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RESEARCH ARTICLE OPEN ACCESS

"Comparative Analysis of G+9 Multi-storied building for different positions of shear wall "

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ABSTRACT
Many buildings having irregularity in each plan and elevation in the gift situation. To make building safe from devastating earthquakes. For that it is necessary to perceive the performance of the structures to resist towards disaster for both existing and new one. Underneath earthquake loading systems revel in lateral deflections. Significance of those lateral deflections is related to many variables including structural device, mass of the structure and mechanical residences of the structural substances. For the analysis of strengthened concrete multi-storied homes are very complicated to version as structural device. The present-day model of the is: 1893 (element i) -2002 requires that almost all multi-storey homes be analyzed as 3-dimensional systems. In this study we are going to introduce shear wall in the multi-storey building. To see the effect of building with and without shear wall (shear wall having different shape, with constant area is to be taken). This study is going to discuss about the performance of G+9 multi-storey building under seismic loading. Structural irregularities are important factors which decrease the seismic performance of the structures. The study as a whole makes an effort to evaluate the effect of shear wall in irregular RCC buildings, in terms of dynamic characteristics and the influencing parameters which can regulate the effect on Story Displacement, Drifts of adjacent stories, Excessive Torsion, Base Shear, etc. From the above discussion it is observed that as we change the position and Shape of Shear wall, having similar area will reduce the effect of irregularity against the lateral loading in case of G+9 RC the story displacement, story glide, overturning second is efficiently decreased. It's also discovered that via converting the location story stiffness get effected. Further, it is also observed that the terrible shear force is generated within the constructing.

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I. INTRODUCTION

Because the peak of shape increases then the consideration of lateral load may be very a lot vital. For that the lateral load resisting machine turns into extra vital than the structural machine that resists the gravitational hundreds. The lateral load resistant system is broadly used are shear wall, ridge body, diagrid gadget. The machine generally used lateral load resisting system. Shear walls concurrently face up to big horizontal load assist have very high in plane stiffness and energy and aid gravity masses, making them quite positive in lots of structural engineering packages. In architecture planning tall building diagrid structural machine is adopted. The particular geometric configuration of the system diagrid– diagonal grid structural structures are widely used for tall homes due to its structural performance and aesthetic capacity. Therefore, the diagrid, for structural effectiveness and aesthetics has generated renewed interest from architectural and structural designers of tall buildings.

These forces can actually tear (shear) a constructing apart. Reinforcing a body by way of attaching or placing a rigid wall internal it maintains the form of the frame and prevents rotation on the joints. Shear walls are mainly crucial in high-upward thrust homes concern to lateral wind and seismic forces. A number of the functions were mentioned beneath: -

1. Shear partitions are mainly vital in excessive-rise buildings.
2. In residential homes, shear walls are outside form a container which provides all the lateral help or the constructing.
3. Resist: lateral masses, seismic loads, vertical forces.
4. Reduces lateral sway of the constructing.
5. Inflexible vertical diaphragm transfers the loads into foundations.

6. Shear partitions behavior depends upon: fabric used, wall thickness, wall duration, wall positioning in constructing frame also.

Knowledge all the physic of shear walls may additionally require a schooling in structural engineering, however a simple manner to understand how they perform is to imagine a wooden rectangular with four edges—basically two columns and two beams. This frame can support weight from above—compression—as any load placed on the upper beam is transferred through the columns to the bottom of the rectangular.

However, if you positioned too much strain on its sides—a lateral pressure—and the square will twist and collapse on itself unless it is braced by supports. Shear partitions have those braces and are designed in order that they do not disintegrate on themselves. In turn, they assure that no wind will blow your home down. The aid supplied through shear walls does, however, create a design impediment for architects. Whether or not the support in opposition to lateral forces is way to sheathing covering the body or from different braces inside it, any home windows or doorways ought to be limited in terms of the overall location of the shear wall (and in a few cases can't be used at all).

1.2 Behavior of Shear Wall under Lateral Loads

The shear wall along without considering the interaction of the frame can resist the lateral loads of about 35 stories. When the number of floors is increasing shear walls cannot resist the loads along. Further, the length and width of the shear walls also cannot be increased due to the limitations in the floor area.In these situations, the interaction of the shear wall with the frame is considered which indeed reduces the lateral deflections/drift considerably. Further, it reduces the flexural moment in the wall considerably. Therefore, consideration of the wall frame interactions improves the performance of the structure and it reduces the cost of the construction too.

