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A REVIEW OF HIGH-RISE BUILDING SEISMIC BEHAVIOR WITH TRANSFER FLOOR

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Abstract—
The demand for land rises in tandem with the global population. Convertible ground is a solution to this issue since it offers all the necessary acreage and infrastructure to accommodate large families in the community. systems for floors that may transport weights to other foundations and sustain loads, such as lateral and vertical stresses. The weight may be calculated by dividing the column length by the row length. It is essential to study publications by different writers in order to comprehend the significance of load models and testing. This investigation's primary goal is to demonstrate how shifting patterns behave in various seismic zones and the variables influencing these patterns.

Index Terms— Transfer Structure, Transfer Floor, Plate, Seismic Analysis, Response Spectrum Analysis.

INTRODUCTION

floor systems that can transmit loads to other systems and provide load bearing (such as lateral and vertical loads). Lines and walls that change suggest that assistance, ingenuity, or preparation are needed. Globally, new standards that take into account a range of applications and public expectations are being produced. While structures in various earthquake zones serve a variety of uses, including multipurpose parking spaces, gardens, and playgrounds for kids, structures in higher seismic zones are mostly employed for residential and commercial reasons. One of the main issues with layer changes is that the structure becomes less rigid.

TRANSFER FLOOR

It is a type of flooring system that transfers carrying duties to other structures and supports components that stop floor changes as well as lateral and vertical loads. License plate switches and light switches are other possible replacements. The replacement is separated into thick or waist-deep plates using a non-uniform method that affects geometric function, strength, and quality. In order to stop the growth of soft products, the practical constraints of such interventions are explicitly outlined. The diaphragm's design still assumes and disregards conduction distortion. From the replacement slab's bottom wall and superstructure, columns of varying widths can be separated within the replacement slab. They are simple to include into building designs to offer open.

Figure 1:- Transfer slab With Shear wall

Figure 2:- Transfer slab With Column

II. LITERATURE REVIEW

I. In **2019 Mohammed Abdul Sameer** and colleagues The seismic behavior of buildings with varying heights and transfer floors was assessed, and pushover analysis of the model structures was completed, all using the SAP 2000 program. The depth of the produced plates varies from 1-3 meters at different heights, according to the architectural specifications for the transfer plate in the structure. This served as the basis for the evaluation of base shear, displacement, drift, natural frequency, time period, and other characteristics. The author discovered that the behavior of the SWF model is noticeably better than that of the moment-resisting frame in terms of load capacity and stiffness. The findings were positive for drift, displacement, and base shear.

II. As of **2018, Kong Wei-yi et al.** In order to look at the internal forces of the model that is in contact with the fire as well as the vertical loads on coupling, an RCC structure with a four-story model and a large transfer girder on the first level was examined using ABAQUS software under various fire scenarios. The internal force of the supporting beam in the transfer structure column model grew along with the heating period. Although the forces were reorganized, the changes were made too abruptly and severely prior to the ninety-minute heating phase. There is some fluctuation in B.M.s when transfer girders are used to deliver the loads and transfer heat evenly and over from the fire floor to the first level. It is possible for the entire heating process to result in an internal force superposition larger than the space.

III. Joshi, Neelkanth D., and others (2018), Due to a lack of available space, high-rise structures including columns spaced widely apart to provide parking, a function hall, a garden, and other amenities common to contemporary architecture were built using transfer girders. The author examines how variations in transfer girder stiffness under lateral load impact the lateral stiffness of the frame using analytical methods. STAAD-PRO was utilized to analyze the frame structure, which included a transfer girder. As a result, the transfer girder's stiffness changed without having an impact on the state of the soft story floating frame. The column with a separate base is less stiff in the lateral direction than the floating column on the transfer girder. The stiffness variation of the transfer girder and the support deflection were directly correlated when the frame was eccentrically centered, and the stiffness variation of the transfer girder and the change in the stiffness of the frame were also directly correlated.

