	200	459
L.3x-L.1	5700	250	1425000	986	15	@	250	2766
L/Lx-13/14	3300	250	825000	571	15	@	300	1326
L/Lx-3x.7	7100	300	2130000	1474	15	@	250	3452
Lx-10	800	300	240000	166	15	@	200	459
Lx-8	900	300	270000	187	15	@	200	520
Lx-7	850	300	255000	177	15	@	200	490
M.13-M.14	3300	250	825000	571	15	@	250	1591
M.3x-M.1	6500	250	1625000	1125	15	@	300	2632
My.11-My.14	6100	250	1525000	1056	15	@	300	2468
N.11-N.13	5200	250	1300000	900	15	@	300	2101
N.3-N.3x	1600	250	400000	277	15	@	300	632
N-1	800	300	240000	166	15	@	200	459
P-14	500	800	400000	277	15	@	200	275
P-11	300	700	210000	145	15	@	200	153
P.1-P.3	5200	250	1300000	900	15	@	300	2101
Q.11-Q.14	5500	250	1375000	952	15	@	300	2224
Q-2	450	450	202500	140	15	@	200	245
TOTAL SHEAR CAPACITY OF GROUND FLOOR IN THIS DIRECTION kN				33259	TOTAL SHEAR CAPACITY kN		112672	

$$V_c = 0.18 A_c f_c^{1/2} \phi_c$$

A_c = Area of Concrete Walls of each floor in Each Direction

$f_c = 35$ Mpa

$\phi_c = 0.65$

$$V_s = (\phi_s A_s F_y dv \cot \theta) / s$$

A_s = Area of hor. Steel or tie

$F_y = 400$ Mpa

$\phi_s = 0.85$

$dv = 0.9(L-50)$

$\cot \theta = 1$

Wall Mark	Length	Width	Ac	$V_c=0.18\phi_c f_c^{1/2} A_c$	Reinf.		S	$V_s=(\phi_s A_s F_y dv \cot \theta)/s$
	mm	mm	mm ²	kN	bars		mm	kN
C.4-C.6	2500	200	500000	320	10	@	200	750
C.6-C.10	5500	200	1100000	705	10	@	400	834
C.2-C.5	9200	200	1840000	1179	10	@	200	2800
D.6-D.11	9200	200	1840000	1179	15	@	300	3733
D.2-D.3y	6500	200	1300000	833	15	@	300	2632
Dx.3y-Dx.5	3000	300	900000	577	15	@	300	1204
E.6-E.11	9200	200	1840000	1179	15	@	300	3733
E.2-E.5	9200	200	1840000	1179	15	@	300	3733
F.6-F.13	13000	200	2600000	1666	15	@	300	5284
F.5-F.2	9200	200	1840000	1179	15	@	300	3733
Fx.7-Fx.13	11000	200	2200000	1410	15	@	300	4468
G.2-G.4	8500	200	1700000	1089	15	@	300	3448
Gx.7-Gx.13	11000	200	2200000	1410	15	@	300	4468
H.6-H.13	13000	200	2600000	1666	15	@	250	6340
H.2-H.4	8000	200	1600000	1025	15	@	250	3892
J.9-J.13	9000	200	1800000	1154	10	@	200	2739
J.7-J.8	2500	300	750000	481	10	@	270	555
J.2-J.5	9200	200	1840000	1179	10	@	300	1867
K.12-K.13	3300	250	825000	529	10	@	200	995
K.2-K.5	9200	200	1840000	1179	15	@	300	3733
Kx.7-Kx.8	2500	300	750000	481	10	@	270	555
L.10x-L.13	6200	200	1240000	795	15	@	250	3011
L.2-L.5	9200	200	1840000	1179	15	@	250	4480
Lx.6-Lx.10	4800	300	1440000	923	15	@	250	2326
M.7-M.10x	7400	300	2220000	1423	10	@	200	2249
M.2-M.3z	6700	200	1340000	859	10	@	300	1357
My.3x-My.3z	2700	300	810000	519	10	@	200	811
N.11-N.13	4100	200	820000	525	10	@	300	826
N.2-N.3z	7500	200	1500000	961	15	@	250	3648
Ny.3x-Ny.4	3500	250	875000	561	10	@	200	1056
TOTAL SHEAR CAPACITY OF 2nd FLOOR IN THIS DIRECTION kN				29344	TOTAL SHEAR CAPACITY kN			110601

$$V_c=0.18A_c f_c^{1/2} \phi_c$$

A_c = Area of Concrete Walls of each floor in Each Direction

$$f'_c = 30 \text{ Mpa}$$

$$\phi_c = 0.65$$

$$V_s=(\phi_s A_s F_y dv \cot \theta)/s$$

A_s = Area of hor. Steel or tie

$$F_y = 400 \text{ Mpa}$$

$$\phi_s = 0.85$$

$$dv = 0.9(L-50)$$

$$\cot \theta = 1$$