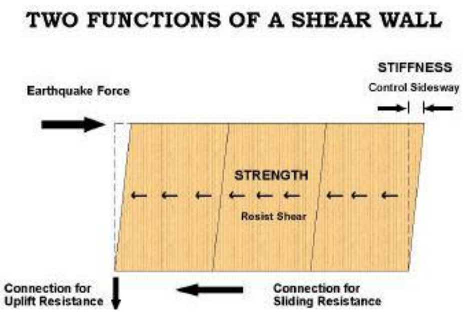

Fig 1.2: *Function of Shear wall*

1.3 Shear Wall Reinforcement Detailing

Most of the shear walls are exact with the traditional approach. But, whilst the later lateral hundreds are growing or if they may be subjected to cyclic loadings, unique detailing techniques are used.

According to the tips of code, followings are considered within the reinforcement detailing.

- vertical reinforcement: 0.002 ac (1/2 placed in each face) and the minimum diameter of the bar is 12mm. most region of vertical reinforcement zero.04ac
- Horizontal reinforcement (in every face): 25% of the vertical reinforcement or 0.001ac whichever is more. The minimal preferred bar diameter is one-fourth of the vertical bar diameter.
- Hyperlinks: diameter shall now not be less than 1 / 4 size of the most important compression bar.
- Horizontal spacing: maximum spacing must now not exceed two times the wall thickness

Minimal spacing of bars 75mm. If bar length is 40mm, spacing more than 100mm). maximum spacing of vertical and horizontal bars: the lesser of three instances the wall thickness or 400mm. Similarly, any vertical compression bar now not nearby a link should be within 200mm of a restricted bar. The following diagram extracted from the same old approach of detailing structural concrete suggests normal methods that could be used while designated drawings are organized from the Standard Method of Detailing Structural Concrete indicates typical methods that could be used when detailed drawings are prepared.

1.5 Classification of Shear Walls

1. Easy square sorts and flanged partitions.
2. Coupled shear walls.
3. Rigid body shear walls.
4. Framed walls with in stuffed frames.
5. Column supported shear walls.
6. Middle types shear walls.

1.6 Shapes of shear walls

Even as many shear walls are simple square planes, they can be even extra effective at resisting wind or earthquakes when they may be constructed in an expansion of shapes:

1. Center partitions are container-fashioned shear partitions that form a square or rectangle around a significant core, which usually carries a building's elevators and mechanical systems.
2. C-fashioned partitions have quick extensions off every end of the principal plane.
3. L-formed walls have an extended leg off one end of the plane.

1.7 Failures of Shear Walls

Shear walls are structural elements in buildings that resist lateral forces such as wind or earthquakes. They are designed to transfer these forces to the foundation and provide stability to the building. However, shear walls can fail due to various reasons, including:

1. Inadequate design: Shear walls must be designed to withstand the expected lateral forces on the building. If the design is inadequate, the shear walls may not be able to resist the forces, leading to failure.

2. Poor construction: If the construction of the shear walls is not done properly, they may not be able to transfer the lateral forces to the foundation. This can cause the walls to fail under high wind or earthquake loads.

3. Improper placement: The placement of shear walls in a building is critical to their effectiveness. If they are not placed in the correct locations, they may not be able to resist the lateral forces on the building.

4. Material defects: The materials used in constructing shear walls must be of good quality and free from defects. If the materials are defective, the walls may not be able to resist the lateral forces.

5. Excessive loads: Shear walls can also fail if they are subjected to excessive loads, either from external sources such as high winds or earthquakes or from internal sources such as heavy equipment or storage.

6. Foundation failure: Shear walls transfer the lateral forces to the foundation of the building. If the foundation is not strong enough or if there is a failure in the foundation, the shear walls may not be able to perform their function and may fail.

1.9. Terminology And Seismic Parameters

The following are some frequent seismic terms**.**

1.9.1 There Was An Earthquake (Seismic Activity)

Earthquakes are the shaking and vibration of the earth's surface caused by sudden release of built-up tectonic stress. Friction between moving plates in the earth's crust builds tension that eventually shifts plates abruptly, sending out seismic waves. This discharge of seismic energy radiates out, causing ground motion at the surface. The magnitude and impacts of shaking depend on proximity, ground conditions, and the amount of energy released at the quake's underground source. Seismographs detect and measure earthquakes, while modified building designs better withstand strong shaking.

