

Seismic Vulnerability of RCC Building under Irregular Configuration in Different Zone

Reema J K¹, kashinath k r²

¹Department of civil engineering, Visvesvaraya technological university, Haveri, Karnataka

²Assistant professor, Department of civil engineering, Haveri, Karnataka

Abstract- Earthquake is one of the major condition where there will be bi and distribution of an associated mental layers where they are going to cause a stress due to their motions to each other. This phenomena where the movement and emotion where they will be get converted into vibration and comes to the earth surface is known as earthquake. this unwanted vibration are going to reduce the lifespan of the building structure and creates unwanted cracks or some other issues where there will be a threat to the living of the people in the economical conditions.

Keywords: *Beam, Coloum, Slab, Concrete*

I. INTRODUCTION

In nature one of the major and one of the most visited phenomena is the earthquakes, where thousands and many of the people in the country or in the world will suffer from one of the major phenomena of the seismic vibrations. buildings must be constructed in a such a way that they must be and high level of the security provided to the people in order to live happily and safely, in such manner the building must be designed in a way that it was stain all kind of forces including some of the seismic forces which are taken into consideration under this project.

II. METHODOLOGY

1. 3D model is created by using ETABS 2015 of both soft and regular G+7 buildings.
2. Define properties like material, section and load cases and then assign it.
3. Select all the beams and columns the frame elements. It bending moment and axial force (P-M2-M3) is allotted for columns.
4. Considering important load combination which comes under Indian Standard load conditions has been carried out as per value for 56 which is designed for the proper analysis.
5. Conditions of the load where the gravity and also as well as one of the important parameters of the response spectrum which is taken into analysis as well as some of the important static linear conditions which has to be determined for all the different models

III. Materials

Beam	400mm×610mm
Column	600mm×600mm
Slab	200mm
Concrete	M25 grade for beams & columns
Steel	fy= 415 Mpa
Brick Density	20 kN/m ³

Details of materials and section properties of RC Irregular Cshaped building.

Beam	400mm×610mm
Column	600mm×6000m
Slab	200mm
Concrete	M25 grade for beams & columns
Steel	fy= 415 Mpa
Brick Density	20 kN/m ³

Table 3.6 Details of materials and section properties of RC Irregular L shaped building.

Beam	400mm×610mm
Column	600mm×600mm
Slab	200mm
Concrete	M25 grade for beams & columns
Steel	fy= 415 Mpa
Brick Density	20 kN/m ³

IV. Flow diagram

3D model is created
Material properties, section properties, load cases are defined and assigned.
Analysis is done for gravity loads
Earthquake loads are defined and assigned as per IS 1893 2002
Response spectrum analysis is done
Equivalent static load cases are defined
Analyze the model by Equivalent static method
Run analysis,
Plot the graph

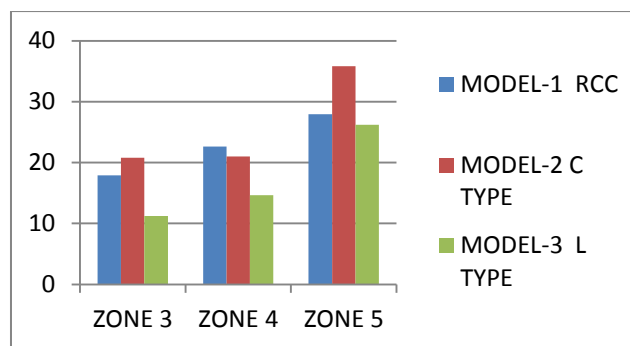
RESULTS AND COMPARISON

5.1 DISPLACEMENT:

MODEL-1= RCC, MODEL-2= C-SHAPED, MODEL-3=L-SHAPED

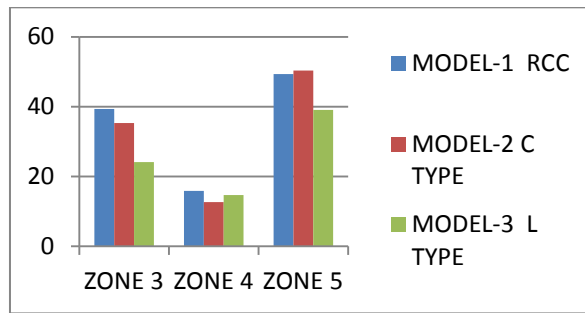
X DIRECTION

MODEL	ZONE 3	ZONE 4	ZONE 5
MODEL-1 RCC	17.927	22.656	27.927
MODEL-2 C	20.807	20.993	35.807
MODEL-3 L	11.216	14.652	26.216



Y DIRECTION

MODEL	ZONE 3	ZONE 4	ZONE 5
MODEL-1 RCC	39.362	15.87	49.362
MODEL-2 C	35.292	12.675	50.292
MODEL-3 L	24.093	14.677	39.093

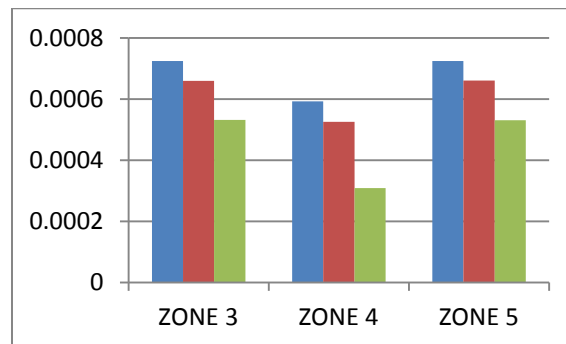


5.2DRIFT:

