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Seismic Analysis of Positioning of RC Shear Wall and Bracing on Lateral Performance of Building Having Re-Entrant Corners

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Abstract: *The current scenario has incorrect configurations both in terms of and at altitudes, which may experience devastating earthquakes in the future. However, a collective assessment of the impact of vertical and horizontal inequalities on the seismic demand of building structures is needed. Form T, L consists of both horizontal irregularity and the angle of entry Re - and vertical irregularity as mass irregularity. Inequality causes a sudden change in the strength or rigidity of the structure, which is not desirable in an earthquake-resistant - system. In this article, seismic analysis of the location of the RC shear wall and tightening of the lateral characteristics of the building, which have the angles of the input substances, is analyzed using the STAAD - PRO software.*

Keywords: Re-entrant corner, diaphragm discontinuity response spectrum, displacement, drift, base shear, overturning moment

I. INTRODUCTION

According to IS 1893, part 1: The configurations of the 2016 plan of the structure and its lateral resistance system re-containing - the angle of entry is subject to two types of problems, the first leads to a local concentration of the voltage at the cut angle of entry re -, and the second problem - torsion. The resulting forces are very difficult to study. The concentration of stress and the effect of torsion are interrelated. The magnitude of the forces will depend on the characteristics of the earth's movement, the mass of the building, the type of structural systems, the length and height of the wings and their aspect ratio.

The simplest methods are to divide the structures into recesses and convert them into smaller blocks of regular configurations. The demarcation of buildings must be located far apart to avoid exposure to rates during earthquakes.

II. LITERATURE REVIEW

P.B Prajapati focused on the seismic reaction of a conventional multi-storey building with an asymmetrical plan and compared to a conventional multi-storey building. A building with g + 20 and g + 22 a building with plan asymmetry is modeled and analyzed in the analysis of the final elements that are traced. the shear wall is provided in the corner for entry into the building. The results of this article as an increase in height L - in the shape of the building directly increase the relative displacement and stress at repeated - input angles. The increase in height T - in the shape of the building directly increases the relative displacement, and the voltage will develop in the entrance corner re -. T - construction of the mold with sliding wall and without sliding wall after analysis shows a uniform stress developed in corners that are in a format that do not have TAG1. In T -, the construction of the re - shape of the input angles did not fail due to the stresses transmitted by the shear wall. But without a sliding wall, it will fail.

Pankai Agarwal studied diaphragm rupture by taking 5 structure. One as usual and the other 4 as a growing percentage in the opening of the plate 0%, 4%, 16%, 24%, 36%. Analysis of the response spectrum using staad pro. is done. parameters such as the base shift, bending moment, drift history, shear force are obtained. The results show that increasing the percentage of discovery increases the drift of history. 24% of openings have less value than the maximum shear force compared to 16% of openings.

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III. METHODOLOGY

The following models are analysed using STAAD-PRO software:

1. Model-1: Rentrant-corner building without shear wall and bracings
2. Model-2: Rentrant-corner building with bracings at front side
3. Model-3: Rentrant-corner building with bracings at other side
4. Model-4: Rentrant-corner building with bracings at front and other side
5. Model-5: Rentrant-corner building with shear wall at core location
6. Model-6: Rentrant-corner building with shear wall at front and other side
7. Model-7: Rentrant-corner building with shear wall at core, front and other side
8. Model-8: Rentrant-corner building with bracings at front side and shear wall at other side
9. Model-9: Rentrant-corner building with shear wall at front side and bracings at other side
10. Model-10: Rentrant-corner building with bracings at front and other side, shear wall at core