1.9.2 Seismic Indian Standard Code

The Indian Standard 1893 provides seismic design parameters for earthquake resistant construction. It aims to improve building safety through ductile design. Following IS 1893 helps structures withstand ground shaking from earthquakes.

1.9.4 Seismic Zone Factor (Z)

Seismic zone factors are provided in earthquake-resistant building codes like the Indian Standard 1893. These factors represent the intensity of ground shaking expected in a seismic zone during a maximum considered earthquake. Higher zone factors mean stronger anticipated shaking. Structural engineers use seismic zone factors along with other parameters to calculate the horizontal seismic forces that buildings must be designed to withstand. The zone factor gets reduced from the maximum earthquake to the frequent earthquake level. Accurately accounting for the localized shaking intensity through zone factors ensures structures are resilient to potential earthquakes in that region. Seismic zone categorization and corresponding factors are periodically updated to incorporate new data.

The fine shape to use in any particular scenario—some are greater effective at absorbing seismic influences even as others are better proper to high winds—might be decided by means of the structural Eng.

2.1 LITERATURE REVIEW

2.1 General

Based on the objective of study, this chapter reflects the previous studies conclusion on influence of using shear wall in structures subjected to seismic loads. Also this reflects the previously done work to improve the seismic behavior of structures and various loading and failure scenarios.

2.2 Research Background

This section reviews the literatures that provide a basic background and the ideas for the present work. The literatures discussed in this section have been relevant for the present study and emphasize the key research work done.

Nikhil Pandey (2021) (Stability Analysis Of Shear Wall at Different Locations In Multi-Storeyed Geometrically Irregular Building Using STAAD.Pro V8iThe study determined that the optimal position for shear wall a in a multi-story building is near the core of the structure, as obtained from analysis using STAAD.Pro V8i software. [1]

Chandrakar, Sahu (2021) (Evaluation of the Codal Provision for Asymmetric Building) The study examined the safety requirements for designing an asymmetrical building and found that the increase in reinforcement needed with the building's height allows for a simpler calculation of reinforcements. [2]

Lakshmi, Sowmya (2020) (Comparative Study of

G+8 Building with & without Shear Wall in Various Zones by using STAAD.Pro) The study uses computer software to analyze the structural behavior of a G+8 residential building with and without shear walls in different seismic zones. It compares the maximum displacement, stresses, and base shear for each case and aims to determine the effectiveness of shear walls in improving the building's structural integrity. The study considers medium soil conditions and focuses on zones III, IV, and V. [3]

Hossam El-Sokkary, Khaled Galal (2020) (Material Quantities of Reinforced Masonry versus Reinforced Concrete Shear Walls) This study compared the material quantities used in reinforced masonry (RM) and reinforced concrete (RC) buildings with shear walls as the seismic force-resisting system. Shear walls are used as a communal seismic force-resisting system in both types of buildings. The study evaluated the quantity of materials used for shear walls in each type of building and compared them. [4]

Zain-Ul-Abdin Butt et al. (2019) (Comparison between Symmetrical and Unsymmetrical Building under Seismic Load Using Bracing and Shear Wall) In this paper, the focus was made on linear dynamic analysis for seismic excitation. The presentation was made to get the effective position of the shear wall with bracing. Dynamic behavior of the structure was studied and comparison was made based on parameters like base shear, time period, story drift, and displacement at nodes. [5]

Vishal N, Ramesh Kannan M, Keerthika L (2019) (Seismic Analysis of Multi-Storey Irregular Building with Different Structural Systems) The study analyzed a 20-storey building with vertical setback irregularity using different structural systems in CSI ETABS V16. The results include plots of axial force, shear force, bending moment, and storey displacement, which were compared for each structural system. [6]

Divya Vishnoi (2018) (Analysis and design of symmetric and unsymmetrical building frame subjected to gravity load) The Load Distribution in Symmetric model is more uniform as compared to asymmetric model. The requirement of reinforcement is more in asymmetric frame than the symmetric frame. [7]

Patil A. G., Prof. Hamane A. A. (2018) (Analysis of Shear wall at Different Location for Asymmetric High-Rise Building)"The seismic analysis of shear walls for asymmetric multi-storey buildings is important due to the high lateral forces generated by earthquakes and wind loads. This study uses the Response spectrum method and IS 1893 (Part-I):2002 to calculate earthquake loads." [8]

3.1 METHODOLOGY

In this chapter, discussion about the description of multi story building having G+9 multi story has been done and analyzed for current study for types and patterns of Shear wall having different shape. Modeling and analysis through Staad.Pro V8i has also been showcased in this chapter.