MODEL-1= RCC, MODEL-2= C-SHAPED, MODEL-3=L-SHAPED

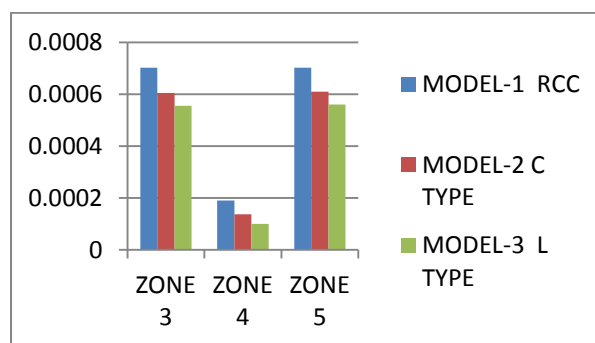
X- DIRECTION

MODEL	ZONE 3	ZONE 4	ZONE 5
MODEL-1 RCC	0.000724	0.000592	0.000724
MODEL-2 C	0.00066	0.00053	0.00066
MODEL-3 L	0.00053	0.00031	0.00053



Y- DIRECTION

MODEL	ZONE 3	ZONE 4	ZONE 5
MODEL-1 RCC	0.000702	0.00019	0.000702
MODEL-2 C	0.00061	0.00014	0.00061
MODEL-3 L	0.00056	0.0001	0.00056

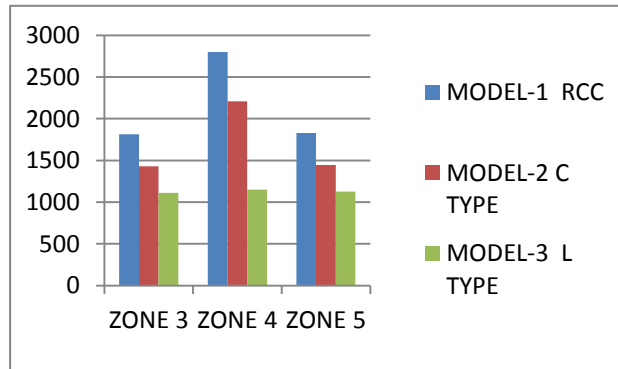


5.3 SHEAR

MODEL-1= RCC, MODEL-2= C-SHAPED, MODEL-3=L-SHAPED

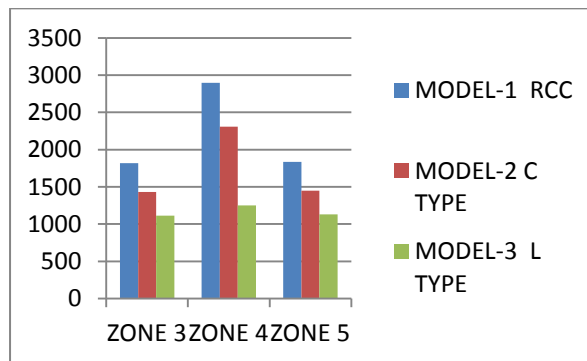
X- DIRECTION

MODEL	ZONE 3	ZONE 4	ZONE 5
MODEL-1 RCC	1814.786	2796.971	1829.786
MODEL-2 C	1428.67	2208.75	1443.67
MODEL-3	1112.75	1149.217	1127.754



Y- DIRECTION

MODEL	ZONE 3	ZONE 4	ZONE 5
MODEL-1 RCC	1819.942	2896.971	1834.942
MODEL-2 C	1431.542	2308.75	1446.54
MODEL-3 L	1114.12	1249.22	1129.123



CONCLUSIONS

1. Considering the result and comparison X and Y direction we have consider three different zones which are like 3, 4 and 5.
2. Considering the displacement results in the direction of X we found that under all the zones type structure is found to be having less displacement when compared to that of the C type and RCC structure.
3. Also considering the Y direction in zone 3 and 5 the L type is found to be having better performance while in zone 4 C type will be showing some of the better performance result.
4. Considering the average out of both the X and Y direction it is found that young type structure is founded to be safer than all other type.
5. considering the drift in all zones and both in X and Y directions near the models which shows the better performance again is the attached with clear analysis it shows where is of response along the zones and also invited direction the same L type model holds good for the same conditions and the better performance under second choice will be given by C type.

6. Considering the shear in X and Y direction we found that the X direction is showing lesser value than that of the C type and also as well as RCC structure.
7. In Y direction it is found to be the L shaped which is having the lesser value when compared to all other values and also the seat type structure also holds good for the second option.
8. The average of the both the structure in L-type under all zones the error type structure holds good for the better choice when compared to that of the Other models.
9. Considering all the conditions and all the three performances the real type structure is holds good when compared to all other models and also the seat type which is a better choice for the second option when compared to that of the conventional RCC structures.

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