

Design And Analysis Of Multistorey Building With Respect To Seismic Loads Using ETABS

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Abstract

Earthquake resistance diagnosis was carried out for some buildings in India. Buildings were selected based on their age, usage, structure and distribution. The investigation covered Disaster Management Buildings, Emergency Response Organizations, hospitals, schools as well as residential buildings. The tall buildings are more flexible than the shorter buildings and they are sensitive to a different frequency range in the earthquake excitation. In our paper we analyze and discuss about Hostel with G+4 with separate parking. Finally we choose Seismic analysis and response spectrum approach as a analysis method analysis will be done using E-Tabs software. Our project will be located at salem with 17.5m height designed as a RC multistorey framed structure. The objective of the study is to create a program in E-Tabs to determine bending moment & stress diagrams based on response spectrum method.

Keyword: Design, Analysis, Multistorey Building, Seismic Loads, ETABS

1.INTRODUCTION

An multi storey building (in American English) or flat (in British English) is a self-contained housing unit (a type of residential real estate) that occupies only part of a building. Such a building may be called an multi storey building building, multi storey building (in American English), block of flats, tower block, high-rise or, occasionally mansion block (in British English), especially if it consists of many multi storey building for rent. In Scotland it is often called a tenement, which has a pejorative connotation elsewhere.

Multi storey building may be owned by an owner/occupier by leasehold tenure or rented by tenants (two types of housing tenure). The term multi storey building is favored in North America (although flat is used in the case of a unit which is part of a house containing two or three units, typically one to a floor) and also is the preferred term in Ireland.

1.1 Necessity

By constructing the modern designs with all the facilities in Multistorey building is very useful for college students. And also very useful for rural area students to attain their aim and studies from out their area by staying in college hostel with safety and basic need.

1.2 Availability Of Labours

Experienced and skilled labors such as Mason, Carpenters and Painters etc., are available in Salem dist.

1.3 Availability Of Materials

All the materials are available locally in Salem and around.

1.4 Administrative Approvals

The administrative approval should be obtained from the concerned authority of government of Tamilnadu.

1.5 Schedule Of Rates

The rates of adapted as per the current P.W.D schedule of rates 2016-2017 of Salem district and prevailing market rates available locally.

2.LIST OF NOTATIONS

UBC - uniform building code

Ah - Design horizontal seismic coefficient

DL - Response quantity due to dead load

ELx - Response quantity due to earthquake load for horizontal shaking along-x direction

ELy - Response quantity due to earthquake load for horizontal shaking along-y direction

ELz - Response quantity due to earthquake load for vertical shaking along z direction

g - Acceleration due to gravity

h - Height of structure, in metres.

Z - Zone factor

ϕ_{ik} - Mode shape coefficient at floor i in mode k

λ - Peak response due to all modes considered W - Seismic weight of the structure

W_i - Seismic weight of floor i

ELx - Response quantity due to earthquake load for horizontal shaking along-x direction

B - Breadth of the beam or slab.

D - Overall depth of beam or slab.

d - Effective depth of beam or slab.

Fy - Characteristic strength of the steel.

K - Constant of co-efficient of factor.

Lex - Effective length of shorter side of slab. Ley -

Effective length of longer side of slab. SV - Spacing of stirrups.

V - Shear force.

Vu - Design Shear force.

W - total load.

Wu - Factored load.

3.SPECIFICATION

3.1detailed Specification

The detailed specification is a detailed description and expresses the requirements. The detailed specification of an item of work specifies the quality and quantities of materials the proportion of mortar. Workmanship is the method of preparation of work and excavation and the method of measurement the detailed specification of different items of work are prepared separately and describe what the works should be and how they shall be executed. The detailed specification form an important part of contract document. Every engineering Department prepared, the detailed specifications on various items of work and get them printed in order book from under the name. Detailed specification when the work or a structure or project is taken up instead of waiting detailed specification every time the printed detailed specifications are referred.