3.2 Description of Models

For this study, a 10-story building with a 3-meters height for each story, irregular plan is modelled. These buildings were designed in compliance to the Indian Code of Practice for Seismic Resistant Design of Buildings. The buildings are assumed to be fixed at the base and the floors acts as rigid diaphragms. The different sections of shear walls are taken and their area is kept constant for different shapes. Storey heights of buildings are assumed to be constant including the ground storey. The buildings are modelled using software STAAD.Pro V8i Four different models were studied with different positioning of shear wall in building. Models are studied in v zones comparing lateral displacement, story drift, overturning moment, Shear force are being compared between each model.

Figure captions appear below the figure, are flush left, and are in lower case letters. When referring to a figure in the body of the text, the abbreviation "Fig." is used. Figures should be numbered in the order they appear in the text.

Table captions appear centered above the table in upper and lower case letters. When referring to a table in the text, no abbreviation is used and "Table" is capitalized.

1) 3.2.1The plan of the building model

1 Model 1 – Model with shear wall at central core

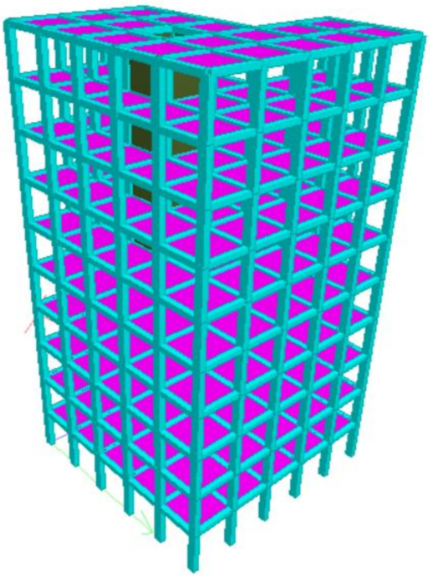

Fig 3.1: Showing 3D rendering View of Model 1

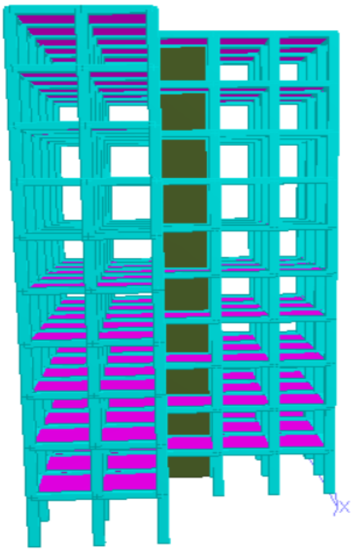

Fig 3.3: Elevation of Model 1

Model 2 – Model with L – Shape Shear wall at Periphery

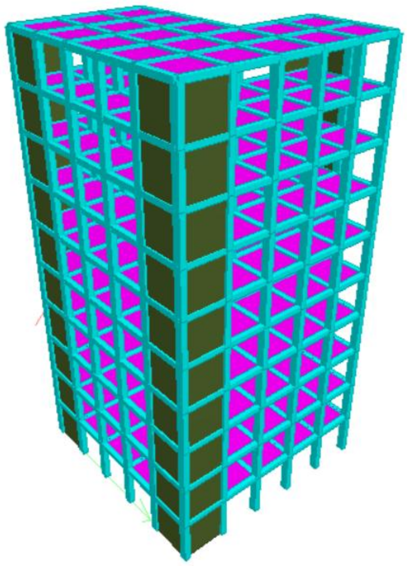

Fig: Showing 3D rendering View of Model 2

2 Model 4 – Model with shear wall parallel to each other.

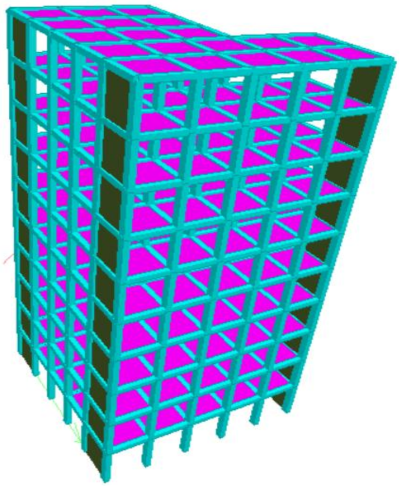

Fig : Showing 3D rendering View of Model 4

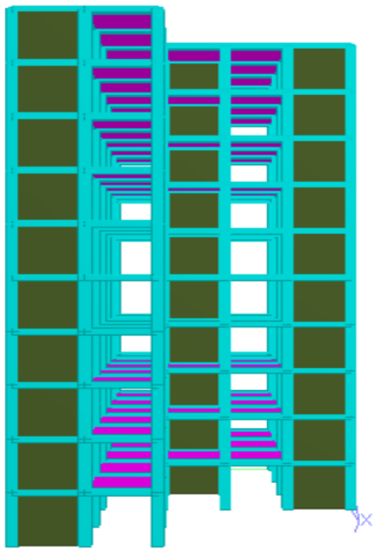

Fig 3.12: Elevation of Model 4

3.3 Is Codes used in the study

Designing and loading for current study has been in accordance with Indian Standard Codes by BIS. Following IS codes are considered for present study.

- IS 13920:1993, ductile detailing of reinforced concrete structures subjected to seismic forces — code of practice.
- IS 456: 2000, plain and reinforced concrete - code of practice.
- IS 875:1987 PART 1, 2, 3, and 5 code of practice for design loads (other than earthquake) for buildings and structures, (dead load, live load, wind load)
- IS1893 :2002, criteria for earthquake resistant design of structures.

3.4 Overview of the software used

