JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

COMPARATIVE STUDY OF TALL STRUCTURES WITH SOFTSTOREY OPENINGS AND SHEARWALLS USING ETABS

[1]Shreehari Kulkarni,[2]Rishikesh, [3]Vishwanath, [4]Sourabh

[1]Post graduate Student,[2,3,4]Assistant professor ,
[1]Department of Civil Engineering,
[1]Sharnbasva university , Kalburgi ,India

Abstract : In the domain of current design, noteworthy development and designing ability are shown in the development of transcending structures that are designed to endure seismic powers. Two distinct approaches have emerged as a result of this endeavor: one includes the reconciliation of nonstop vertical shear walls, while the other decisively positions shear walls to brace weak delicate story areas. The huge structures that have been built with this variety of strategies are analysed very closely during the study. the application of computer simulations enabled by the the ETABS program, the work aims to broaden and improve our knowledge of the earthquake-proofing implications of these two shear wall approaches.The main objective of the exploration is to compare multi-story constructions with and without coordinated shear walls in scenarios with sensitive story weaknesses.It applies reaction range inquiry to pinpoint important boundaries like maximum displacement, maximum drift , and storey shear and narrative advancements.In designs with 15, 20, and 25 storeys, the impact of placing shear walls at building corners versus discretionary locations is investigated.The process of assessment calls notice to the similarities are the two different models: one adopting a weak story structure, and the other introducing another shear wall opposite the delicate story. Both models are put through to simulated seismic forces based on actual earthquakes as the examination unfolds. If shear walls may effectively reduce displacement and drift while also showing only minor performance changes with respect to wall position.The main ideas from the similar review are illustrated in the conclusion. the significance of arrangement schemes and the function of shear walls in maintaining seismic robustness. The findings of the pertinent inquiry for both the delicate narrative and shear wall models are presented in the section of the text devoted to results and dialogues. The greatest displacements, lateral shifts, and shear forces are detailed in thorough tabulations and illustrations at the narrative level.The development of future seismic plan rehearsals is aided by the seismic resistance of tall structures with complex story layouts.

***IndexTerms* - Softstorey openings , shearwall, , maximum displacement, maximum drift , storey shear etc.**

1INTRODUCTION

The modern building has changed significantly as a result of human creativity and skill. The effort to create towering buildings that can survive the powerful effects of seismic activity has propelled this advancement. This endeavor sparked investigation into numerous design tactics, which led to the development of two well-known techniques. Compared to the second, which purposefully employs shear walls to solve soft-story weaknesses, the first incorporates shear walls throughout the height of the building. The comparison study focuses on an exhaustive assessment of tall structures utilizing these different methods. It tests how these structures behave under seismic loads using the computational resources of the ETABS program. The goal is to plunge further into what the two shear wall plans mean for how seismically solid tall plans are.

2.LITERATURE REVIEW

Mahendra Kumar The study "Seismic Behavior Of Buildings With Shear Wall" examines the seismic performance of a five-story structure by strategically integrating shear walls. The research examines various shear wall configurations, evaluating characteristics including storey displacement , storey drift, and base shear. It is carried out within Zone V in imitation with the Indian Standard of Practice for Seismic Resistant Design of Structures. The study evaluates five different structural models using ETAB software for modeling and analysis: a shear-wall-absent structure, shear walls at the center on each side, shear walls alternately on each side, shear walls at corners on each side, and shear walls at the center on the inner side. Building 4 specifically emphasizes the increased stability by showcasing the lowest top relegation. Increased base shear and storey acceleration are a trade-off for this decrease, however both outcomes are attributable to the additional stiffness imposed by shear walls.

Shear wall and non-shear wall constructions are the subject of a literature review. Under the direction of **Mr. Alokkumar A. Mondal, Mrs. Gitadevi B. Bhaskar, and Miss. Deepa Telang,** a comprehensive effort called "Comparing the Effect of Earthquake on Shear Wall Building and Non-Shear Wall Building - A Review" analyzes the seismic properties of structures.According to a detailed literature analysis carried out as part of the research, shear walls are essential for enhancing the stability of structures during seismic occurrences. According to the assessment, shear walls are an effective way to lessen the lateral stresses brought on by earthquakes.The complex connection that exists between shear wall location and force distribution is additionally addressed along with some of the difficulties that shear wall perforations come across.

Comparative seismic evaluation of structures with and without shear walls in RCC and composite column buildingsBy evaluating the usefulness of shear walls in both RCC structures and those with composite columns, the research carried out by **Akansha Dwivedi and B.S. Tyagi** done the seismic resilience of complexes.It includes an intersection of response spectrum analysis and static analysis techniques to properly evaluate the seismic behavior in different structure layouts using a total of four different models established in the Etabs software in the IV zone.A 20-story skyscraper with a height of 3 meters each level, including the first, is being created throughout the modeling phase. The models were created with a fixed substructure in compliance with the IS 456 and IS 1893 requirements using the IV zone specifications. The columns are set in a square layout with a 4 meter spacing and were chosen for their resilience to seismic stresses.It considers the presence and absence of shear walls for both RCC and composite column designs, focusing on equivalent building layouts. Storey displacement, drift, stiffness, lateral force, and base shear are only a handful of the most significant features that are investigated by the study's topics.

The cooperative examination drove **by Prof. Patil S.S. furthermore, Sagare S.D. digs** into the unique way of behaving of skyscraper structures portrayed by delicate stories, looking at the impact of shear walls on their seismic execution. The main focus of the concentration is on the convincing alleviation of brittle bullet guides by the elimination of shear barriers. To investigate the consequences of various configurations, four undisputed models are taken into consideration: Model 1, an RC frame without shear walls that is exposed; Model 2, a structure with a fragile floor and a block infill on the top level; Model 3, a block infill at the first floor's corner to increase the first floor's immobility; Model 4 is an L-shaped configuration of shear walls from the floor to the roof. The test employs 3D representations and information from the Bhuj earthquake (January 26, 2001) and is conducted using direct time history testing and programming from SAP 2000 V14.

Alhat Sneha Dnyaneshwar, D. N. Mandlik, V. P. Bhusare, N. V. Khadake as partners' research is on presents a thorough analysis of seismic examination conveys, focused on narrative float criteria and a collapse adaptation diversions.The seismic evaluation of reinforced concrete (RCC) structures with sensitive stories at various levels is the focus of this writing review. It looks at multi-story buildings with open ground levels, a design that is particularly susceptible to shake-induced breakdown. No matter of any inherent drawbacks, such approaches are typically implemented in developing nations in response to community and intellectual requirements. It takes use of already developed construction models, featuring delicate storey properties reinforced with shear walls and those containing steel stiffeners installed on the upper floor. The review's extension stretches out to the cooperation of ten-story structures with soil structure interfaces under various soil conditions. The exploration underscores the unmistakable way of behaving of the primary floor, which is frequently more vulnerable yet more unbending contrasted with more significant levels, because of guidelines. The examination shows the meaning of delicate story development in skyscraper and multi-story structures, which fills in as a typical component in contemporary Indian metropolitan engineering. The review highlights the significance of tending to delicate story conduct in seismic plan, particularly inside non-industrial countries, where these designs are predominant notwithstanding their vulnerability to implode during quakes.