3.2 Materials

All materials shall be as per standard specifications. Coarse aggregate shall be of hard, well-burnt brick ballast of 40 mm gauge. It shall be clean, free from dust, dirt, and other foreign matters. Brick ballast shall pass through square mesh of 52.5 mm and not more than 20 per cent shall pass through a mesh of 25 mm.

3.3 Proportions

The concrete shall consist of 1 m³ of brick ballast, 0.32 m³ of surkhi (sand and cinder) and 0.16 m³ of white lime in the proportion of 100: 32: 16 by volume.

3.4 Mixing

Mixing shall be done on clean water tight, masonry platform of sufficient size. Brick ballast shall be stacked in a rectangular of uniform thickness usually 30 cm high and well soaked with clean water for a period of at least three hours. Lime and surkhi shall be measured with wooden box in the proportion in 1: 2 and mixed thoroughly dry to have uniform colour.

3.5 Foundation And Plinth

Foundation and plinth shall be used Ist class brickwork in 1: 6 cement mortar over 1: 4: 8 cement concrete. The footing size as 3200 mm x 4800 mm.

3.6 Sand Filling In Basement

The basement filled up with clean sand and it should be compacted with water as per standard specifications.

3.7 Damp Proof Course

Damp proof course shall 200 mm thick cement concrete 1: 11/2: 3, mixed with standard water proofing materials as specified and painted with two coats of bitumen.

3.8 Super Structure

Super structure shall be of Ist class brickwork with 1: 6 cement mortar. The height of all walls will be 3500 mm above floor level. Parapet walls 300 mm thick and 1000

mm high will be provided all around. The beams sizes as 300 mm x 230 mm and columns sizes as 400 mm x 300 mm will be provided all around.

3.9 Roofing

Roof shall be of R.C.C. slab with an insulation layer and lime concrete terracing above, supported over R.C.C. beams as required. Height of all rooms will be 4.7 m.

3.10 Flooring

Floors of all rooms shall be of mosaic. Bath rooms and rest rooms shall be coloured and polished of cement concrete over lime concrete.

3.11 Finishing

Inside and outside walls shall be of 12 mm cement lime plastered 1: 1: 6. Bath rooms and rest rooms are inside white washed 3 coats.

3.12 Weathering Course

A Weathering course using brick jelly concrete will be provided average 75 mm thick over the slab and finished with two course of hydraulic pressed Mangalore flat tiles using cement mortar 1:5 mixed with 10% of crude Oil.

3.13 White Washing

One primer coat and two coats of colour wash to be done for all plastered wall including inside and outside of all around.

4. E-TABS REPORT

4.1 Structure Data

This chapter provides model geometry information, including items such as story levels, point coordinates, and element connectivity.

4.1 Story Data

Table 1 shows Story Data

Table 1 Story Data

Name	Height mm	Elevation mm	Master Story	Similar To	Splice Story
Story5	3500	17000	Yes	None	No
Story4	3500		No	Story5	No
Story3	3500	10000	No	Story5	No
Story2	3500	6500	No	Story5	No
Story1	3000	3000	No	Story5	No
Base	0	0	No	None	No

4.2 Point Coordinates

Table 2 shows Joint Coordinates Data

Table 2 Joint Coordinates Data

Label	X mm	Y mm	ΔZ Below mm
1	0	0	0
25	44400	0	0
19	3700	0	0
36	3700	6800	0
38	0	6800	0
40	7400	0	0
47	7400	6800	0
48	11100	0	0
50	11100	6800	0
52	14800	0	0
54	14800	6800	0
56	18500	0	0
58	18500	6800	0
60	22200	0	0
62	22200	6800	0
82	25900	0	0
83	25900	6800	0
84	29600	0	0
85	29600	6800	0
86	33300	0	0
87	33300	6800	0
88	37000	0	0
89	37000	6800	0
90	40700	0	0
91	40700	6800	0
93	44400	6800	0
94	48100	0	0
95	48100	6800	0
96	51800	0	0
97	51800	6800	0
98	3700	9400	0
99	0	9400	0
100	7400	9400	0
101	11100	9400	0
102	14800	9400	0
103	18500	9400	0
104	22200	9400	0
105	25900	9400	0
106	29600	9400	0
107	33300	9400	0
108	37000	9400	0
109	40700	9400	0
110	44400	9400	0