Staad Pro is a comprehensive software used by structural engineers to design and analyze buildings, bridges, and other infrastructure. It allows creating computer models of proposed structures and simulating how they would behave under different loading conditions like earthquakes, winds, and traffic. Staad Pro can perform stress analyses and code checks per major international design standards like the Indian earthquake code IS 1893. The detailed analytical results help engineers optimize and validate the safety of structural designs. Key features include nonlinear static and dynamic analysis for effects like seismic loading. By simulating earthquake forces on virtual models, Staad Pro allows engineers to iteratively improve building earthquake resilience. The software also auto-generates useful design outputs like drawings, schedules, and reports. Overall, Staad Pro is an essential engineering tool that enables creating optimized, cost-effective structural designs that meet safety norms under seismic and other loads.

2) 3.4.1.Modelling Through STAAD.Pro V8i

G+9 multi – story building has been modeled through STAAD.Pro. Approach for comparative modeling of Structure having different shape of Shear Wall.

a) Modeling and designing of G+9 multi-Story building (Model With shear wall at central core) with M30 grade of concrete, reinforcement of 415 grade with structural elements and factor as per table 3.2 for seismic zone V.

b) Modeling and designing of G+9 multi-Story building (Model With L – Shape Shear wall at Periphery) with M30 grade of concrete, reinforcement of 415 grade with structural elements and factor as per table 3.2 for seismic zone V.

c) Modeling and designing of G+9 multi-Story building (Model With combination of Centre Core shear wall and Shear wall at its Periphery) with M30 grade of concrete, reinforcement of 415 grade with structural elements and factor as per table 3.2 for seismic zone V.

d) Modeling and designing of G+9 multi-Story building (Model with shear wall parallel to each other at its corner) with M30 grade of concrete, reinforcement of 415 grade with structural elements and factor as per table 3.2 for seismic zone V.

B. 3.5 Methodology of STAAD.PRO

The study's goal is to assess and design a commercial building that meets the essential standards of safety, durability, economy, aesthetic appearance, feasibility, practicability, and acceptability using STAAD.PRO.

3.5.1 PROCEDURE FOR DETERMINING THE **STAAD.PRO**

Step - 1: Creation of structure model.

Firstly, we have to opened the STAAD.PRO we select a new model and a window appears where we had entered the nodes dimensions.

Step - 2: Assigning of Supports

By keeping the selection at the base of the structure and selecting all the columns we assigned supports by going to assign menu joint/frame Restraints fixed.

Step -3: Defining & assigning of properties

Here we had first defined the material property by selecting property menu and add new material properties for our structural components (like beams, column) by giving the specified details in properties. After that assigning all properties for our structural members.