S. Arunkumar and Dr. G. Nandini Devi.

Three different structural models—the infilled frame with a soft storey (IFSS), infilled frame with shear wall in a soft storey (IFSW), and infilled frame with cross bracing (IFCB)—are the focus of their research.Shear walls make it clear that reinforcing measures are effective since they significantly decrease inter-story drift and increase storey forces.

In a collaborative research effort by **Miss Aadishri D Kadam and Dr. P.S. Pajgade**, the investigation focuses on the design and behavior analysis of soft storey effects within RC (Reinforced Concrete) structures, with an emphasis on the application of seismic codes IS-1893(Part I)-2016 and IS-13920-2016. A comparative assessment of multi-storey building behaviors is conducted, involving configurations with and without shear walls and struts. Through the utilization of ETABS software and compliance with seismic codes, the analysis is performed on a G+15 storey building, modeled in various setups that encompass bare frames, shear walls, struts, and infill walls.

The investigation of the effects of soft storeys in the seismic-resistant analysis of RC (Reinforced Concrete) framed buildings is the main goal of the study carried out by **Abdul Rauf Muqeeb, Md Faisaluddin, and Shaik Abdulla.** Ten different models are included in the mathematical modelling phase, each of which has the purpose of studyinganalyzing a specific configuration. These models come in both with and without shear walls variants, soft storeys at various levels, infill brickwork, and other structural components. Linear static analysis, linear dynamic analysis, and non-linear static analysis (push-over) are all included in the seismic analysis approach. Along with performance point characteristics discovered by pushover analysis, such as spectral acceleration, spectral displacement, base shear, and roof displacement, the results include basic natural time intervals, storey drifts, storey displacements, and design seismic base shear.

Infill walls' impact on lowering drift and displacement is concluded.For better strength of the structure and minimize drift and damage, soft levels and infill walls are essential.

Youssef I. Agag, Mohamed E. El Madawy, and Raghda I. Halima

Wall framework utilizing direct Comparable Static Burden and Reaction Range examinations, and distinguishing the ideal place of shear walls inside eight particular models introduced in the exploration. The structure considered in the review comprises of twenty stories and is displayed utilizing ETABS v.16.2 programming. The models include shear walls set midway, at corners, at the outside border, and in different blends. Through the examination, ends are drawn in regards to the way of behaving of designs impacted by shear walls. Remarkably, giving shear walls in the two headings of the structure's arrangement design upgrades the primary way of behaving. The discoveries show that shear walls at the outside border or focal center work on seismic boundaries by lessening removals and story floats contrasted with models without shear walls. Also, the review underscores consistence with allowable cutoff points for story float as determined by code (ECL 201/2012) for both Identical Static Burden and Reaction Range Investigation strategies. Strangely, the Reaction Range Investigation strategy exhibits more precise way of behaving of underlying reaction than the Same Static Burden approach, yielding more successful base shear values.

Amitkumar Yadav, Dr. Vikram Patil, and Somanagouda Takkalaki

Dynamic wind forces are used as the main lateral load in the Dynamic wind forces are used as the main lateral load in the research, which focuses on variables including bending moment, shear force, and deflection. Greater deflection, Bending Moment, and Shear Force result from wider apertures. There are two typical structural designs that have a substantial impact on the building's drift behavior: soft floor openings and shear wall corners. Comparing the maximum drift of a tall building with a soft story opening and a shear wall corner due to seismic pressures is the goal of this study.

3.AIM AND OBJECTIVE

1. Comparing the behavior of multi-story structures with soft floors constructed with and without shear walls
2. Analyze and design multi-story structures with soft floors using the response spectrum analysis method.
3. Figuring out boundary conditions like drift, and storey displacement.
4. Comparing where a shear wall is placed: at a corner vs on the other side
5. Comparing structures of 15, 20, and 25 storeys.

4.METHODOLOGY

METHODS: For the comparison, two distinct models were examined. While the second model depicts a tall structure with a shear wall corner, the first model depicts a tall structure with a soft story opening in one of its levels. Simulated seismic excitations simulating an earthquake of a similar magnitude were applied to both models.

MODELLING

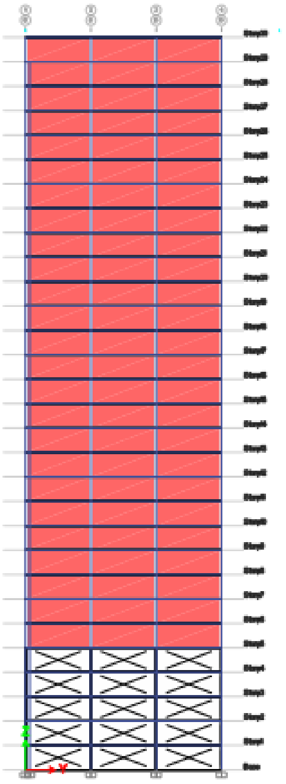


Fig 4.1 Softstorey openings

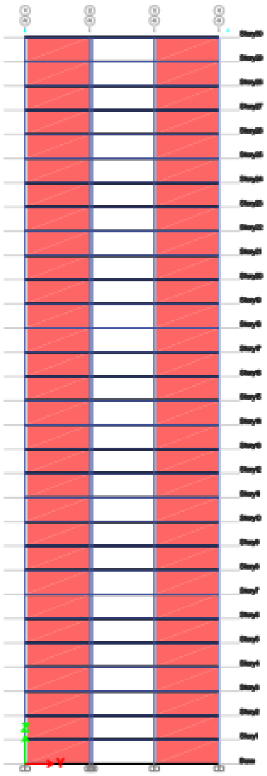


Fig 4.2 Shearwall

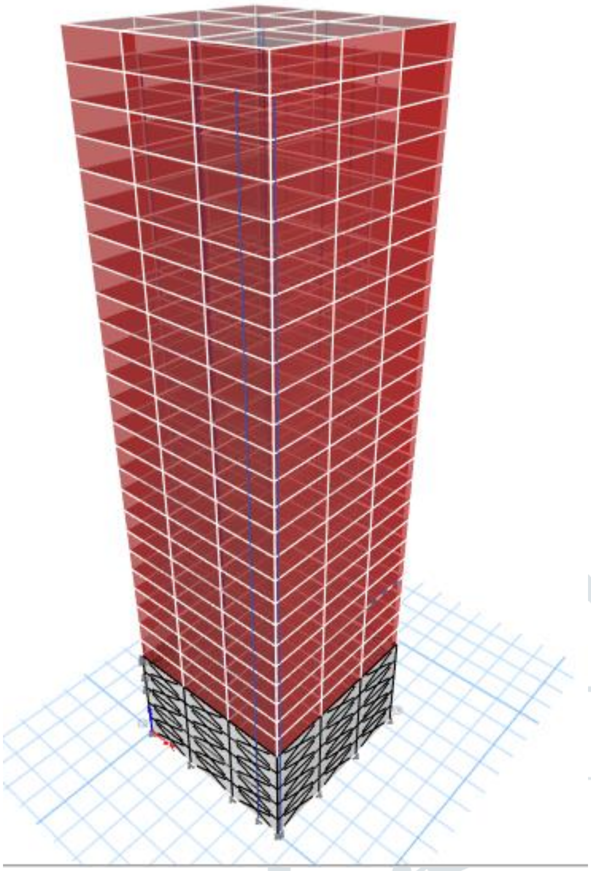


Fig 4.3 Softstorey openings (3-D View)