111	48100	9400	0
112	51800	9400	0
113	3700	14100	0
114	0	14100	0
115	7400	14100	0
116	11100	14100	0
117	14800	14100	0
118	18500	14100	0
119	22200	14100	0
120	25900	14100	0
121	29600	14100	0
122	33300	14100	0
123	37000	14100	0
124	40700	14100	0
125	44400	14100	0
126	48100	14100	0
127	51800	14100	0
128	3700	18800	0
129	0	18800	0
130	7400	18800	0
131	11100	18800	0
132	14800	18800	0
133	18500	18800	0
136	29600	18800	0
137	33300	18800	0
138	37000	18800	0
139	40700	18800	0
140	44400	18800	0
141	48100	18800	0
142	51800	18800	0
143	3700	23500	0
144	0	23500	0
145	7400	23500	0
146	11100	23500	0
147	14800	23500	0
148	18500	23500	0
151	29600	23500	0
152	33300	23500	0
153	37000	23500	0
154	40700	23500	0
155	44400	23500	0
156	48100	23500	0
157	51800	23500	0
158	3700	28200	0
159	0	28200	0
160	7400	28200	0
161	11100	28200	0
162	14800	28200	0
163	18500	28200	0
166	29600	28200	0

167	33300	28200	0
168	37000	28200	0
169	40700	28200	0
170	44400	28200	0
171	48100	28200	0
172	51800	28200	0
173	3700	32900	0
174	0	32900	0
175	7400	32900	0
176	11100	32900	0
177	14800	32900	0
178	18500	32900	0
181	29600	32900	0
182	33300	32900	0
183	37000	32900	0
184	40700	32900	0
185	44400	32900	0
186	48100	32900	0
187	51800	32900	0
188	3700	37600	0
189	0	37600	0
190	7400	37600	0
191	11100	37600	0
192	14800	37600	0
193	18500	37600	0
194	22200	37600	0
195	25900	37600	0
196	29600	37600	0
197	33300	37600	0
198	37000	37600	0
199	40700	37600	0
200	44400	37600	0
201	48100	37600	0
202	51800	37600	0
203	3700	42300	0
204	3700	47000	0
205	3700	51700	0
206	0	42300	0
207	0	47000	0
208	0	51700	0
209	7400	42300	0
210	7400	47000	0
211	7400	51700	0
212	11100	42300	0
213	11100	47000	0
214	11100	51700	0
215	14800	42300	0
216	14800	47000	0
217	14800	51700	0
218	18500	42300	0

219	18500	47000	0
220	18500	51700	0
221	22200	42300	0
222	22200	47000	0
223	22200	51700	0
224	25900	42300	0
225	25900	47000	0
226	25900	51700	0
227	29600	42300	0
228	29600	47000	0
229	29600	51700	0
230	33300	42300	0
231	33300	47000	0
232	33300	51700	0
233	37000	42300	0
234	37000	47000	0
235	37000	51700	0
236	40700	42300	0
237	40700	47000	0
238	40700	51700	0
239	44400	42300	0
240	44400	47000	0
241	44400	51700	0
242	48100	42300	0
243	48100	47000	0
244	48100	51700	0
245	51800	42300	0
246	51800	47000	0
247	51800	51700	0
249	3700	56400	0
252	0	56400	0
255	7400	56400	0
258	11100	56400	0
261	14800	56400	0
264	18500	56400	0
267	22200	56400	0
270	25900	56400	0
273	29600	56400	0
276	33300	56400	0
279	37000	56400	0
282	40700	56400	0
285	44400	56400	0
288	48100	56400	0
291	51800	56400	0

4.3 Properties

This chapter provides property information for materials, frame sections, shell sections, and links.