Step -4: Defining of loads

The loads in STAAD.PRO are defined as using "load & definition command", in define menu. here assigning dead load, live load, sunk load as floor load and wall load assign as member load then choose members one by one and assign wall load on members.
Wind loads are defined as per IS-875:1987 PART 3. In staad.pro firstly we take the value from IS-875:1987 part 3 and create a definition in "load & definition command", and assigned it to the structure.
Seismic loads are defined and assigned as per IS-1893:2016 part 1 by giving zone, soil type, and response reduction factor in X and Y directions. In staad.pro firstly we take the value from IS-1893:2016 part 1 and create a definition in "load & definition command", and assigned it to the structure. In staad.pro when we perform seismic analysis as per code all type loads like dead load, live load, sunk load, wall load is paste in definition of seismic load by going into "staad editor".

Step - 5: Assigning of load combinations

After step 4 we go to "load & definition command", for applying load combination.

Step - 6: Design

After assigning all loads and combination, we go to "design menu" and choose the IS-code as per perform all the analysis, here we taken IS- 456:2000. After taking codes, we go to "define parameter command", defining grade of steel, grade of concrete and them assigning in structure. Then we go to "Design commands", defining design beam, design column, concrete take off and assign them in structure.

Step - 7: Analysis

After assigning all the properties and all design parameters we have go to "Analyze" and perform run analysis.

Step - 8: Post- analysis
After analyzing structure we have go to post processing. Here we get all the values those are we want to perform like

- Bending moment
- Shear force
- Support reaction
- Response parameters

Loads Combination
Load combinations for design purposes shall be those the produce maximum forces and effects and consequently maximum stress and deformations.
4.1 General this chapter, discussion about the description of multi-story building having G+9 multi story building and analyzed for current study, types and patterns of Shear wall having different shape. Modeling and analysis through STAAD.Pro V8i have also been show cased in this chapter. IS 456 and IS 800 have been selected for the design process.

5.1 Introduction
After modelling and analysis all the model having Shear wall consisting of different shape, at different location on STAAD.Pro V8i, the following conclusion is considered for the modelling system. Different seismic responses are recorded for the modelling system which are Story Displacement, Story Drift, Story overturning moment, Story Shear stresses. The results are evaluated with the help of the tables and figures. The maximum parameter is considered for the following analysis up to the top of the story level. Different load combination is applied and the max response we get for the loading 1.5 (DL + EQX)

5.2 Story Displacement
The Story displacement is the displacement of the single story with respect to the base story the displacement in different direction is shown b5.3 elow and the resultant displacement is shown blow with respect to the table and graphs.

5.3 Maximum Story Displacement for all Models
The displacement for X-axis and max resultant displacement is given below for the model. The displacement for the model 4 having max displacement where as the model 1 and 3 having less displacement as shear wall having box frame structure which increase the stability of the frame.

Table 5.2.5: Story Displacement in all directions

Displacement				
	X	**Y**	**Z**	**Resultant**
Model	**(mm)**	**(mm)**	**(mm)**	**(mm)**
Model No. 1	28.963	1.082	27.316	28.995

Model No. 2	28.957	4.579	25.582	30.299
Model No. 3	28.47	4.303	20.294	29.261
Model No. 4	49.697	4.689	25.397	49.758