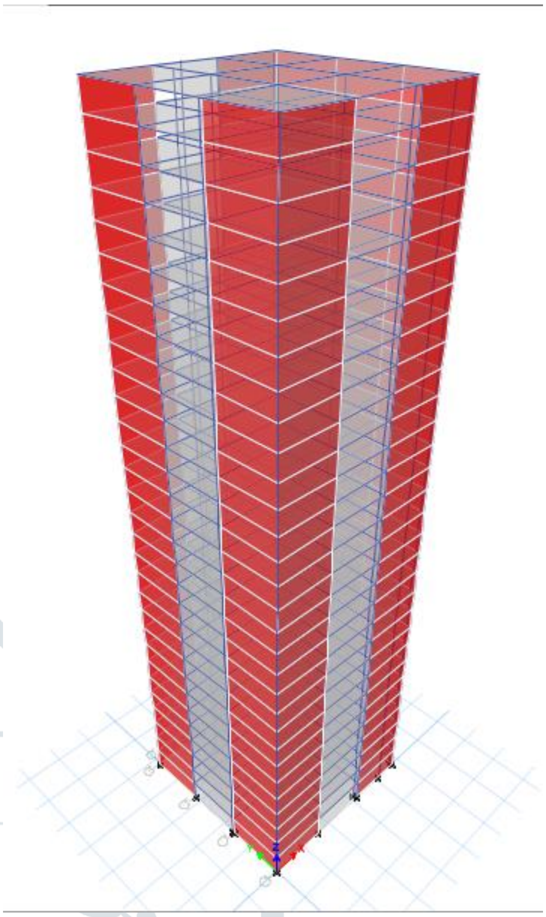


Fig 4.4 Shearwall (3-D View)

5.RESULTS AND DISCUSSIONS

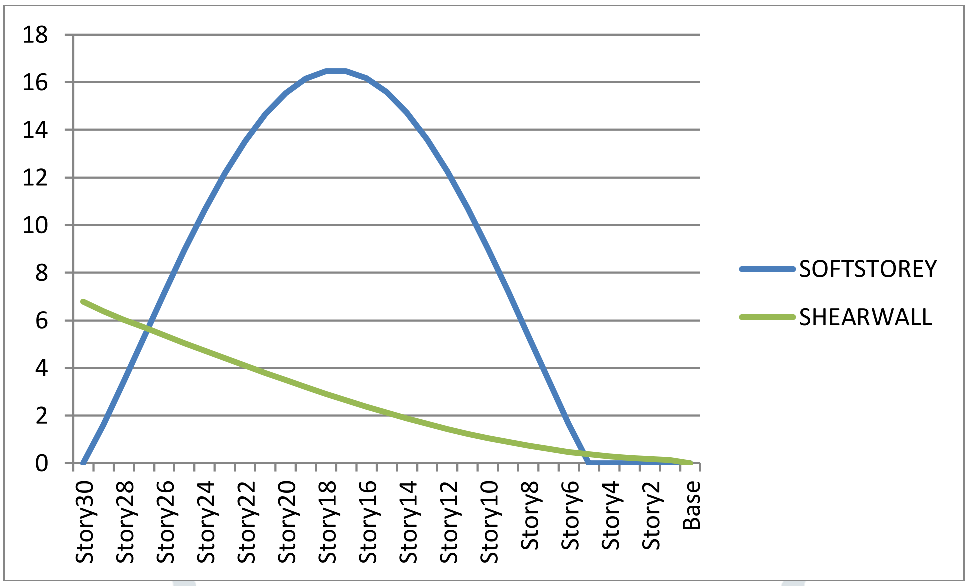
5.1 Softstorey Openings And Shearwall

	SOFTSTOREY		SHEARWALL	
Story	**X-Dir**	**Y-Dir**	**X-Dir**	**Y-Dir**
	mm	Mm	Mm	mm
Story30	0	0	6.787	0.448
Story29	1.607	0.058	6.384	0.303
Story28	3.43	0.123	6.029	0.294
Story27	5.29	0.191	5.7	0.28
Story26	7.151	0.258	5.373	0.269
Story25	8.951	0.324	5.045	0.258
Story24	10.644	0.386	4.721	0.249
Story23	12.186	0.442	4.401	0.241
Story22	13.539	0.492	4.087	0.234
Story21	14.67	0.535	3.78	0.228
Story20	15.548	0.568	3.481	0.223
Story19	16.15	0.591	3.19	0.218
Story18	16.459	0.604	2.908	0.215
Story17	16.466	0.607	2.635	0.212
Story16	16.17	0.598	2.373	0.21
Story15	15.581	0.58	2.122	0.208
Story14	14.714	0.551	1.882	0.208
Story13	13.592	0.513	1.654	0.208
Story12	12.244	0.466	1.44	0.208
Story11	10.703	0.412	1.24	0.21
Story10	9.008	0.353	1.054	0.212
Story9	7.202	0.289	0.883	0.215
Story8	5.339	0.224	0.729	0.218
Story7	3.47	0.16	0.592	0.223
Story6	1.655	0.124	0.473	0.227
Story5	2.56E-06	0.001	0.372	0.231
Story4	0	0	0.292	0.233
Story3	0	0	0.224	0.227
Story2	0	0	0.184	0.211

Story1	0	0	0.138	0.154
Base	0	0	0	0

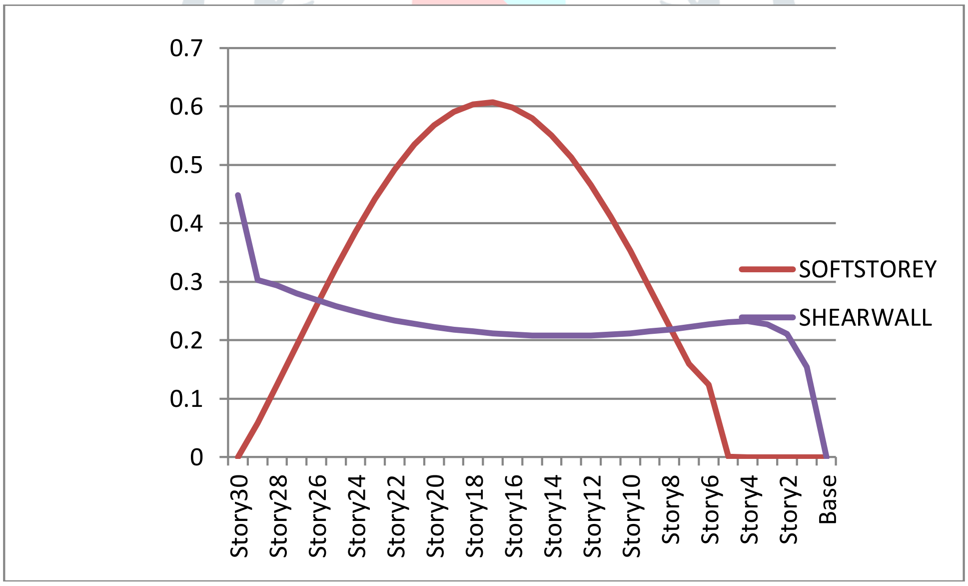
Table 5.1.1 Maximum displacement

X DIR MM



Graph 5.1.1 Maximum displacement (X-dir mm)