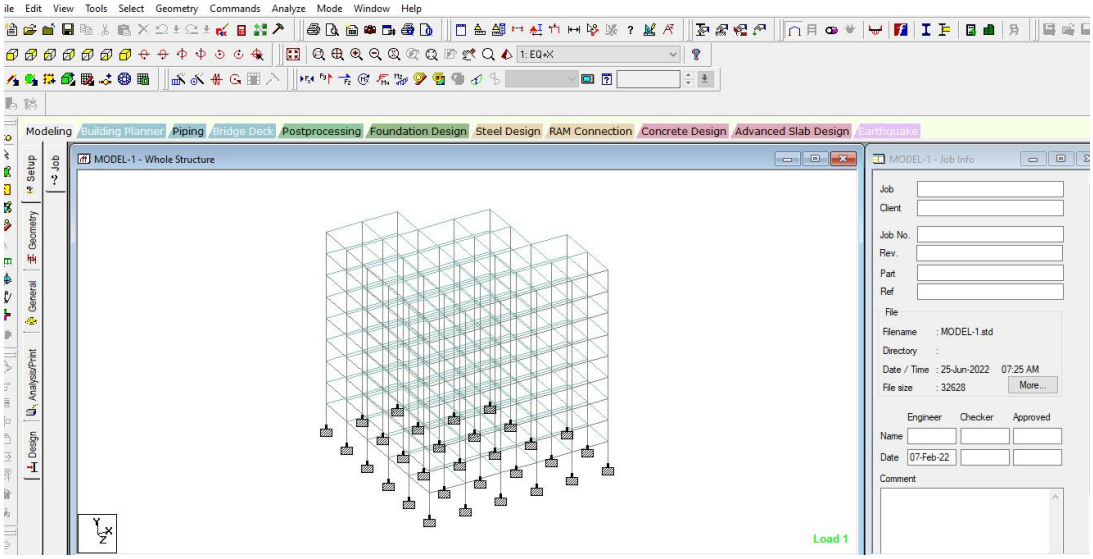

Figure 1: Model-1-Re-entrant corner building

The above figure is related to Model-1-Re-entrant corner building as per the analysis in STAAD-PRO software.

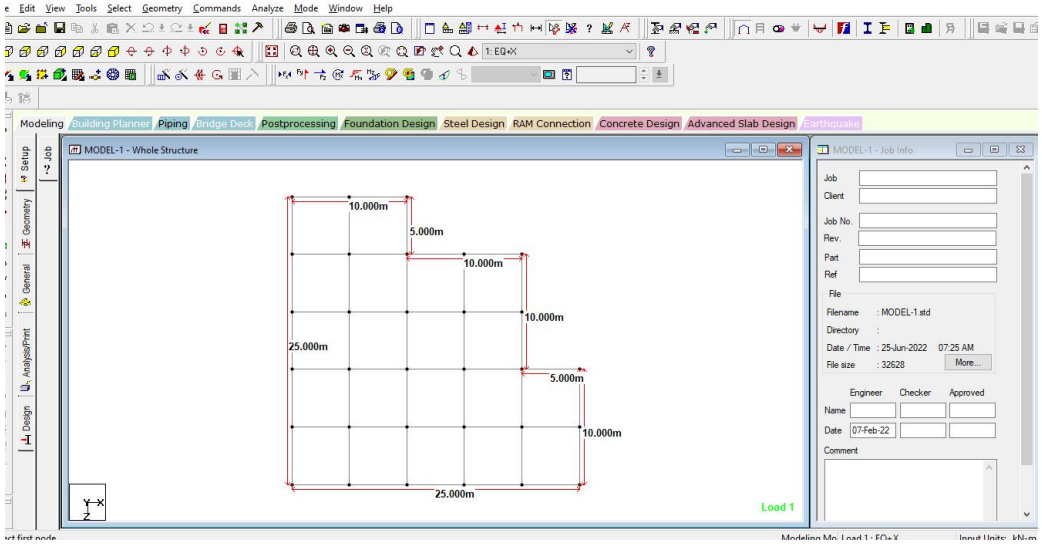

Figure 2:Plan of-Re-entrant corner building

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The above figure is related to Plan of-Re-entrant corner building as per the analysis in STAAD-PRO software.

