

Fig.(6) – Ultimate Moment M_{yy} In Roof Slab under (DL+SDL+Impact)

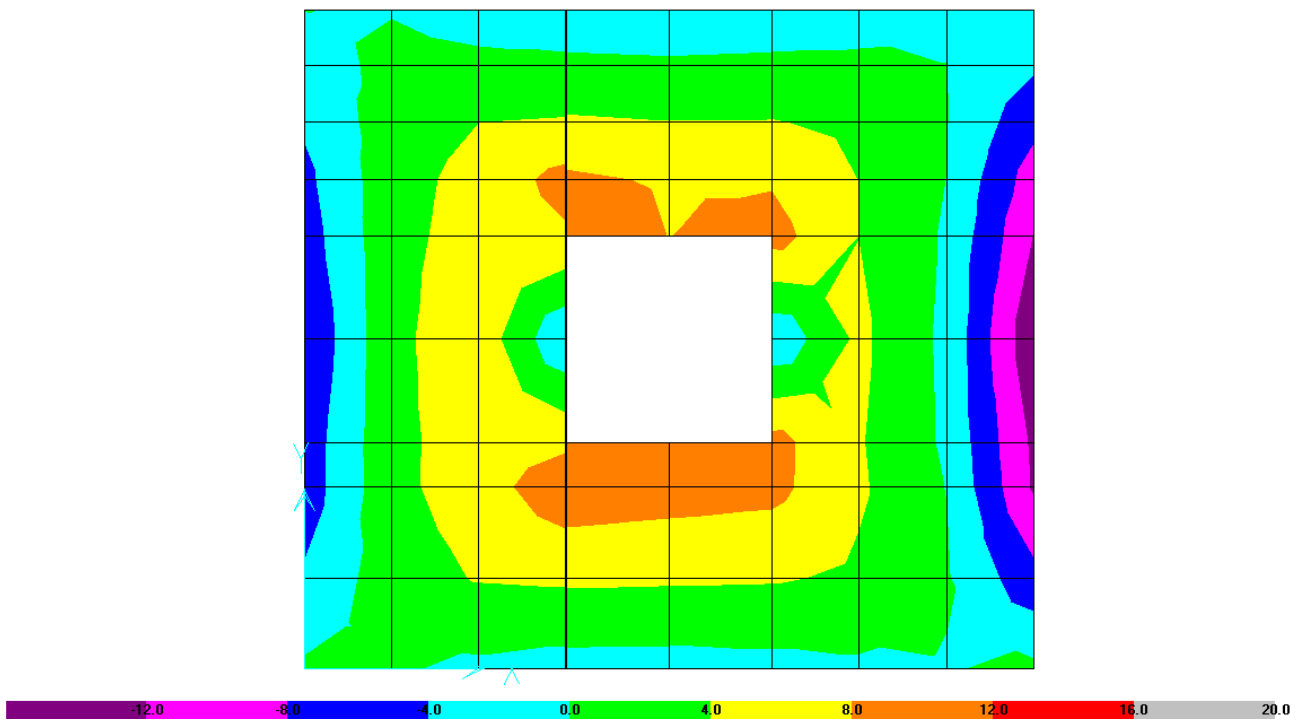


Fig.(7) – Ultimate Moment M_{xx} in Exterior Wall with opening under Impact

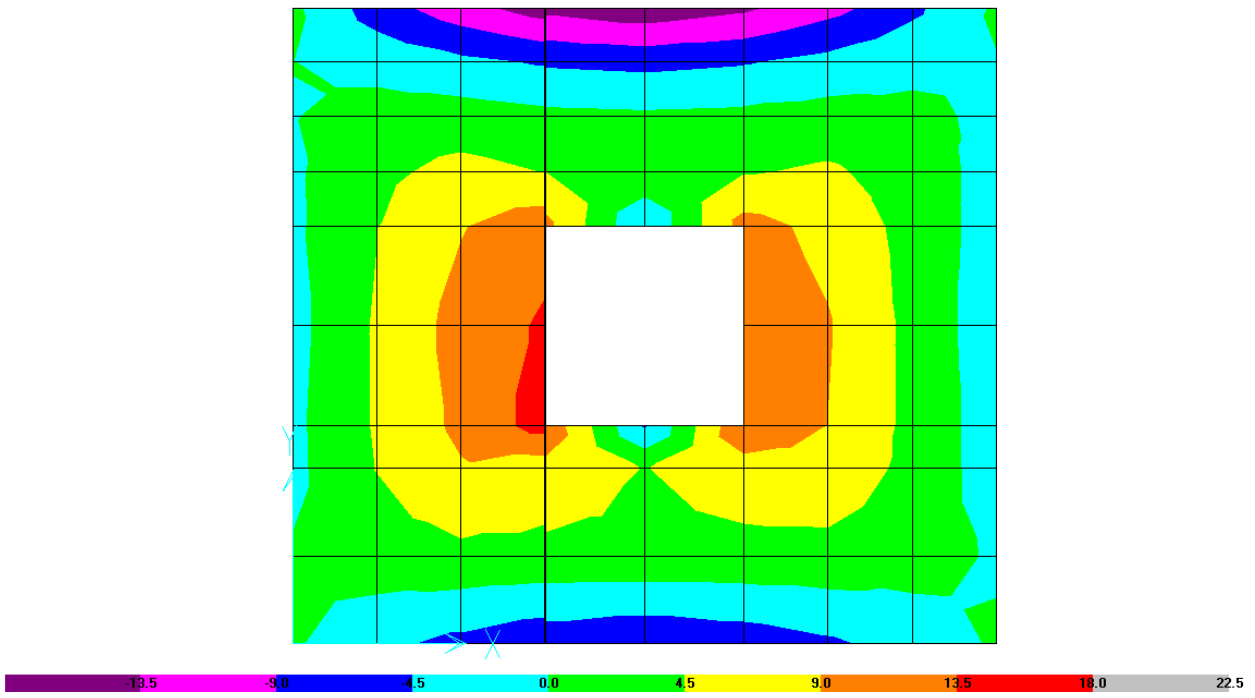


Fig.(8) – Ultimate Moment M_{yy} in Exterior Wall with opening under Impact

5. ETABS MODEL

a- Assumptions :

A 3D- ETABS Model was created for the whole building as shown in Fig.(9). The loads subjected were Dead Loads (DL), Superimposed Dead Load (SDL), Live Loads (LL), Wind Loads (W), Earthquake Loads (EQ) and Impact Loads (IM). Load combination were chosen as per ACI 318M-08 and UBC-97 codes. Analysis and Design runs were conducted. Serviceability and strength requirements of the codes were met satisfactorily.

b- Results

The computer results are provided in software. Samples of deformed shapes and internal forces and moments are shown in Figs.(9 & 10) and Table (2).