4.4 Materials

Table 3 Material Properties Summary

Name	Type	E MPa	v	Unit Weight kN/m ³	Design Strengths
4000Psi	Concrete	24855.58	0.2	23.5631	$F_c=27.58$ MPa
A615Gr60	Rebar	199947.98	0.3	76.9729	$F_y=413.69$ MPa, $F_u=620.53$ MPa

4.5 Frame Sections

Table 4 Frame Sections Summary

Name	Material	Shape
Beam	4000Psi	Concrete Rectangular
Column	4000Psi	Concrete Rectangular

4.6 Shell Sections

Table 5 Shell Sections Summary

Name	Design Type	Element Type	Material	Total Thickness mm
Slab1	Slab	Shell-Thin	4000Psi	150

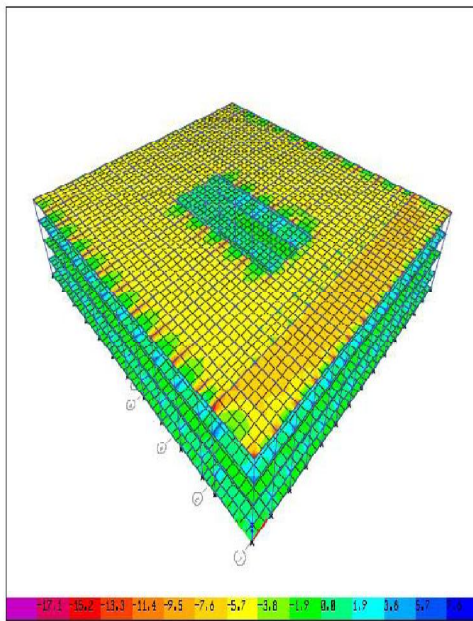


Figure.1 Slab Stress Diagram

Figure.1 shows Slab Stress Diagram. Figure.2 shows Overall Bending Moment For Structure

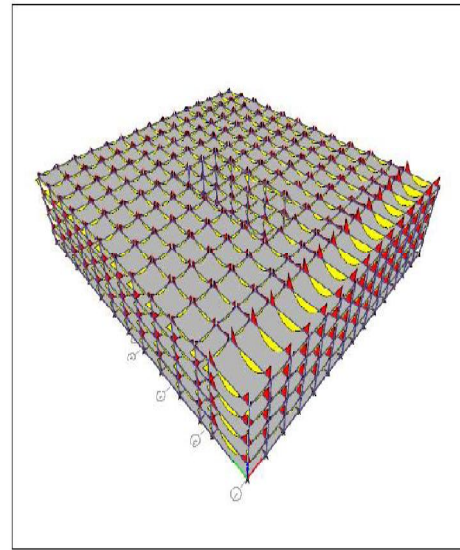


Figure.2 Overall Bending Moment For Structure

4.7. Frame Assignments

Table. 6 Shows Frame Assignments

Table. 6 Frame Assignments

Story	Label	Unique Name	Design Type	Length mm	Analysis Section	Design Section
Story4	C23	2229	Column	3500	Column	Column
Story4	C24	156	Column	3500	Column	Column
Story4	C25	171	Column	3500	Column	Column
Story4	C26	186	Column	3500	Column	Column
Story4	C27	201	Column	3500	Column	Column
Story4	C28	215	Column	3500	Column	Column
Story4	C29	230	Column	3500	Column	Column
Story4	C30	244	Column	3500	Column	Column
Story4	C31	340	Column	3500	Column	Column
Story4	C32	344	Column	3500	Column	Column
Story4	C33	348	Column	3500	Column	Column
Story4	C34	352	Column	3500	Column	Column
Story4	C35	356	Column	3500	Column	Column
Story4	C36	360	Column	3500	Column	Column
Story4	C37	364	Column	3500	Column	Column
Story4	C38	368	Column	3500	Column	Column
Story4	C39	372	Column	3500	Column	Column
Story4	C40	376	Column	3500	Column	Column
Story4	C41	380	Column	3500	Column	Column
Story4	C42	384	Column	3500	Column	Column
Story4	C43	437	Column	3500	Column	Column
Story4	C44	441	Column	3500	Column	Column
Story4	C45	445	Column	3500	Column	Column
Story4	C46	449	Column	3500	Column	Column
Story4	C47	453	Column	3500	Column	Column
Story4	C48	457	Column	3500	Column	Column