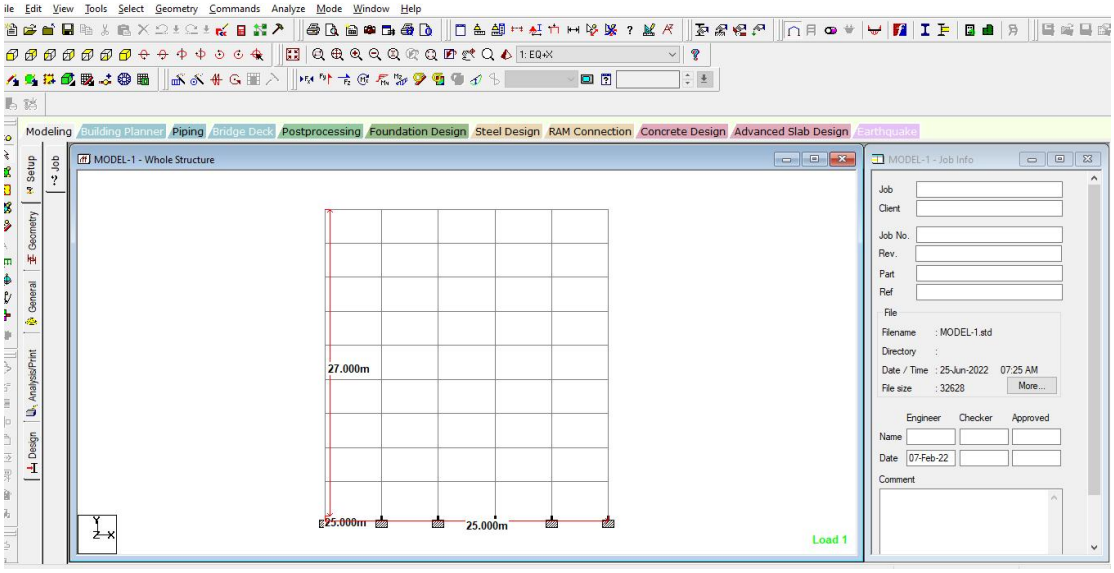

Figure 3:Elevation of-Re-entrant corner building

The above figure is related to Elevation of-Re-entrant corner building as per the analysis in STAAD-PRO software.

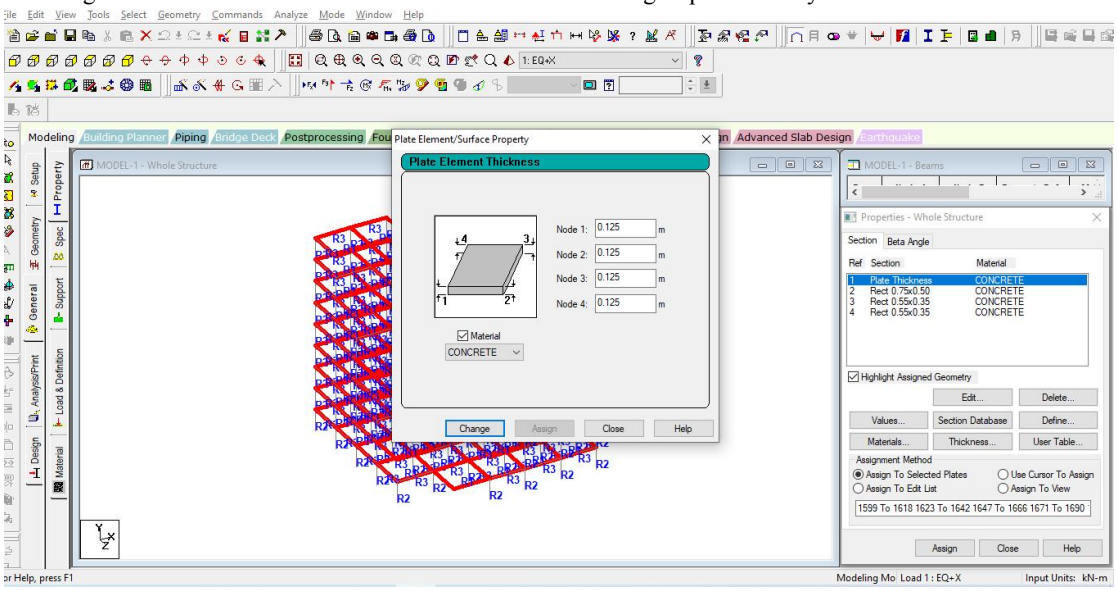

Figure 4:Plate Thickness of-Re-entrant corner building

The above figure is related to Plate Thickness of-Re-entrant corner building as per the analysis in STAAD-PRO software.