YDIR MM

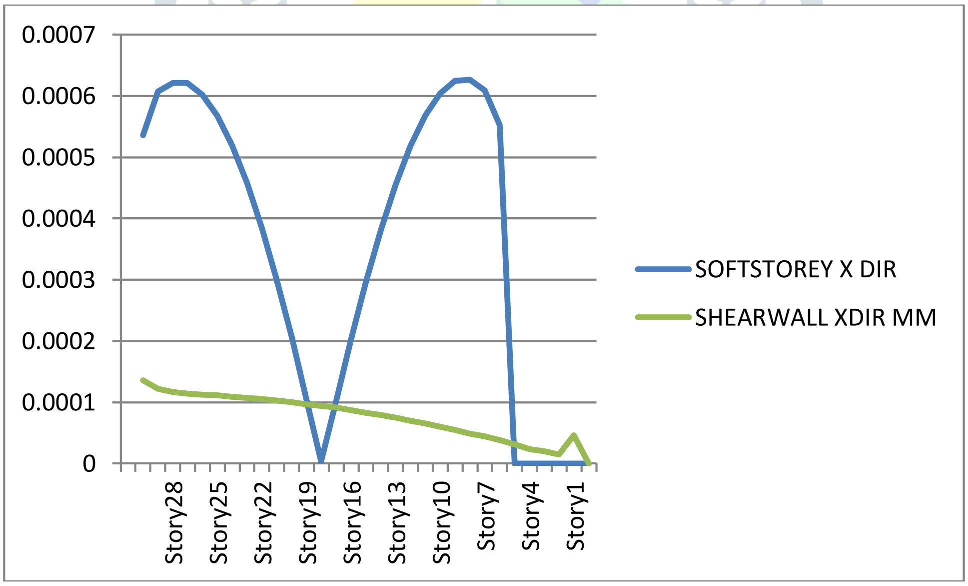


Graph 5.1.2 Maximum displacement (Y-dir mm)

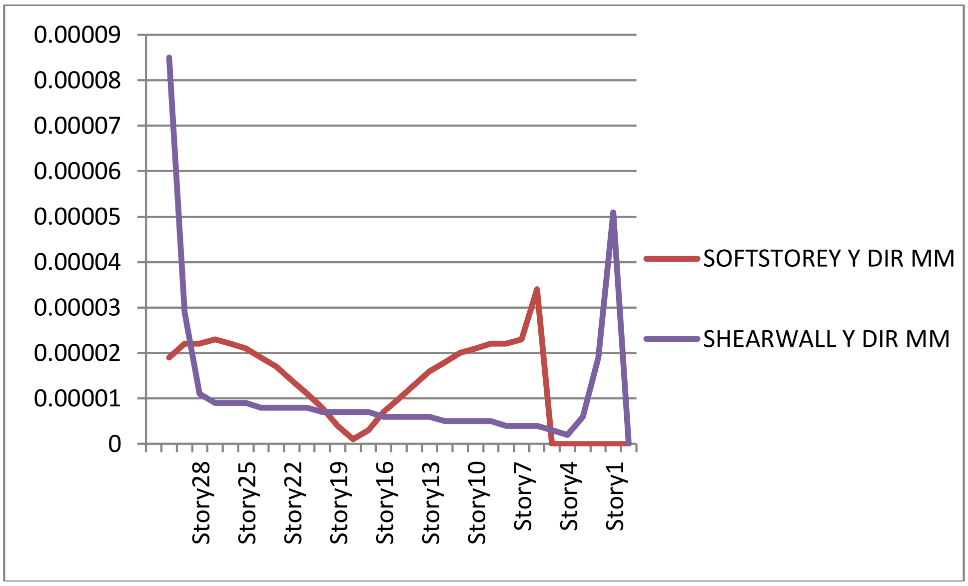
	SOFT STOREY		SHEARWALL	
Story	**X-Dir**	**Y-Dir**	**X-Dir**	**Y-Dir**
Story30	0.000536	0.000019	0.000136	0.000085
Story29	0.000607	0.000022	0.000122	0.000029
Story28	0.000621	0.000022	0.000117	0.000011
Story27	0.000621	0.000023	0.000114	0.000009
Story26	0.000602	0.000022	0.000112	0.000009
Story25	0.000568	0.000021	0.000111	0.000009
Story24	0.000519	0.000019	0.000109	0.000008
Story23	0.000458	0.000017	0.000107	0.000008

Story22	0.000384	0.000014	0.000105	0.000008
Story21	0.000299	0.000011	0.000103	0.000008
Story20	0.000206	0.000008	0.0001	0.000007
Story19	0.000106	0.000004	0.000097	0.000007
Story18	0.000003	0.000001	0.000094	0.000007
Story17	0.000101	0.000003	0.000091	0.000007
Story16	0.000202	0.000007	0.000087	0.000006
Story15	0.000296	0.00001	0.000083	0.000006
Story14	0.000381	0.000013	0.000079	0.000006
Story13	0.000456	0.000016	0.000075	0.000006
Story12	0.000519	0.000018	0.00007	0.000005
Story11	0.000569	0.00002	0.000065	0.000005
Story10	0.000604	0.000021	0.00006	0.000005
Story9	0.000625	0.000022	0.000055	0.000005
Story8	0.000626	0.000022	0.000049	0.000004
Story7	0.000609	0.000023	0.000044	0.000004
Story6	0.000552	0.000034	0.000038	0.000004
Story5	0	0	0.000031	0.000003
Story4	0	0	0.000023	0.000002
Story3	0	0	0.00002	0.000006
Story2	0	0	0.000015	0.000019
Story1	0	0	0.000046	0.000051
Base	0	0	0	0

5.1.2 Maximum Drift



Graph 5.1.3 Maximum drift (X-dir mm)



Graph 5.1.4 Maximum drift (Y-dir mm)