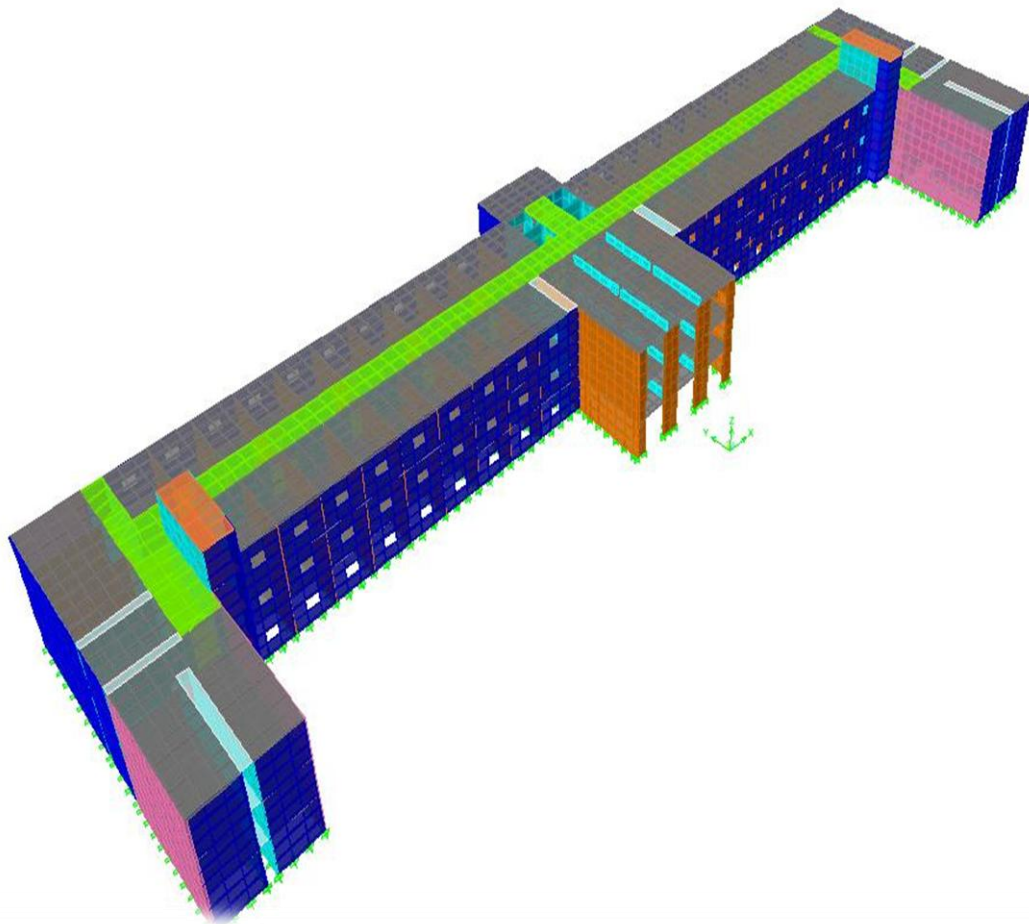


Fig.(9) – 3D Model for the whole building

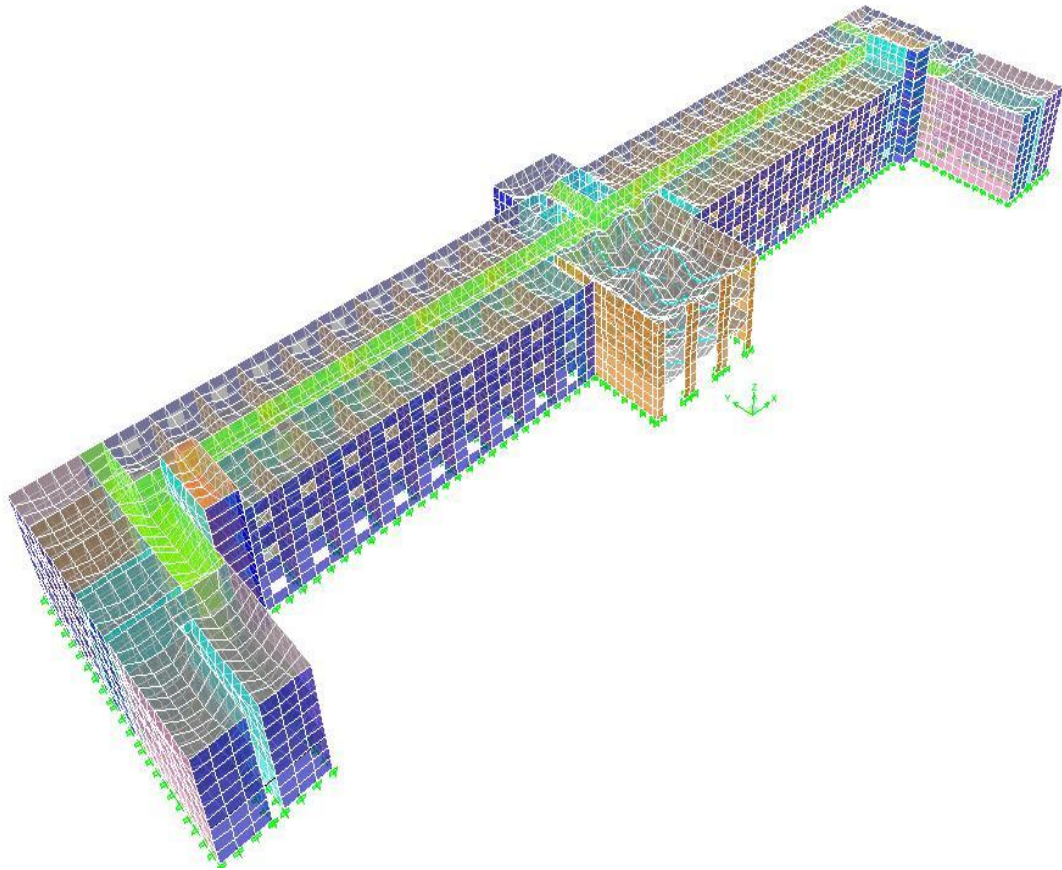


Fig.(10) – 3D Deformed shape under (Impact+DL+SDL+LL)

Story	Pier	Load	Loc	P	V2	V3	T	M2	M3
STORY1	P37	UDLIM2Y	Top	-107.43	-19.13	-4.87	0.041	4.302	26.369
STORY1	P37	UDLIM2Y	Bottom	-101.95	4.02	0.62	0.197	0.114	-16.294
STORY1	4	UDLIM2Y	Top	-107.39	19.15	-4.87	-0.041	4.302	-26.353
STORY1	4	UDLIM2Y	Bottom	-101.85	-3.97	0.62	-0.197	0.114	16.349
STORY1	37	UDLIM2Y	Top	-869.57	-6.04	1153.91	115.129	-386.844	182.887
STORY1	37	UDLIM2Y	Bottom	-389.9	-13.92	-1132.74	-82.63	-355.881	387.565
STORY1	39	UDLIM2Y	Top	-869.37	8.08	1153.91	-115.131	-386.844	-184.548
STORY1	39	UDLIM2Y	Bottom	-389.67	15.9	-1132.74	82.629	-355.882	-388.157
STORY1	40	UDLIM2Y	Top	-229.61	0.17	328.55	-0.001	-145.953	0.269
STORY1	40	UDLIM2Y	Bottom	-204.47	0.17	-313.09	0	-123.283	0.554
STORY1	41	UDLIM2Y	Top	-138.44	-135.24	1.94	1.065	1.389	31.495
STORY1	41	UDLIM2Y	Bottom	-139.38	-196.73	-7.25	-1.256	-4.777	-186.662
STORY1	42	UDLIM2Y	Top	-138.3	-135.16	-1.94	-1.065	-1.389	31.374
STORY1	42	UDLIM2Y	Bottom	-139.2	-196.69	7.25	1.256	4.776	-186.762

Table 2 – Sample results for exterior walls under (DL+SDL+LL+Impact)

6. Conclusion

The structure for the permanent accommodation building as provided by the Livin Modular has been analyzed and designed according to the ACI318M-08 & UBC-97 Codes and was found to be satisfactory.