IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 2, June 2022
Impact Factor: 6.252

Structural Analysis of Irregular Reinforced Concrete Building Due to Earthquake: A Review

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Abstract: *In recent years, there has been a change in the complexity of housing and commercial structures from the complexity of several decades ago. Previously, residential and commercial buildings were mostly rectangular in shape and thus followed the traditional side load paths. Due to advances in technology, these structures are now more complex in shape and contain many inequalities. Such disturbances include, but are not limited to, non-parallel systems, aperture ruptures, torsional effects, and relay angles (ASCE 2010), which complicate traditional lateral load pathways. These complex diaphragms require more in-depth analysis - to determine the full path of the lateral load. In the case of this study, only the issue of irregularity will be studied.*

Keywords: Irregularity, Seismic, displacement and buildings

I. INTRODUCTION

Historically, since before the turn of the twentieth century and even in modern buildings there is significant damage in buildings with retransmission corners after side loading events, such as earthquakes. Damage to the corners of the buildings in retransmission was significantly noted after the earthquake in Canto in 1923, the earthquake in Santa-Barbara in 1925, earthquakes in Alaska in 1964 and the earthquake in Mexico City in 1985 [4]. In some of these significant events, it was noted that the damage to the building occurred first in the corner of the reentrant, and then went to other parts of the building. Damage observed in the diaphragm of the roof and upper floors emitted from the retransmission angle of the Ministry of Telecommunications building in Mexico City after the 1985 earthquake.

II. LITERATURE REVIEW

2.1 Related Work

Subodh. S. Patil et al. investigated, that the effect of the type and amount of reduction of lateral rigidity along the height of the building and the ratio of total flexible and sliding deformations on the ratio is investigated spectral movement to roof movement and the ratio of the maximum inter-storey ratio to the roof drift coefficient.

Sujay Deshpande et al. it has been studied that nonlinear dynamic analyzes indicate that the maximum shear force is proportional to the bending moment power of the wall and is inversely proportional to the accompanying base shear force. The upper - limited estimate of the bending moment power of the high - east wall in combination with the assumed zero base shear force can be used in a simple nonlinear static analysis to estimate the maximum shear force below the bending plastic hinges.

Shiva Coumar Hallale et al. presented an approximate method for estimating the maximum requirements for side drift in multi-storey buildings with different lateral rigidity, which reacts mainly in the fundamental mode, when they are exposed to an earthquake.

Ravi Kant et al. It was investigated that the highest seismic demand is for the combined - stability - and - strength inequality. It can be concluded that a large number of research studies and building codes have addressed the issue of the impact of vertical disturbances. Building codes provide criteria for classifying vertically irregular structures and offer an analysis of the history of elastic time or an analysis of the spectrum of the elastic reaction to obtain the design lateral distribution of force.

Rajiv Banerji et al. concluded that a nonlinear shift model could be used to determine whether diagonal cracking of the wall and obtaining horizontal reinforcement of the walls would reduce the force of the return shift without causing a

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shift failure. Increasing the amount of horizontal reinforcement in the wall above a certain limit may not prevent a shift failure, and therefore you need to find another design solution

In this article, the definition of a stiffness center for solid floor diaphragm buildings was extended to asymmetrical buildings with flexible floors. An analysis procedure based on the superposition - is proposed for the implementation of the code - defined torsional provisions for buildings with flexible floor diaphragms, similar to rigid floor diaphragms.

Naresh Kumar B. G. et al. It has been studied that high - rising concrete walls are often supported near or below the class by rigid floor diaphragms connected to the walls of the perimeter foundation. When much of the moment of overturning into the wall is transferred to the foundation walls by power pairs in two or more rigid floor diaphragms, the maximum moment of bending of the bending plastic hinge occurs over the diaphragms, and the shear force returns below the bending loop.

III. CONCLUSION

This study summarizes the state of - - art history - in the seismic response of vertically irregular building frames. Criteria determining vertical irregularity in accordance with current building codes were discussed. An overview of studies of seismic behavior of vertically incorrect structures was presented, together with their findings. It has been observed that building codes provide criteria for classifying vertically irregular structures and offer dynamic analysis to achieve design lateral forces.

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