Label	Story	Section	Location	P MM	M Major MM-m	M Minor MM-m	PMM Combo	PMM Ratio or Rebar %
C40	Story4	Column	Top	256.9238	70.2949	-185.8226	DCon2	0.89 %
C40	Story4	Column	Bottom	234.3153	-64.9723	-155.9247	DCon2	0.81 %
C41	Story4	Column	Top	400.4125	24.2425	251.5695	DCon2	1.16 %
C41	Story4	Column	Bottom	427.8047	-25.9078	-216.7071	DCon2	0.88 %
C42	Story4	Column	Top	531.4375	82.1838	-167.4492	DCon2	0.8 %
C42	Story4	Column	Bottom	558.8296	-93.8427	-157.7297	DCon2	0.8 %
C43	Story4	Column	Top	346.8884	90.2198	-128.3711	DCon2	0.8 %
C43	Story4	Column	Bottom	373.7805	-83.1031	-118.9838	DCon2	0.8 %
C44	Story4	Column	Top	400.3676	-24.2482	254.9357	DCon2	1.19 %
C44	Story4	Column	Bottom	427.7597	25.9051	-219.2682	DCon2	0.88 %
C45	Story4	Column	Top	531.7754	-32.2043	-169.6162	DCon2	0.8 %
C45	Story4	Column	Bottom	559.1675	33.8832	-159.5175	DCon2	0.8 %
C46	Story4	Column	Top	399.5241	-24.1992	254.5308	DCon2	1.19 %
C46	Story4	Column	Bottom	426.9163	25.884	-218.8872	DCon2	0.88 %
C47	Story4	Column	Top	530.8354	-32.1474	-169.3203	DCon2	0.8 %
C47	Story4	Column	Bottom	558.2275	33.8082	-159.1993	DCon2	0.8 %
C48	Story4	Column	Top	399.5307	-24.1995	254.5495	DCon2	1.19 %
C48	Story4	Column	Bottom	426.9223	25.8844	-218.2164	DCon2	0.88 %
C49	Story4	Column	Top	530.7735	-32.1436	-169.3132	DCon2	0.8 %
C49	Story4	Column	Bottom	558.1656	33.8025	-159.1894	DCon2	0.8 %
C50	Story4	Column	Top	399.5336	-24.199	254.5449	DCon2	1.19 %
C50	Story4	Column	Bottom	426.9307	25.8849	-218.7708	DCon2	0.88 %
C51	Story4	Column	Top	530.8928	-32.1887	-169.3078	DCon2	0.8 %
C51	Story4	Column	Bottom	558.0845	33.7976	-159.1084	DCon2	0.8 %
C52	Story4	Column	Top	399.542	-24.1992	254.5442	DCon2	1.19 %
C52	Story4	Column	Bottom	426.9341	25.8851	-218.7417	DCon2	0.88 %
C53	Story4	Column	Top	530.5037	-32.1273	-169.3052	DCon2	0.8 %
C53	Story4	Column	Bottom	557.8959	33.7881	-158.9421	DCon2	0.8 %
C54	Story4	Column	Top	399.5426	-24.1993	254.5459	DCon2	1.19 %
C54	Story4	Column	Bottom	426.9347	25.8851	-218.7428	DCon2	0.88 %
C55	Story4	Column	Top	530.4998	32.127	-169.3026	DCon2	0.8 %
C55	Story4	Column	Bottom	557.8919	33.7859	-158.9378	DCon2	0.8 %

