(IJITR) INTERNATIONAL JOURNAL OF INNOVATIVE TECHNOLOGY AND RESEARCH
Volume No.8, Issue No.6, October – November 2020, 9648-9650.

A Study Of High Rise Construction Through Floating Pillars

DUGGA SAROJA
M.Tech Student, Dept of CIVIL, Priyadarshini Institute of Technology & Science for Women, Chintalapudi, Tenali, A.P, India

K.KIRAN KUMAR
Assistant Professor, Dept of CIVIL, Priyadarshini Institute of Technology & Science for Women, Chintalapudi, Tenali, A.P, India

Abstract: **Today, most industrial areas, together with apartment buildings, have smaller floors with receptions, exhibition rooms, and conference rooms, a large garage, etc. The immediate background of the floor displacement, the tomb float, the base cut-out and the minute of the fall are recorded for both covers with and without skimming. The evaluation is performed on structural designs that have different types of RCC floors with a light and complex design as well as drift poles. A software application with a limited number of components, namely ETABS, Staad for v8i, is used for evaluation, which allows easy definition of specifications such as lateral stresses, bending accuracy, shear pressure, axial stress, floor shear, floor drift and pad shear. All of these services, unlike the much spaced columns on the upper floors, require a large amount of continuous space, and so the idea of a drift column began. This paper aims to point to the evidence of research conducted in the past by seismic analysis of the structure of a floating column by several authors. FEM codes are produced to obtain 2D multi-storey details with and without the skimming region, which reflect the frame responses at different seismic vibration excitations. It has a distinct appearance material that preserves the PGA and also the regular aspect.**

Keywords: **Multi Stored Building; FEM; Staad Pro; Shear Force; Axial Force;**

INTRODUCTION:

Construction procedures during an earthquake depend critically on its general shape, dimensions, and geometry, as well as on how exactly the earthquake pressures are achieved. The vibrations exposed to different degrees of floor shall decrease as the demand develops along the height above the ground in the fastest direction; any kind of change or interruption in this batch transfer procedure will result in inefficiency of the structure [1]. Structures with straight problems (such as multi-storey recreational buildings are larger than other floors) cause sudden seismic stress at the stop level. Structures with fewer columns or wall surfaces in a particular floor or with an unusually high floor tend to wear out or collapse, which started due to the floor. In Gujarat, during the Bug earthquake in 2001, a number of buildings with open floor parking vehicles were broken or severely damaged. Structures with columns that hang or drift on the beam of light on the mezzanine floor and do not roll with it also have suspension while transporting the tons. However, the provision of drift poles released at the conical impingo-beam index increases the viability of the side dose-resistant system due to vertical suspension. This type of building does not cause any problems with vertical load problems. However, during an earthquake, there is not much to provide a clear path to shift lateral stresses to the structure. The lateral stresses accumulated in the upper floors during the entire impact must be transmitted by the projected cantilever beam of lights [2]. Therefore, the reflection pressures are based on the fact that the poles are confusing at first. In this scenario, the columns start to deform and twist as well, resulting in a complete collapse. This is due to the major deficiency in the stiffness of the first stage poles, the prediction of the cantilevered light rays as well as the flexible description of the light column beam connection. There are many tasks in which drift poles are grabbed, especially in aero floors where transmission girders are used to ensure more open spaces are available in the first stage [3]. These open spaces may be required to set up a hall function or automatic parking. Transmission beams need to be developed and designed effectively, especially in earthquake areas.

RELATED STUDY:

In addition, problems with the threshold are sometimes described as problems that the region deserves. It can be said that this is a mathematical problem, because many dependent variables have to satisfy the differential equation anywhere within the domain name for the independent variables, as well as to detail the specific problems within these domain name limits. The region behind the problems in FEM usually has the region as the domain name of the interest rate, which usually represents the physical framework. Thus, regional variables are controlled by differential formulas, and in addition, it is worth describing the specific value of area variables at the area boundary. Seismic assessment is part of the architectural assessment as well as the calculation of the reactions from the building frame to the earthquake [4]. It belongs to the implementation of architectural style, earthquake design or architectural analysis in the area where the earthquake prevails. The structure has the ability to swing back and forth during an earthquake (and even during a strong wind hurricane). This is a "basic setup" and a more systematic way of building responses. However, most structures have larger reactive settings that are clearly triggered during an earthquake. In the variant of drift structures, there is a greater gain compared to normal structures. The shift between floors also supports an increase in the diversity of floors. Ground drift is a plus for column erosion structures, because the elimination of columns strengthens the mass for this reason. Because the block and tightness also further strengthen the core cut. Therefore, the primary shear is additional to the oblique columnar structures contrasting with conventional structures [5]. Thus, the research study showed that in practice it is possible for erosive plumes to remain particularly free in earthquake-prone locations.