5.2 Soft Storey With One Story Opening And Shearwall Opposite Side

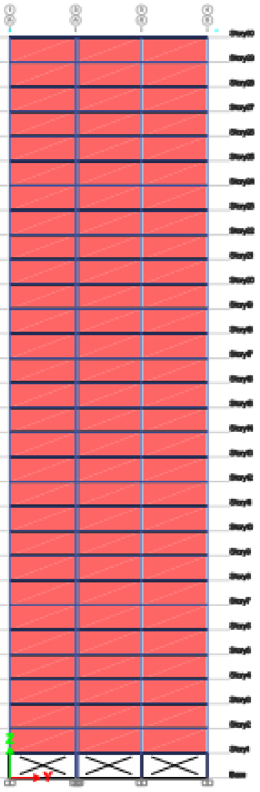


Fig 5.2.1 Softstorey with one storey opening

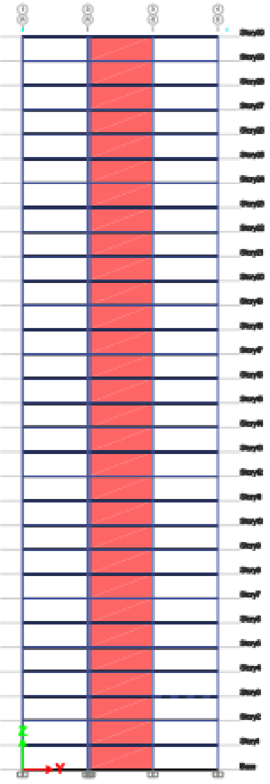


Fig 5.2.2 Shearwall Opposite Side

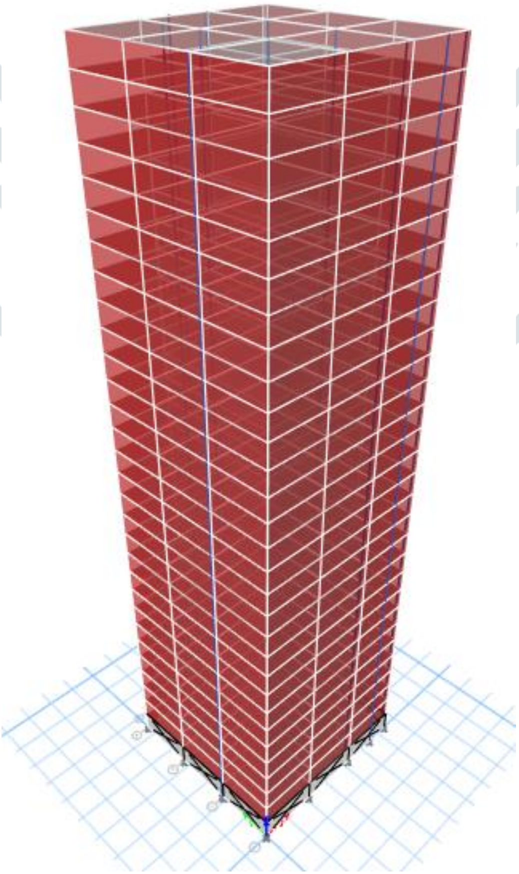


Fig 5.2.3 Softstorey with one storey opening (3D view)

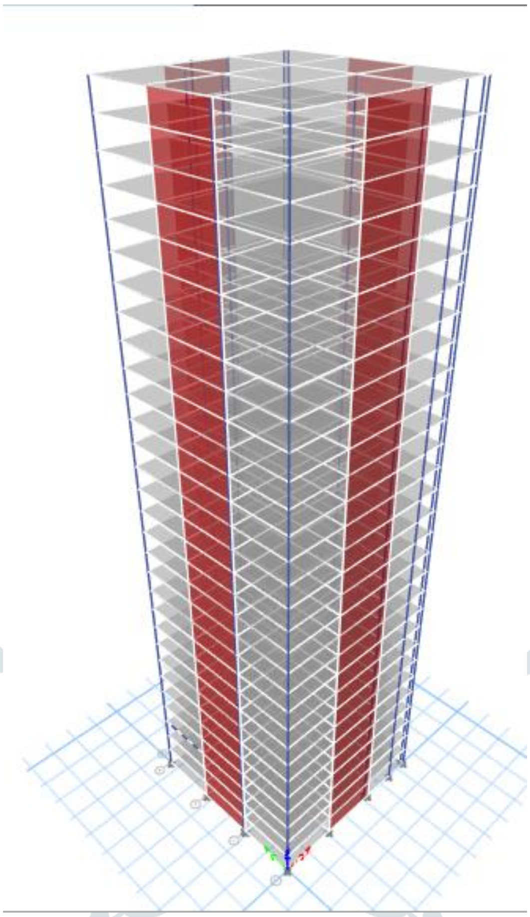
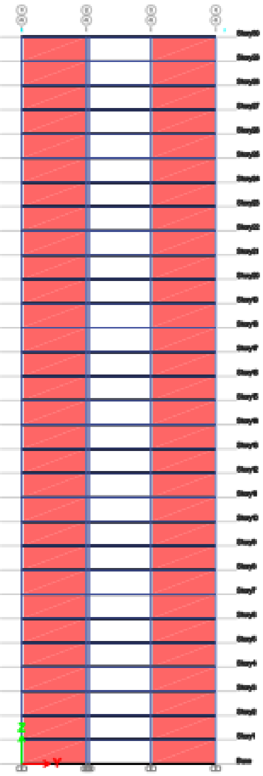


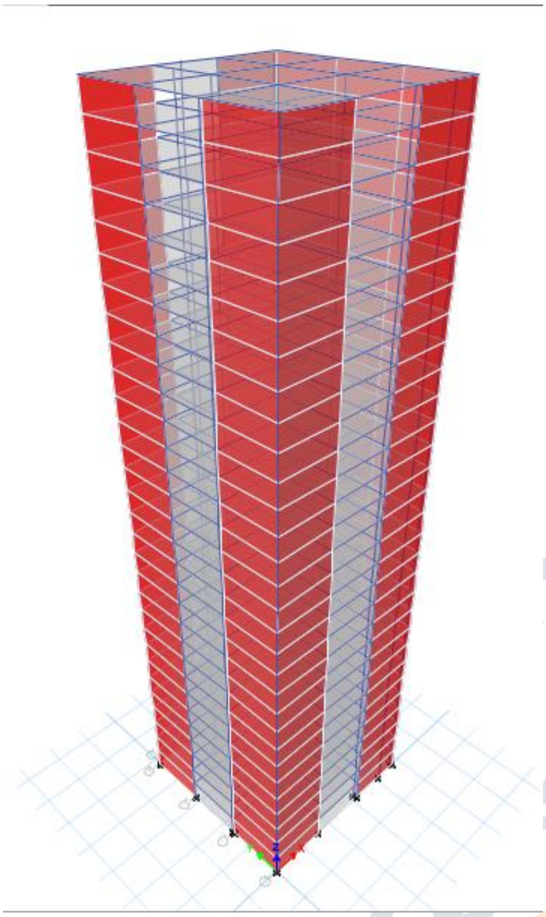
Fig 5.2.4 Shearwall Opposite Side(3-D View)