C95	Story4	Column	Top	335.8671	-87.872	-18.3398	DCon2	0.8 %
C95	Story4	Column	Bottom	362.7592	81.4344	-19.5227	DCon2	0.8 %
C96	Story4	Column	Top	512.0704	31.0111	-24.8593	DCon2	0.8 %
C96	Story4	Column	Bottom	539.4625	-32.6698	27.148	DCon2	0.8 %
C97	Story4	Column	Top	332.4837	87.8513	-16.8833	DCon2	0.8 %
C97	Story4	Column	Bottom	359.8758	-91.239	-18.8887	DCon2	0.8 %
C98	Story4	Column	Top	510.1484	-30.8946	-24.767	DCon2	0.8 %
C98	Story4	Column	Bottom	537.5405	32.5834	27.0704	DCon2	0.8 %
C99	Story4	Column	Top	510.1118	-30.8923	-24.7214	DCon2	0.8 %
C99	Story4	Column	Bottom	537.5039	32.5812	27.0241	DCon2	0.8 %
C100	Story4	Column	Top	511.3738	-30.9688	-24.7232	DCon2	0.8 %
C100	Story4	Column	Bottom	538.7659	32.6276	27.1887	DCon2	0.8 %
C101	Story4	Column	Top	482.2328	59.3389	-21.9787	DCon2	0.8 %
C101	Story4	Column	Bottom	479.6249	-59.1381	-24.4513	DCon2	0.8 %
C102	Story4	Column	Top	509.5411	30.8878	-24.6728	DCon2	0.8 %
C102	Story4	Column	Bottom	536.9332	-32.5188	-26.9729	DCon2	0.8 %
C103	Story4	Column	Top	509.6191	30.8825	-24.716	DCon2	0.8 %
C103	Story4	Column	Bottom	537.0112	-32.5214	-27.0191	DCon2	0.8 %
C104	Story4	Column	Top	510.1756	30.8962	-24.7484	DCon2	0.8 %
C104	Story4	Column	Bottom	537.5678	-32.5851	-27.0491	DCon2	0.8 %
C105	Story4	Column	Top	512.073	-31.0111	-24.837	DCon2	0.8 %
C105	Story4	Column	Bottom	539.4651	32.67	27.1285	DCon2	0.8 %
C106	Story4	Column	Top	332.4728	-87.3343	-16.8824	DCon2	0.8 %
C106	Story4	Column	Bottom	359.865	81.2088	-18.826	DCon2	0.8 %
C107	Story4	Column	Top	512.2527	31.022	-24.8626	DCon2	0.8 %
C107	Story4	Column	Bottom	539.6448	-32.6809	-26.3644	DCon2	0.8 %
C108	Story4	Column	Top	332.6247	87.368	-16.332	DCon2	0.8 %
C108	Story4	Column	Bottom	360.0169	-91.2444	-18.142	DCon2	0.8 %
C109	Story4	Column	Top	510.3369	-30.906	-24.4737	DCon2	0.8 %
C109	Story4	Column	Bottom	537.729	32.5848	26.275	DCon2	0.8 %
C110	Story4	Column	Top	510.3522	-30.9069	-24.4704	DCon2	0.8 %
C110	Story4	Column	Bottom	537.7443	32.5858	26.2696	DCon2	0.8 %
C111	Story4	Column	Top	512.1648	-31.0167	-24.5215	DCon2	0.8 %
C111	Story4	Column	Bottom	539.597	32.6755	26.3125	DCon2	0.8 %