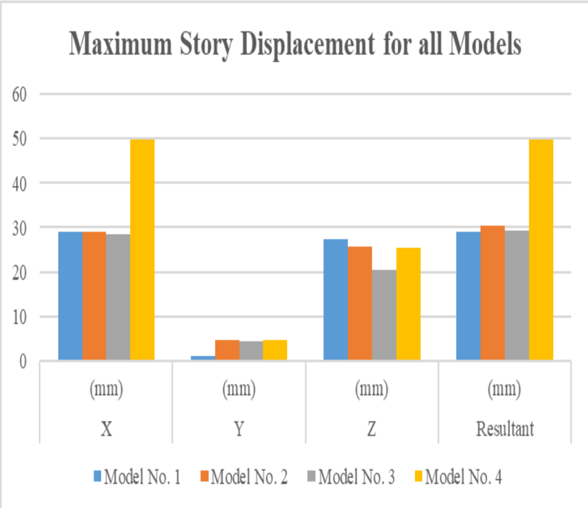

Fig 5.5: Story Displacement for all Models

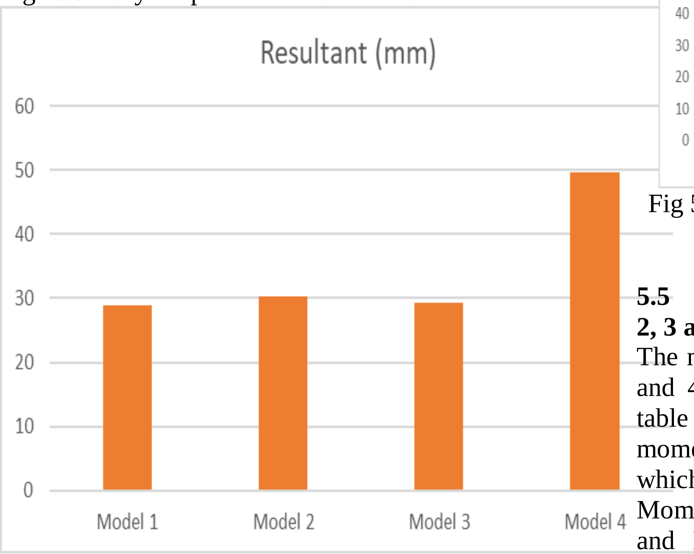

Fig 5.6: Resultant Story Displacement

5.3Max. Bending Moment

The bending moment for various frame is given below for the portal frame in various direction are given below

5.4 Max. Torsional Moment for Model No.1, 2, 3 and 4.

The max. Torsional Moment for the model no.1, 2, 3 and 4 in different direction is given below in the table 5.3.5 model 4 experience the max. torsional moment among other frames in X-axis. The max torsion moment comes in Model No 1 and min value in Model 3 and model no 4. The beam which experience the highest value of Torsional Moment are as following respectively as shown in table No 5.3.4.

Table 5.3.5: Max. Torsional Moment for all models in X-axis.

Model Nos	Torsion Mx (kN-m)
Model 1	42.953
Model 2	61.644
Model 3	48.86
Model 4	92.38

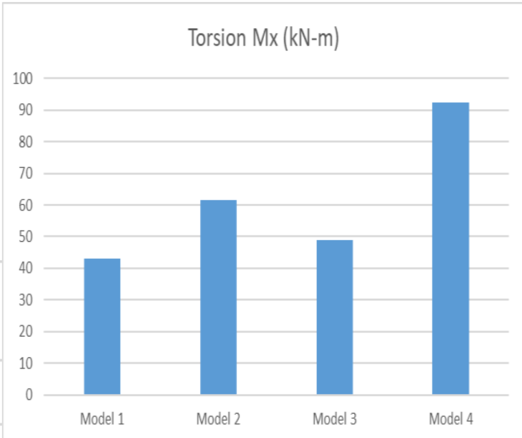

Fig 5.12: Max. Torsional Moment for Model No.1, 2, 3 and 4.

5.5 Max. Bending Moment for Model No.1, 2, 3 and 4.

The max. Bending Moment for the model no.1, 2, 3 and 4 in different direction is given below in the table 5.3.5 model 4 experience the max. bending moment among other frames in X-axis. The beam which experience the highest value of Bending Moment are as following. beam, My in 753no. beam and Mz in 523no. beam in Y-axis and Z-axis respectively as shown in the table No 5.3.4.

Table 5.3.6: Max Bending Moment for all models.

Max. Bending	
My (kN-m)	**Mz** (kN-m)
73.999	66.466
74.299	**75.106**
68.933	**66.313**
84.942	**99.335**

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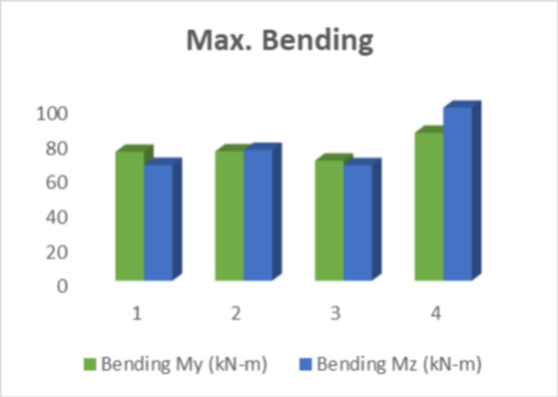

Fig 5.13 Max. Bending Moment for Model No.1, 2, 3 and 4.