5.3 COMPARING PLACEMENT OF SHERWALL SHEARWALL AT CORNER AND SHAERWALL AT OPPOSITE SIDE



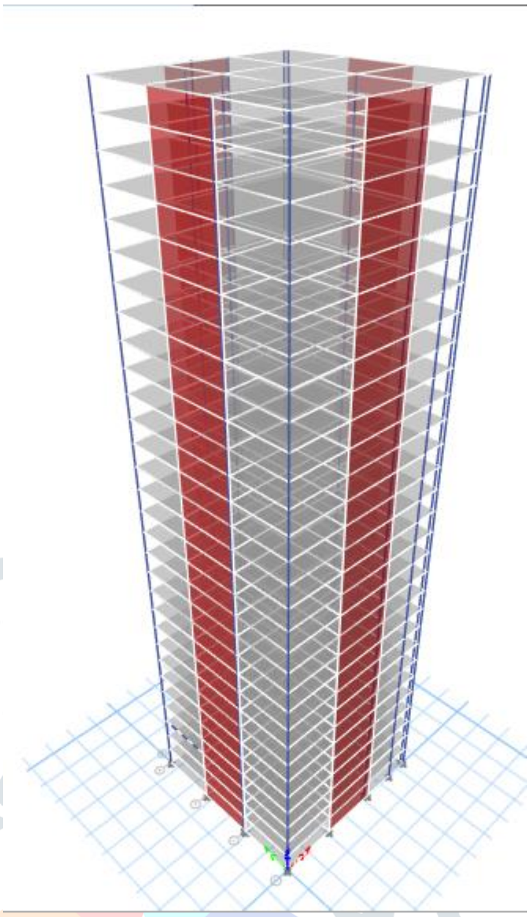
5.3.1SHEARWALL AT CORNER

5.3.2 SHAERWALL AT OPPOSITE SIDE



s

5.3.3 SHEARWALL AT CORNER
(3-D View)

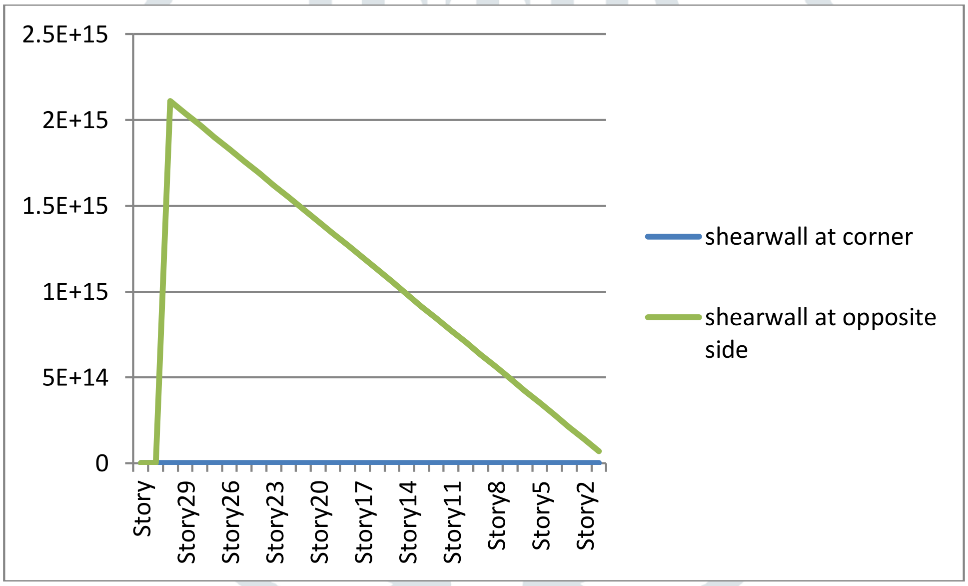


5.3.4 SHAERWALL AT OPPOSITESIDE
(3-D View)

	Shearwall At Corner		Shearwall At Opposite Side	
Story	**X-Dir**	**Y-Dir**	**X-Dir**	**Y-Dir**
	mm	mm	Mm	Mm
Story30	6.787	0.448	2.11E+15	1.27E+09
Story29	6.384	0.303	2.04E+15	1.23E+09
Story28	6.029	0.294	1.97E+15	1.19E+09
Story27	5.7	0.28	1.90E+15	1.15E+09
Story26	5.373	0.269	1.83E+15	1.10E+09
Story25	5.045	0.258	1.76E+15	1.06E+09
Story24	4.721	0.249	1.69E+15	1.02E+09
Story23	4.401	0.241	1.62E+15	9.77E+08
Story22	4.087	0.234	1.55E+15	9.35E+08
Story21	3.78	0.228	1.48E+15	8.92E+08
Story20	3.481	0.223	1.41E+15	8.50E+08
Story19	3.19	0.218	1.34E+15	8.07E+08
Story18	2.908	0.215	1.27E+15	7.65E+08
Story17	2.635	0.212	1.20E+15	7.22E+08
Story16	2.373	0.21	1.13E+15	6.80E+08
Story15	2.122	0.208	1.06E+15	6.37E+08
Story14	1.882	0.208	9.85E+14	5.95E+08

Story13	1.654	0.208	9.14E+14	5.52E+08
Story12	1.44	0.208	8.44E+14	5.10E+08
Story11	1.24	0.21	7.74E+14	4.67E+08
Story10	1.054	0.212	7.03E+14	4.25E+08
Story9	0.883	0.215	6.33E+14	3.82E+08
Story8	0.729	0.218	5.63E+14	3.40E+08
Story7	0.592	0.223	4.92E+14	2.97E+08
Story6	0.473	0.227	4.22E+14	2.55E+08
Story5	0.372	0.231	3.52E+14	2.12E+08
Story4	0.292	0.233	2.81E+14	1.70E+08
Story3	0.224	0.227	2.11E+14	1.27E+08
Story2	0.184	0.211	1.41E+14	8.5E+07
Story1	0.138	0.154	7.03E+13	4.2E+07
Base	0	0	0	0