C150	Story4	Column	Bottom	539.6861	-32.6821	-24.7675	DCon2	0.8 %
C151	Story4	Column	Top	512.0042	31.0069	-23.2241	DCon2	0.8 %
C151	Story4	Column	Bottom	539.3963	-32.6888	-25.8354	DCon2	0.8 %
C152	Story4	Column	Top	518.5796	31.4052	-25.7979	DCon2	0.8 %
C152	Story4	Column	Bottom	545.9717	-33.064	-25.3397	DCon2	0.8 %
C153	Story4	Column	Top	332.5777	87.2895	-14.9976	DCon2	0.8 %
C153	Story4	Column	Bottom	359.9698	-91.0448	-16.6734	DCon2	0.8 %
C154	Story4	Column	Top	332.386	87.2503	-15.1761	DCon2	0.8 %
C154	Story4	Column	Bottom	359.7581	-91.0107	-17.4355	DCon2	0.8 %
C155	Story4	Column	Top	338.9545	87.7578	-17.3672	DCon2	0.8 %
C155	Story4	Column	Bottom	364.3466	-91.3121	-17.5844	DCon2	0.8 %
C156	Story4	Column	Top	510.3685	-30.9079	-22.9973	DCon2	0.8 %
C156	Story4	Column	Bottom	537.7607	32.5868	-24.8985	DCon2	0.8 %
C157	Story4	Column	Top	510.0762	-30.8902	-23.2302	DCon2	0.8 %
C157	Story4	Column	Bottom	537.4683	32.549	-25.897	DCon2	0.8 %
C158	Story4	Column	Top	517.0963	-31.3153	-25.8317	DCon2	0.8 %
C158	Story4	Column	Bottom	544.4884	32.9742	-25.2813	DCon2	0.8 %
C159	Story4	Column	Top	509.7087	-30.8878	-22.9548	DCon2	0.8 %
C159	Story4	Column	Bottom	537.0983	32.5267	-24.8595	DCon2	0.8 %
C160	Story4	Column	Top	509.3999	-30.8492	-23.2036	DCon2	0.8 %
C160	Story4	Column	Bottom	538.792	32.5081	-25.5414	DCon2	0.8 %
C161	Story4	Column	Top	516.4347	-31.2753	-25.8221	DCon2	0.8 %
C161	Story4	Column	Bottom	543.8268	32.9341	-25.2682	DCon2	0.8 %
C162	Story4	Column	Top	510.1835	-30.8987	-23.1726	DCon2	0.8 %
C162	Story4	Column	Bottom	537.5757	32.5556	-24.6231	DCon2	0.8 %
C163	Story4	Column	Top	509.3989	-30.849	-23.2241	DCon2	0.8 %
C163	Story4	Column	Bottom	538.788	32.5079	-25.5396	DCon2	0.8 %
C164	Story4	Column	Top	516.4579	-31.2767	-25.8255	DCon2	0.8 %
C164	Story4	Column	Bottom	543.85	32.9355	-25.2752	DCon2	0.8 %
C165	Story4	Column	Top	512.2301	-31.0206	-23.7489	DCon2	0.8 %
C165	Story4	Column	Bottom	539.6222	32.6795	-24.9734	DCon2	0.8 %
C166	Story4	Column	Top	509.3387	-30.8483	-23.2469	DCon2	0.8 %
C166	Story4	Column	Bottom	538.7279	32.5042	-25.4769	DCon2	0.8 %
C167	Story4	Column	Top	516.4674	-31.2772	-25.8275	DCon2	0.8 %
C167	Story4	Column	Bottom	543.8595	32.9381	-25.2866	DCon2	0.8 %
C168	Story4	Column	Top	515.519	-31.2196	-24.968	DCon2	0.8 %
C168	Story4	Column	Bottom	542.9111	32.8787	-26.0018	DCon2	0.8 %
C169	Story4	Column	Top	509.2339	-30.8392	-23.2749	DCon2	0.8 %
C169	Story4	Column	Bottom	538.826	32.498	-25.3662	DCon2	0.8 %
C170	Story4	Column	Top	516.4782	-31.2779	-25.8252	DCon2	0.8 %