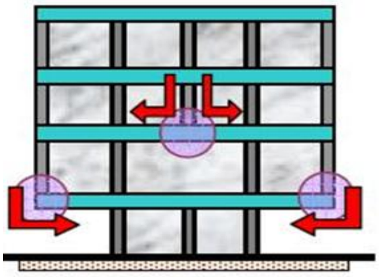

Fig.2.1.Floting Column

METHODOLOGY:

Analysis was performed with E-Tabs software using equivalent static analysis. They also studied differences in both structures using the intensity of past earthquakes, i.e. by applying the motions of the Earth to both structures, from this time history has shifted. Values are compared. The paper presented deals with changes in time period, structure displacement, primary shear, and building seismic weight from manual calculations and electronic cards. The floating column building has been found to be as safe as the normal building. The aim of this work is to study the behaviour of multi-storey buildings with floating columns during an earthquake. The finite element method is used in solving the dynamic control equation. Linear chronological history analysis is performed for multi-storey buildings at different earthquake loads with different frequency contents. It is assumed that the base of the building frame is fixed. Newark's Direct Integration Scheme is being used to speed up the solution over time. A four-deck 2D frame with and without floating shaft for static load is analyzed using existing FEM code and commercial STAAD Pro software. It is concluded that the stable and free vibrations obtained were confirmed using the current limiting element code. The dynamic analysis of the frame is studied by scaling the shaft [6]. To achieve this goal, three RC exposed frame structures with G + 4, G + 9 and G + 15 floors will be analyzed and the forces and fundamental transformations of RC bare frame structures will be compared with G + 4, G + 9 and G + 15 floors in different regions. Earthquakes such as Rajkot, Jamnagar and Buhl using SAP 2000 Analytics Package 14.

ANALYSIS MODELS:

The following are the input data of the test specimen:

Size of beam – 0.1 X 0.15 m

Size of column – 0.1 X 0.125 m

Span of each bay – 3.0 m

Storey height – 3.0 m

Modulus of Elasticity, E = 206.84 X 10^6 kN/m^2

Support condition – Fixed

Loading type – Live (3.0 kN at 3rd floor and 2 kN at 4th floor)

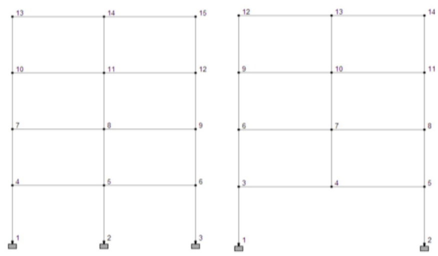

Fig.4.1. 2D Frame with usual columns.

The frequencies of free vibrations of a 2D steel frame with a floating shaft are given in Table 4.6. This table compares the values obtained in the current FEM and STAAD Pro. Table 4.7 shows a comparison of the maximum upper tread displacement achieved with the current FEM and STAAD Pro programs, which are in very close agreement.

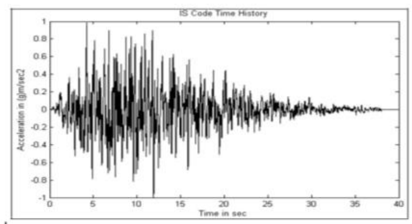

Fig.4.2. Compatible time history as per spectra.

CONCLUSION:

The effects of most floors and without a series of columns are investigated in a wide range of operating conditions. In fact, the relevance of the historical background as well as the information associated with the electric shock was taken into account. The PGA of both earthquakes was significantly reduced by 0.2 g and the same happy period was also maintained. A term-page statement has been developed to evaluate the live-action of the multi-story comparison. Clean and free results confirm the use of the limited number displayed. Direct evaluation of the structure is examined by the difference in column size. It drops down as the first column expands, the positive difference is; the mezzanine floor is reduced. The strength of the scissors as well as the increased expansion are varied by the adjustment to the large crop. The behavior of multi-storey developers is investigated with and without column erosion in the presence of various earthquakes. A study is being done and it is also concluded that the flexibility of the floor as well as the flow of the floor are increased and the poles are stretched. Identifies limitations such as floor defaults, floor changes etc. Increases with the insertion of floating columns. Therefore, as a good thing, it should be avoided in damaged areas. While there is still a lot of work to be done with a small design. Future research should be known for the types of conditions that reflect the actual structural behavior of the structure.

REFERENCES:

[1] Badgire Udhav, Shaikh A. N, Maske Ravi, “Analysis of Multistorey Building with Floating Column”, International Journal of Engineering Research, Vol. 4 Issue 9, September 2015.

[2] Sabari S, Praveen J. V, “Seismic Analysis of Multistorey Building with Floating Column”, International Journal of Civil Engineering Research, Vol 2. Issue 2, October 2014.

[3] A.P. Mundada A. and S. G. Sawdatkar A, "Comparative Seismic Analysis of Multistorey Building with and without Floating Column", International Journal of Current Engineeringand Technology, Vol. 4 No. 5, October 2014.

[4] Srikanth M. K, Yogeendra Holebagilu, “Seismic Response of Complex Buildings with Floating Column for Zone II and Zone V”, International Journal of Engineering andResearch, Vol 2. Issue 4, 2014.

[5] Jayesh Rathi, Sharvari Dhepe, "Comparative Study on Seismic Evaluation of Multistoried Building with and without Floating Column", International Journal for Research in Applied Science & Technology (IJRASET), Vol. 5 Issue IV, April 2017.

[6] Sukumar Behera, "Seismic Analysis of Multistorey Building with Floating Column", NIT Rourkela, May 2012.