5.6 Max. Shear Force for all Models

The max. Shear Force for the model no.1, 2, 3 and 4 in different direction is given below in the table the max. shear force come in Y-axis. The beam which experience the highest value of shear force are as following Fx in 379no. beam, Fy in 435no. beam and Fz in 523no. beam in X-axis, Y-axis and Z-axis respectively as shown in the table No 5.4.4. The model 4 experience the max response and the model 3 and model 1 gives min response for the shear force in X-axis, Y-axis and Z-axis.

Table 5.4.5: Max. Shear Force in all model.

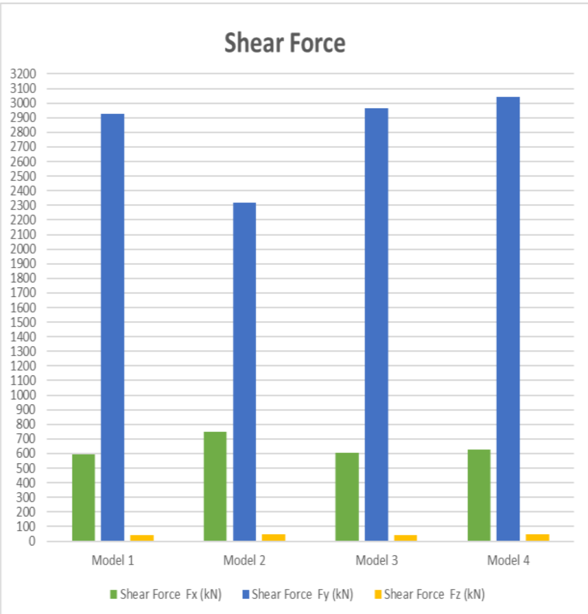

Fig 5.17: Max. Shear Force in all model.

6.1 CONCLUSION

In this study we introduced shear walls in the multi-story building. A fix plan irregularity is considered in the structure, to see the effect of building with and without shear wall (shear wall having different shape, with constant area is to be taken). In this study we have discussed about the performance of G+9 multi-story building under seismic loading. Structural irregularities are important factors which decreases the seismic performance of the structures. The study as a whole makes an effort to evaluate the effect of shear wall in irregular RCC buildings, in terms of dynamic characteristics and the influencing parameters which can regulate the effect on Story Displacement, Excessive Torsion, Bending Moment and Base Shear, etc.

- It is observed from the above analysis that the resultant displacement x-axis and y-axis observed max response for model 4, and Model No 1 (Model with shear wall at central core) and Model No 3 (Model with combination of Centre Core shear wall and Shear wall at its Periphery) shows minimum displacement respectively as compared to the remaining models having shear wall at different locations. As compare to the model 4 the model 1 and 3 having 41.71% and 42.70% of reduction respectively.
- It is observed that the min torsion moment comes in model No 1 and model 3 and model no 4 experience the max torsional moment among the other models. As compare to model 4, model 1 and model 3 experience in 47.17% and 53.50% of reduction.

Model Nos	Shear Force		
	Fx	Fy	Fz
	(kN)	(kN)	(kN)
Model 1	594.786	2924.66	41.513
Model 2	746.382	2318.77	48.47
Model 3	602.537	2966.42	41.513
Model 4	626.537	3043.47	49.215

- It is observed that the beam which experience the highest value of Bending Moment are as following, in y- axis (for My) beam 753 and in Z-axis (for Mz) beam no.523 give max response. The model 4 experience max bending moment among the all model and model 3 experience min bending moment in Y- axis and Z- axis as comparative to the other models. As compare to the model 4, model 3 experience 18.84% reduction in Y-axis and 33.24% reduction in Z-axis.
- It has been observed that the beam which experience the highest value of shear force are

as following Fx in 379no. beam, Fy in 435no. beam and Fz in 523no. beam in X-axis, Y-axis and Z-axis respectively as shown in the table No 5.4.4. The model 4 experience the max response and the model 3 and model 1 gives min response for the shear force in X-axis, Y-axis and Z-axis.

- The best location of shear wall a in multi-story building obtained from the STAAD.Pro V8i is in model 3 (Model with combination of Centre Core shear wall and Shear wall at its Periphery).

From the above discussion it is observed that as we change the position and Shape of Shear wall, having similar area will reduce the effect of irregularity against the lateral loading in model-3 of G+9 RC building in V seismic zone, the story displacement, story drift, overturning moment is effectively reduced. It is also observed that by changing the location, story stiffness gets effected.

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