REVIEW PAPER ON COMPARATIVE STUDY IN THE ANALYSIS OF MULTISTOREY RCC STRUCTURE BY USING DIFFERENT TYPES OF CONCENTRIC BRACING SYSTEM (BY USING SOFTWARE)

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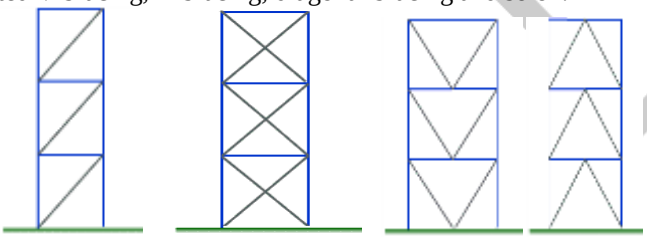
***Abstract*— from last some years we have seen that the most of the RCC buildings were failed due to lateral load. Bracings systems are one of the lateral load resisting systems which have got structural importance especially in reinforced concrete buildings. Different bracing systems are efficient enough for seismic responses. Steel bracing systems have both practical and economic advantages. The application of steel bracings is faster to execute. The steel bracings are usually installed between existing vertical members. The purpose of the study of seismic response of a building is to design and build a structure in which the damage to the structure and its structure component by earthquake is minimized. The paper aims towards the review of study of analysis of Unbraced and braced multistorey RCC building conducted by various authors in the past.**

***IndexTerms*—Component, formatting, style, styling, insert.**
Keywords—RCC Frame, Bracing, Earthquake, ETAB'S

I. INTRODUCTION

In earthquake design the building has to go through regular motion at its base, which leads to inertia force in the building that consecutively causes stresses. India has experienced number of earthquakes that caused large damage to residential and industrial structure. For earthquake resistant design the normal building should be able to resist minor, moderate, sever shaking. In the circumstances of the building, simple shape configuration building transfer the earthquake force in the direct path to the base while in complex shape building the load transferring path is indirect which leads to generation of stresses at the corners. Seismic Analysis is a subset of structural analysis and is the calculation of the response of a building structure to earthquakes. It is part of the process of structural design, earthquake engineering or structural assessment and retrofit in regions where earthquakes are prevalent. In order to make multi-storey structures stronger and stiffer, which are more susceptible to earthquake and wind forces, the cross sections of the member increases from top to bottom this makes the structure uneconomical owing to safety of structure .The behavior of the buildings during earthquake depends not only on the size of the members and amount of reinforcement, but to a great extent on the placing and detailing of the reinforcement. Therefore, it is necessary to provide special mechanism that to improve lateral stability of the structure. There are various types of bracing systems like X bracing, V bracing, inverted V bracing, K bracing, diagonal bracing and so on.



Single Diagonal X Bracing V And Inverted V Bracing

II. LITERATURE REVIEW

Nauman Mohammed, Islam Nazrul (2013) explain bracing system is one of the retrofitting techniques and it provides an excellent approach for strengthening and stiffening existing building for lateral forces. Our ability to build seismically safe structures with adequate seismic resistance has increased significantly in the past few decades. Many reinforced concrete frame structures built in seismically active areas are expected to perform inadequately in a seismic event. The potential advantage of bracing system is the comparatively small increase in mass associated with the retrofitting scheme since this is a great problem for several retrofitting techniques. The application of steel bracings is faster to execute. The steel bracings are usually installed between existing vertical members. Furthermore, if it is used in the structure, the minimum disruption of the building is obtained.

Umesh.R.Biradar1,Shivaraj and Mangalgi(2014) executed 7 models with different bracing systems.They have been modeled and analysed for linear static(ESA),linear dynamic(RSA) ,non linear static(Pushover Analysis) and non linear dynamic analysis(Time history Analysis) by ETABS software .Results such as fundamental time period , seicmic base shear , storey

displacement and storey drift have been evaluated and compared with bare frame model. Model 2 (X bracing system) is showing better seismic performance out of all the models.

Dhananjay. S. Pawar, S. Abdulla U. Phadnis, Raju. S. Shinde, Yugandhar. N. Jinde(2015) observed that, Now-a-days, shear wall in R.C. structure and steel bracings in steel structure are most popular system to resist lateral load due to earthquake, wind, blast etc. bracing is a highly efficient and economical method of resisting horizontal forces in a frame structure. Bracing is efficient because the diagonals work in axial stress and therefore call for minimum member sizes in providing stiffness and strength against horizontal shear. Through the addition of the bracing system, load could be transferred out of the frame and into the braces, by passing the weak columns while increasing strength.

Shahrzad Eghtesadi, Danesh Nourzadeh, Khosrow Bargi (2012) research evaluates that Choosing an appropriate lateral force resisting system has a significant effect on performance of the structure in steel frames. So this paper is aimed at investigating and comparing various types of bracing systems. For this reason, four types of bracing systems including X-bracing, Diagonal bracing, Inverted chevron CBF and Inverted chevron EBF, in four different height levels, are modeled and analyzed. Results show that although diagonal bracing systems increase the energy absorption capacity of the structure, but because of its less rigidity it leads to increasing the buildings weight. So in order to optimize the amount of steel consumption and obtain the light weight structure, best solution is to apply the Inverted chevron CBF bracing systems in steel frames

Karthik K. M, Vidyashree has been modeled G+5 storey building and analyzed considering different types of vertical geometric irregularities and steel bracings using pushover analysis with the help of ETABS 9.7 software. Addition of X type brace, V type Brace and Inverted V/K type brace shows that use of X-type of bracing is found more suitable to enhance the performance of the irregular buildings.

Shachindra Kumar Chadhar, Dr. Abhay Sharma has modeled with V and inverted V.Study revealed that inverted V bracing reduces the bending moment, shear force, storey drift and node displacement significantly. They also found that the various arrangements of bracing systems has great influence on seismic performance of the building frame and double angle section give better result as compared to ISMB and ISMC section.

III. CONCLUSION

Many of the studies have shown seismic analysis of the RCC structures with different bracing system such as single diagonal, X, V, Inverted V and K bracing. From previous studies it has been concluded that the X bracing and Inverted V bracing minimizes the effect of earthquake. The X and Inverted V bracing reduces the maximum lateral displacement and also reduces shear force and bending moment in column.

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