Label	Story	Section	Location	V Major MM	Major Combo	At Major mm ² /m	V Minor MM	Minor Combo	At Minor mm ² /m
C23	Story4	Column	Top	0		0	0.1678	DCon2	555.98
C23	Story4	Column	Bottom	0		0	0.1678	DCon2	555.98
C24	Story4	Column	Top	0		0	18.6935	DCon2	555.98
C24	Story4	Column	Bottom	0		0	18.6935	DCon2	555.98
C25	Story4	Column	Top	0		0	57.9419	DCon2	555.98
C25	Story4	Column	Bottom	0		0	57.9419	DCon2	555.98
C26	Story4	Column	Top	0		0	57.9607	DCon2	555.98
C26	Story4	Column	Bottom	0		0	57.9607	DCon2	555.98
C27	Story4	Column	Top	0		0	19.6865	DCon2	555.98
C27	Story4	Column	Bottom	0		0	19.6865	DCon2	555.98
C28	Story4	Column	Top	0		0	2.8087	DCon2	555.98
C28	Story4	Column	Bottom	0		0	2.8087	DCon2	555.98
C29	Story4	Column	Top	0		0	2.7876	DCon2	555.98
C29	Story4	Column	Bottom	0		0	2.7876	DCon2	555.98
C30	Story4	Column	Top	0		0	0.9962	DCon2	555.98
C30	Story4	Column	Bottom	0		0	0.9962	DCon2	555.98
C31	Story4	Column	Top	0		0	0.0719	DCon2	555.98
C31	Story4	Column	Bottom	0		0	0.0719	DCon2	555.98
C32	Story4	Column	Top	0		0	0.7711	DCon2	555.98
C32	Story4	Column	Bottom	0		0	0.7711	DCon2	555.98

Label	Story	Section	Location	V Major MM	Major Combo	At Major mm ² /m	V Minor MM	Minor Combo	At Minor mm ² /m
C32	Story4	Column	Bottom	0		0	0.7711	DCon2	555.98
C33	Story4	Column	Top	0		0	0.8248	DCon2	555.98
C33	Story4	Column	Bottom	0		0	0.8248	DCon2	555.98
C34	Story4	Column	Top	0		0	1.0043	DCon2	555.98
C34	Story4	Column	Bottom	0		0	1.0043	DCon2	555.98
C35	Story4	Column	Top	0		0	1.008	DCon2	555.98
C35	Story4	Column	Bottom	0		0	1.008	DCon2	555.98
C36	Story4	Column	Top	0		0	16.4112	DCon2	555.98
C36	Story4	Column	Bottom	0		0	16.4112	DCon2	555.98
C37	Story4	Column	Top	0		0	56.0997	DCon2	555.98
C37	Story4	Column	Bottom	0		0	56.0997	DCon2	555.98
C38	Story4	Column	Top	0		0	56.0998	DCon2	555.98
C38	Story4	Column	Bottom	0		0	56.0998	DCon2	555.98
C39	Story4	Column	Top	0		0	16.414	DCon2	555.98
C39	Story4	Column	Bottom	0					

5. CONCLUSION

Our study strongly agree that the proposal will be able to enhance and protect the environment of college hostel building, appeal the important of environmental of protection and eco-friendly among students and improve our college's image. We will ensure that this building concept is carried out to your satisfaction and meet the expectations of our college. The effect of indoor environmental quality in hostel college new block on student health, well-being and productivity is an important topic in our society research. We believed that the indoor environmental quality can negatively affect student physical's health such as asthma exacerbation and respiratory allergies through poor air quality, extreme temperatures, excess humidity and insufficient ventilation and psychological health such as stress and depression through inadequate lighting, acoustics, and ergonomic design. Based on our research and studies, the student with such adverse health conditions are absent more often and less productivity than student without these conditions. For this reason, we concluded that the hostel building is able to address indoor environmental quality and student health concern by providing healthier building environment.

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Abstract



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