Table 5.3.1 Maximum Displacement

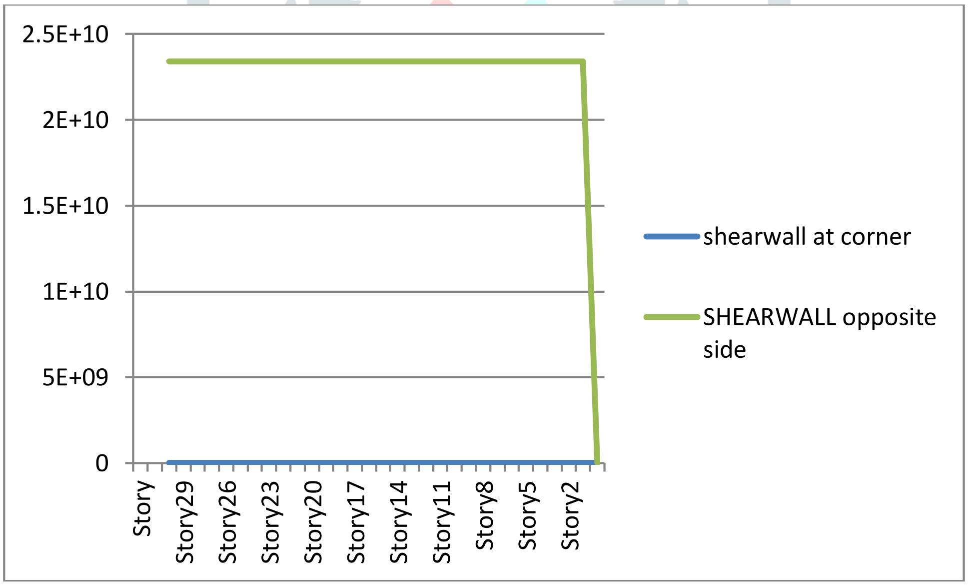


Graph 5.3.1 Maximum Displacement

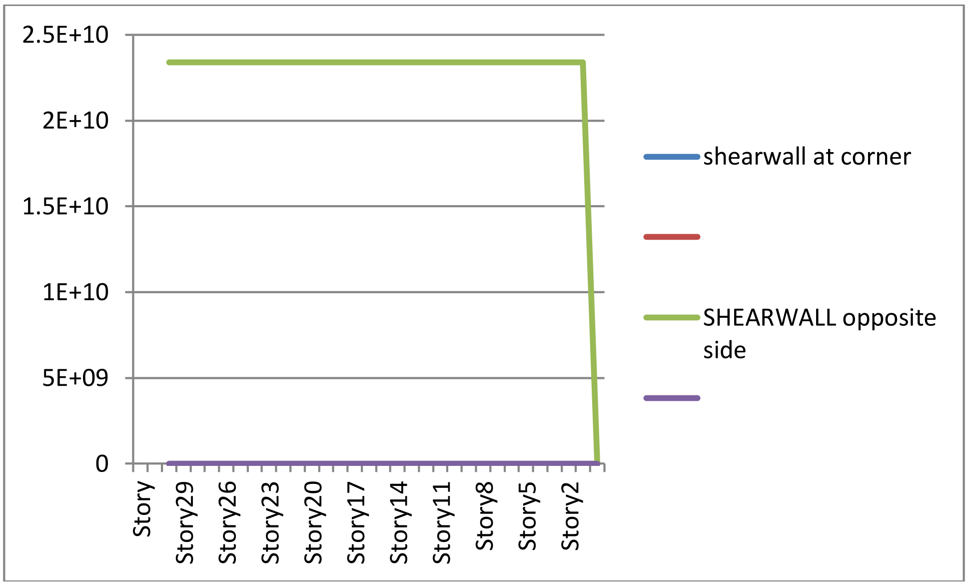
	Shearwall At Corner		Shearwall Opposite Side	
Story	**X-Dir**	**Y-Dir**	**X-Dir**	**Y-Dir**
Story30	0.00014	8.5E-05	2.34E+10	14163.9
Story29	0.00012	2.9E-05	2.34E+10	14163.9
Story28	0.00012	1.1E-05	2.34E+10	14163.9
Story27	0.00011	9E-06	2.34E+10	14163.9
Story26	0.00011	9E-06	2.34E+10	14163.9
Story25	0.00011	9E-06	2.34E+10	14163.9
Story24	0.00011	8E-06	2.34E+10	14163.9
Story23	0.00011	8E-06	2.34E+10	14163.9
Story22	0.00011	8E-06	2.34E+10	14163.9
Story21	0.0001	8E-06	2.34E+10	14163.9
Story20	0.0001	7E-06	2.34E+10	14163.9
Story19	9.7E-05	7E-06	2.34E+10	14163.9
Story18	9.4E-05	7E-06	2.34E+10	14163.9

Story17	9.1E-05	7E-06	2.34E+10	14163.9
Story16	8.7E-05	6E-06	2.34E+10	14163.9
Story15	8.3E-05	6E-06	2.34E+10	14163.9
Story14	7.9E-05	6E-06	2.34E+10	14163.9
Story13	7.5E-05	6E-06	2.34E+10	14163.9
Story12	0.00007	5E-06	2.34E+10	14163.9
Story11	6.5E-05	5E-06	2.34E+10	14163.9
Story10	0.00006	5E-06	2.34E+10	14163.9
Story9	5.5E-05	5E-06	2.34E+10	14163.9
Story8	4.9E-05	4E-06	2.34E+10	14163.9
Story7	4.4E-05	4E-06	2.34E+10	14163.9
Story6	3.8E-05	4E-06	2.34E+10	14163.9
Story5	3.1E-05	3E-06	2.34E+10	14163.9
Story4	2.3E-05	2E-06	2.34E+10	14163.9
Story3	0.00002	6E-06	2.34E+10	14163.9
Story2	1.5E-05	1.9E-05	2.34E+10	14163.9
Story1	4.6E-05	5.1E-05	2.34E+10	14163.9
Base	0	0	0	0

5.3.2 Maximum Drift

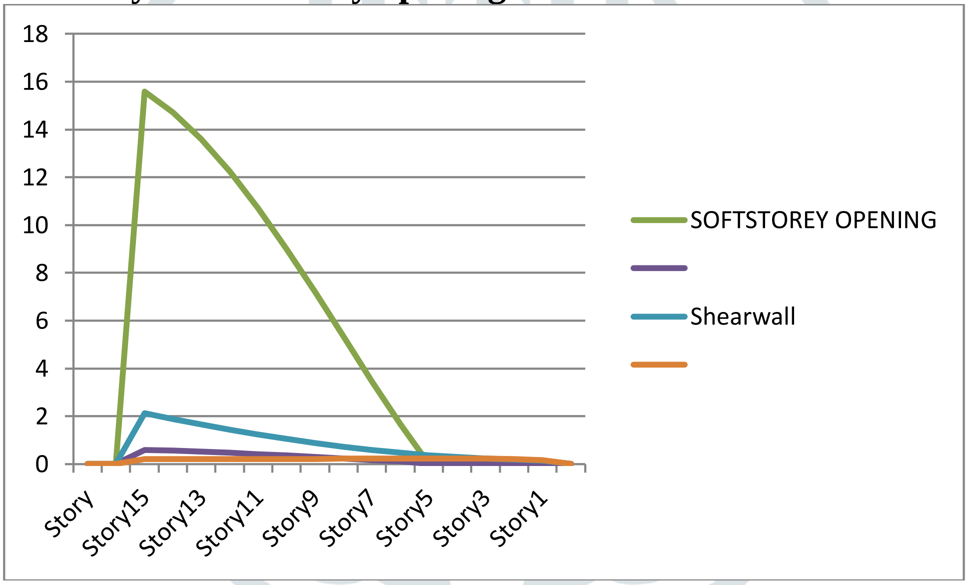


Graph 5.3.2 Maximum Drift

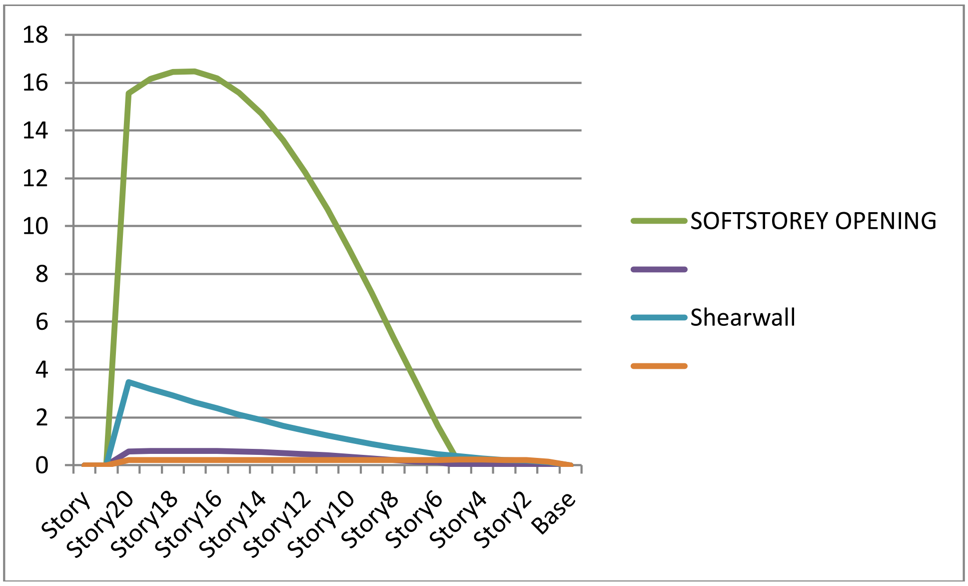


Graph 5.3.3 Maximum Drift (X and Y Dir mm)