IV. RESULTS AND DISCUSSIONS

The different 10 models are analysed using STAAD-PRO software and the results are obtained in terms of the displacement, reactions, beam forces, plate stress for all the models in terms of tabular and graphical format.

Table 1: Displacement for all the models

	Horizontal	Vertical	Horizontal	Resultant
	X mm	Y mm	Z mm	mm
Model-1	77.023	9.743	92.949	93.11
Model-2	81.658	9.743	92.57	92.742

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Model-3	89.268	11.452	98.26	100.189
Model-4	78.638	9.742	91.527	92.506
Model-5	64.537	9.223	68.134	68.35
Model-6	80.157	9.729	92.905	94.254
Model-7	63.803	9.102	60.912	63.956
Model-8	78.756	9.73	91.125	92.015
Model-9	78.411	9.74	91.638	92.295
Model-10	66.313	9.144	66.738	67.367

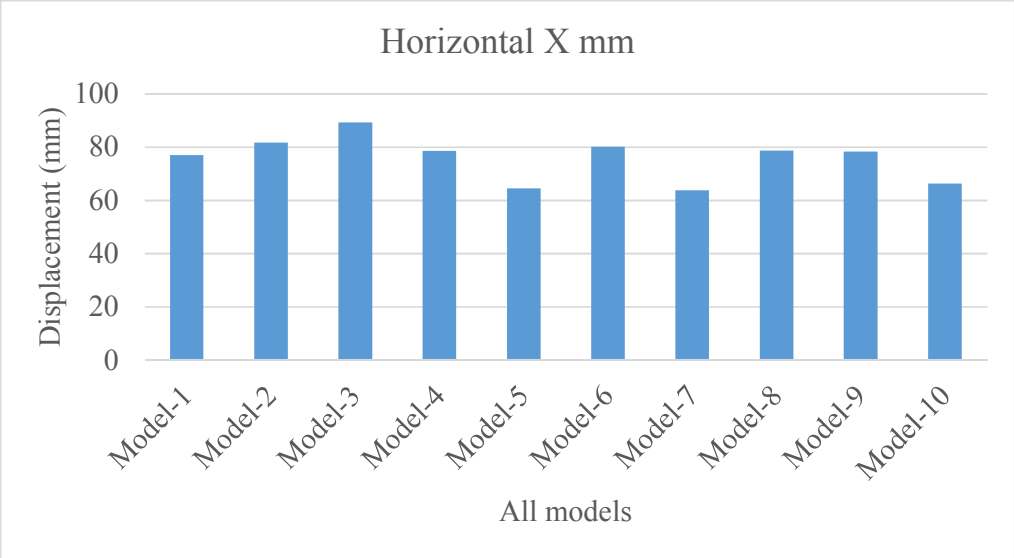

Figure 5:Horizontal Displacement (X) for all the models

The above figure is related to the comparison of Horizontal Displacement (X) for all the models.