IV. Mehair Yacoubian and associates (2017) Transfer structures and other multi-feature buildings are standard in large metro areas with low seismic zones. The behavior of a structure during an earthquake was assessed by the authors using a transfer slab. The transfer plate bias and the substructure's rotational and translational motion governed the behavior of the construction.

V. Y.M. Abdlebasset and associates (2016) In many multistory constructions, the vertical sections of the structure between the building's floors are unevenly built due to design constraints. Such disorderly vertical areas receive the lateral and vertical loads from levels above and below through the use of a transfer floor. When the outcomes of linear and non-linear time history analysis are compared, the former shows a 20–35 percent increase in lateral and drift displacement along with

a 20–35 percent increase in storey moment, shear force, and consequences. Ten to thirty percentage points, on average. It is thought that the elastic response spectrum analysis is less stable than the linear time history analysis. It is possible to create high-rise buildings with transfer floors that have a cracking inertia of 1.2 Icr.

VI. Abdlebasset, Yasser M., and others (2016) The construction phases were examined to look at performance, movement, forces, the design process, and the effect of time-dependent material qualities. A building model with a transfer floor was employed for the numerical study. It must be addressed since the analysis indicates that the effect of time dependency accounts for forty-five percent of the total burden. Reduction displacement is smaller than creep value. Analysis carried out during the building stage has an impact on the distribution of forces and indicates an increase in the dead load within the safety factor. Whether or not the displacement distribution is included in the building stage analysis is irrelevant.

VII. A group of Yong L. (2016), The authors claim that if a building's anomalies are disregarded as it is being built, it might lead to a variety of issues for the structure in the case of an earthquake. In the event of a rare earthquake, damage will occur at the floor between the structure's two independent load-resisting systems due to vertical irregularity.

VIII.In 2012, Tamrazyan A. and colleagues Buildings with many stories must currently be constructed in nations or urban regions with high population densities. The authors inspected a multi-story structure with transfer floors and looked at the danger evaluation. They then used the outcome of important structural components to inform their decision-making about how to maintain the stability of the structure in the event of an unexpected event. The floor below and the higher the changeover had different internal forces during the drift angle investigation, and the changeover was significant. The drift angle between floors and the change in internal forces are larger at high transfer levels.

IX. Zhao and colleagues (2008) In contemporary building design, transfer floor systems are becoming more and more prevalent, particularly in multistory buildings situated in the transition between high and low seismic zones. Both real-world test data and prior numerical studies were used to study the behavior of the structure. Building models with transfer floors subjected to shake table testing demonstrated that the structure maintains its elasticity, that no fractures develop under seismic stress, and that the models' intrinsic frequency does not change. During the few seismic testing, large fissures appeared in the structure's environs, damaging the models. In addition, the natural frequency was reduced by 46%, and the damping ratio of the structure increased by 4.5–7.5 percent. The outside wall above the transfer floor was found to be the source of the shear concentration that caused the local flexural deformation of the transfer floor structure.

X. Su, R.K.L. (2008), Building seismic analysis used the Taft and El-Centro earthquake data extensively to conduct the tests on the shaking table because it thought that the data may provide insight into prior projections of how Hong Kong structures could respond to various seismic situations. The disputed structure's natural frequency did not alter, and there were no indications of fractures in its moderate earthquake model.

Conclusion

In order to avoid significant damage while constructing structures with multiple levels, poor quality should be taken into account. Lines with independent foundations are more durable than lines with displacement. Buildings remain flexible and do not collapse in minor earthquakes.

• Research was done to determine how the building's height affects the vertical position of the transfer plate within the structure. Below are some of the study's conclusions.

• The shear force increases from floor to floor in proportion to the building's total height since the transition level is situated at the lowest point of the structure.

• Storytelling Because of the size difference, the shear force on the transfer plate will always decrease.

• In both the X and Y directions, the variance will decrease as the conversion plate reaches its lowest point and increase as it reaches its highest point. and then suddenly lets go of more.

• As the transformation plate's position varies, the maximum base shear force value drops; on the other hand, the maximum base shear force value increases as the plate's position changes.

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