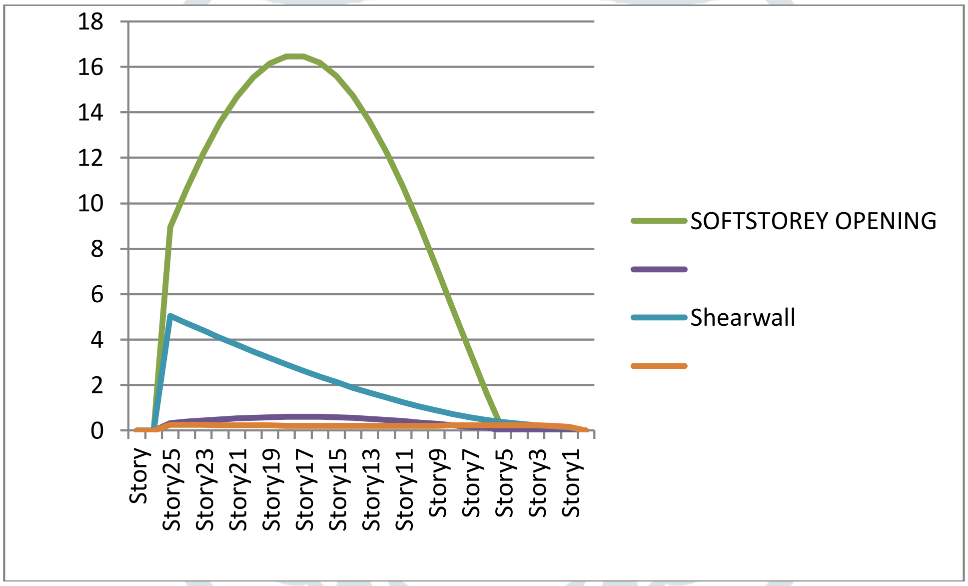
5.4 Comparative study on Softstorey openings and Shearwall



Graph 5.4.1 Maximum Displacement Storey 15



Graph 5.4.2 Maximum Displacement Storey 20



Graph 5.4.3 Maximum Displacement Storey 25

RESULTS

Graphs that interpret the structural geste of all the various structural models in terms of Storey Shear, Storey Deportations, and Storey Drift are used to graphically portray the study's conclusions.

1. When comparing the soft storey structure to other structural models, a very advanced relegation was found.

2. The Shear wall model showed lower demotion, showing that it is a more efficient and secure option in a comparison with the softstorey.

3. The storey drift in the soft storey model was dramatically increased. According to this identifying, comparable buildings may experience major side displacement during seismic happenings.

4. The shear wall model has the highest storey stiffness, according to a comparison of stiffness in buildings.

DISCUSSIONS

Soft Storey And Shear Wall Are Discussed

1. Soft storeys behave quite differently during earthquakes, and this results in structural damage and greater expenditures. It's necessary that people stay away of soft story designs as much as possible in earthquake-prone areas. From the design stage by means of occupation, earthquake-resistant measures should be put into effect as essential.

2. Soft story buildings that are already in place should be carefully analyzed and reinforced as necessary.

3. Soft storey variations should be rectified; SS > 0.8–0.9 and R > 1.5 ratios should be used as references.

4. To achieve compliance, clear criteria for soft story abnormalities should be created.

Based on collapse durability curves and story drift criteria, the results of the seismic assessment are presented. With their fundamental susceptibility to earthquake-induced collapse, multi-story buildings with open ground levels are a common architectural type in developing nations because of economic and sociological requirements. Different building models, including those with soft floors and shear walls together with steel stiffeners on the first floor, are used in the analysis. Although soft-storey structures are prone to collapsing, they are commonly constructed in developing nations like India. Regulations cause the first floor to be typically weaker and stiffer compared to the other stories. investigations on the response to earthquakes of soft-storey structures.

Modern urban architecture in India has grown to be distinguished by research on seismic behavior in structures with soft stories.

1) Due to the lower concentration of bending moments, buildings with shear walls at the corners have the lowest story displacement compared to other models. When shear walls are present, the storey displacement is also reduced, although less than at the corners.

2) For structures with soft storeys, the height of the soft storey is where the greatest storey displacement occurs. Due to the resistive effect of shear walls, the model with shear walls at the corners has the least drift compared to other structures. Although to a lesser extent, shear walls at the periphery also prevent drift.

3) The corner position of shear walls results in the highest base shears in both X and Y directions compared to other models. The position of shear walls affects the force distribution.

4) The installation of shear walls at the corners increases the stiffness of the storey, especially as the building height increases. This transformation of the soft storey into a regular storey is due to increased horizontal stiffness and structural stability.

5) Shear walls at the corners lead to a reduction in the time the building stands during strong seismic events.

6.CONCLUSION

The key role of structural fundamentals in influencing seismic performance is shown by a comparison of altitudinous buildings with soft story openings and shear wall corners. Shear walls substantially contribute difference to overall stability and the amount of dropping down, whereas soft story openings are less resistant to localized damage and collapse. The problems with the study allow us to make the following important the conclusion:

1. The soft storey structure significantly surpassed comparable designs relegation, showing the vulnerable nature of structures of the same type in regions prone to earthquakes.
2. Shear wall models displayed lower relegation, indicating their more excellent improved safeguarding and cost-effectiveness in seismic incidents.
3. The soft storey model showed a significant increase in storey drift, indicating an implied loss of structural integrity during earthquakes.
4. When storey stiffness was compared, it was determined that shear wall models showed the highest stiffness, which meant that they proved more resilient overall and more resistive to seismic forces.structural geniuses can help build a more durable and earthquake-resistant municipal construction by incorporating shear walls into appropriate seismic-resistant designs.

REFERENCES

- Akshay S. Paidalwar and G.D. Awchat., “ Seismic Analysis of Open Ground Storey Building”,
- International Journal of Civil Engineering Research.
- Amitkumar Yadav, Dr. Vikram Patil, Somanagouda Takkalaki., “Analysis of Tall Structures with and Without Openings in Shear Walls”, Ijiset - International Journal of Innovative Science, Engineering & Technology, Vol. 6 Issue 5, May 2019.
- Mahendra Kumar, “Seismic Behavior of Buildings with Shear Wall” International Journal of Engineering Research & Technology (Ijert).

- Alhat Sneha Dnyaneshwar, D. N. Mandlik, V. P. Bhusare and N.V.Khadake., "A Review On Seismic Analysis Of RCC Building With Soft Storey At Different Level", International Journal Of Research In Engineering, Science And Management.

- Prof. Patil S.S. and Sagare S.D., "Dynamic Analysis of Soft Story-High Rise Building
- With Shear Wall", International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS).

- Akansha Dwivedi and B.S Tyagi, "Seismic Analysis of Building with and Without Shear Wall for Building with Rcc and Composite Column", International Journal of Engineering Research & Technology (Ijert).