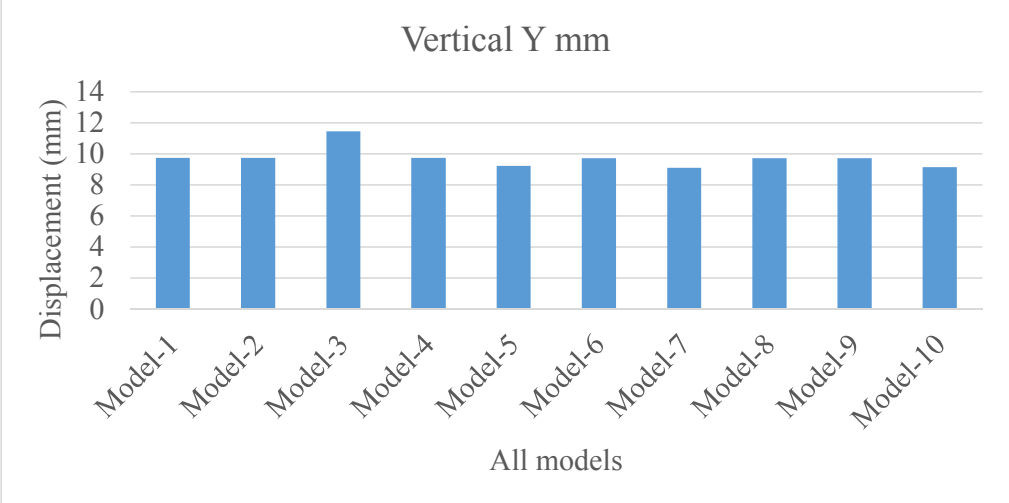

Figure 6:Vertical Displacement (Y) for all the models

The above figure is related to the comparison of Vertical Displacement (Y) for all the models.

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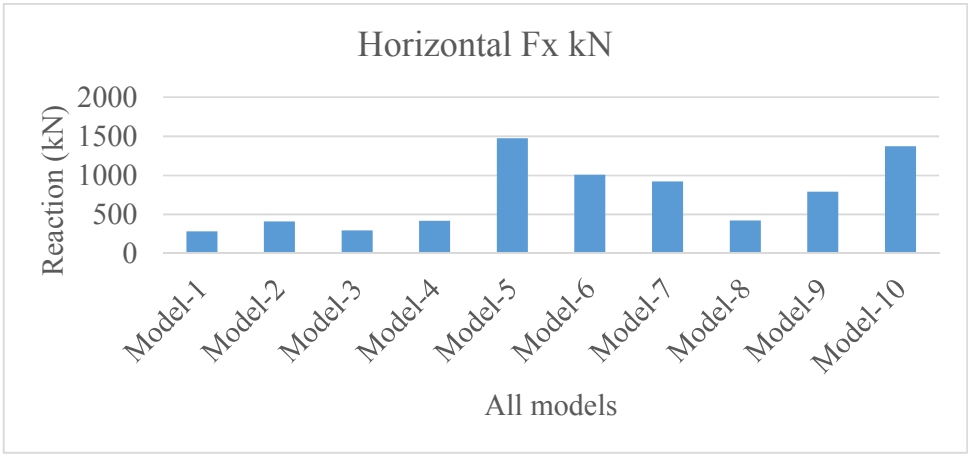

Figure 7:Horizontal Reaction (Fx) for all the models

The above figure is related to the comparison of Horizontal Reaction (Fx) for all the models.

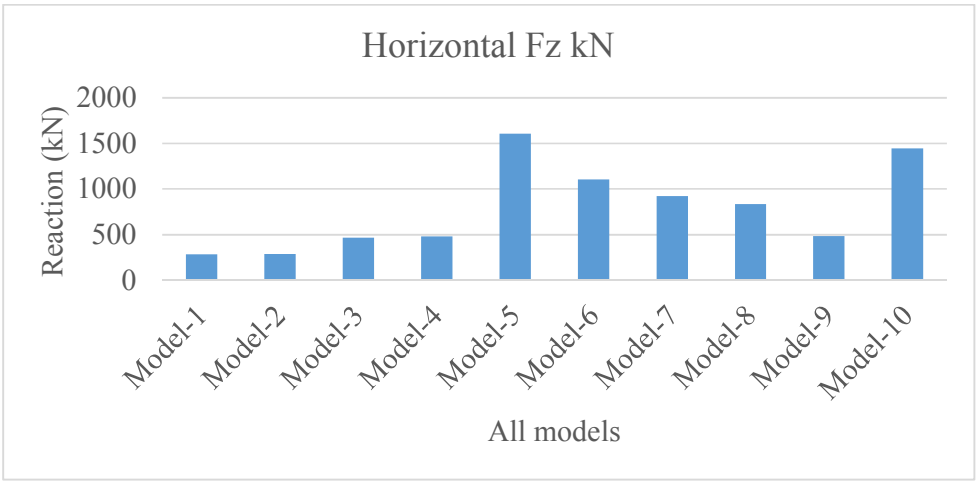

Figure 8:Horizontal Reaction (Fz) for all the models

The above figure is related to the comparison of Horizontal Reaction (Fx) for all the models.

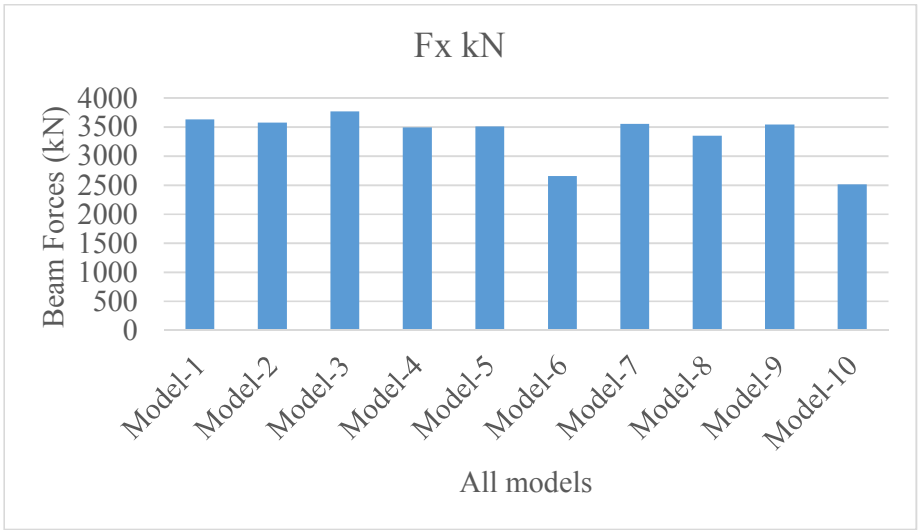

Figure 9:Beam Forces (Fx) for all the models

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The above figure is related to the comparison of Beam Forces (Fx) for all the models.

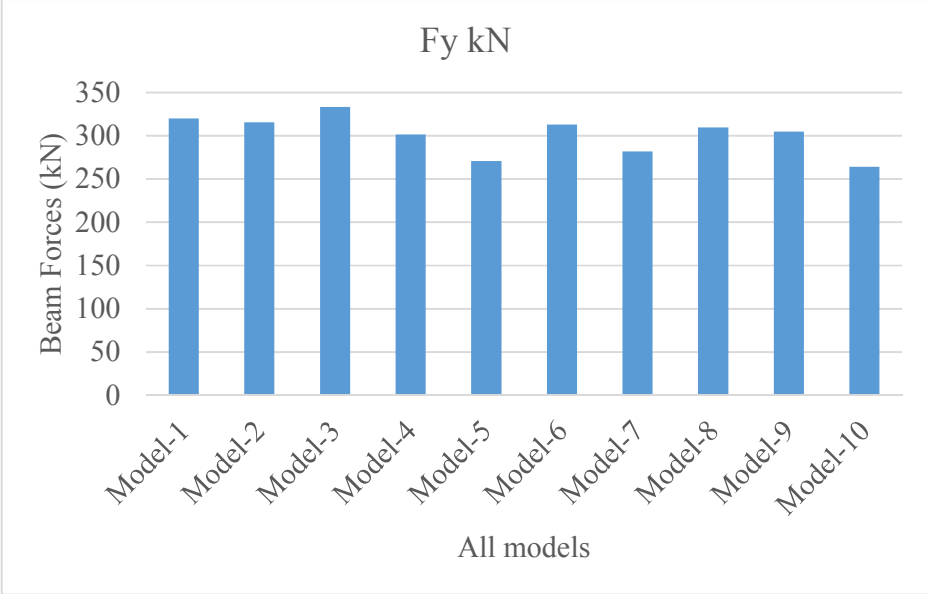

Figure 10:Beam Forces (Fy) for all the models

The above figure is related to the comparison of Beam Forces (Fy) for all the models.

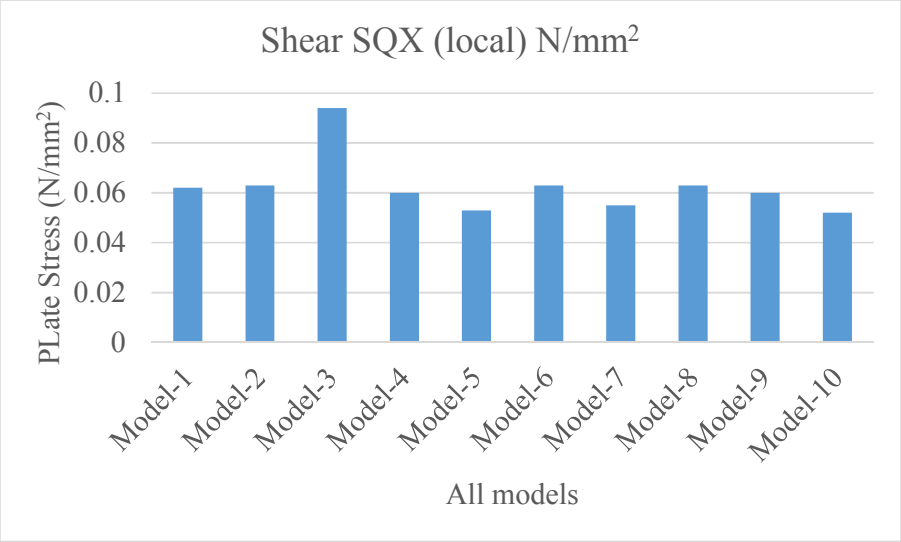

Figure 11:Shear Stress (SQX) for all the models

The above figure is related to the comparison of Shear Stress (SQX) for all the models.

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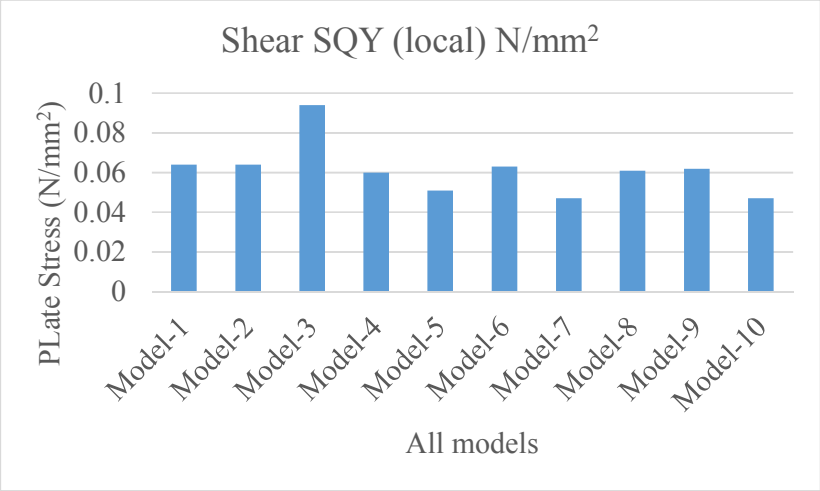

Figure 12:Shear Stress (SQY) for all the models

The above figure is related to the comparison of Shear Stress (SQY) for all the models.

V. CONCLUSION

The following conclusions are obtained.

1. The maximum horizontal displacement is observed in the model-3 (Rentrant-corner building with bracings at other side) as compared to other models.
2. The maximum horizontal reactions is observed in the model-5 (Rentrant-corner building with shear wall at core location) as compared to other models.
3. The maximum beam reactions is observed in the model-3 (Rentrant-corner building with bracings at other side) as compared to other models.
4. The minimum plate stresses is observed in the model-10 (Rentrant-corner building with bracings at front and other side, shear wall at core) as compared to other models.

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