

DYNAMIC ANALYSIS OF RCC STRUCTURE

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Abstract: Looking to the past records of earthquake, there's increase within the demand of earthquake resisting building which might be consummated by providing the shear wall systems within the building. Additionally attributable to the foremost earthquakes within the recent pats the codal provisions revised and implementing additional weightage on earthquake style of structure. Shear wall systems square measure one amongst the foremost usually used lateral load resisting systems in high-rise buildings. Shear walls square measure incorporated in building to resist lateral Forces and support the gravity masses. RCC shear wall has high in plane stiffness, which may be accustomed at the same time resist massive horizontal masses and support gravity masses, creating them quite advantageous in several structural engineering applications. There square measure several literatures offered to style and analyze the shear wall.

INTRODUCTION :

A typical Column may be a vertical support that support to horizontal structural members by suggests that of their weights, moments, shear force, axial load etc., to keep the structure in safe condition and transfer these loads to the ground. But currently a days some columns area unit designed in such a way that it doesn't reach to the bottom, attributable to varied subject area aspects. In those cases the columns transfer above loads as a point load on a beam. This type of column is termed as Floating column. This Point load will increase to a lot of bending moment on beam in order that space of steel needed are going to be a lot of in such cases.

While earthquake happens, the building with floating columns damages more as compared to the building without any floating columns because of discontinuity of structure & load transfer path. The overall size, shape and geometry of a structure play a very important roll to keep structure safe while earthquake occurs. As theory and practical study on buildings says that, earthquake forces developed at different floor levels in a building needs to be brought down along the height to the ground by the shortest path; any deviation of discontinuity in this load transfer path results in poor performance of the building.

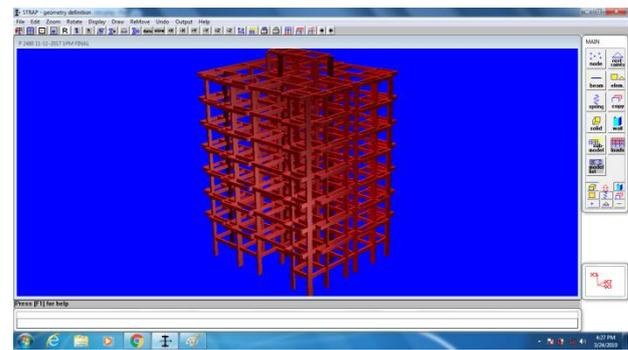


Fig.1: RCC Framed Structure.

OBJECTIVES:

The main aim of this project is to analysis a G+10 RCC building using STRAP. The design engages with the load calculations and software analysis of the whole structure by the Indian Standards and designed based on limit state approach, which focuses mainly on strength and serviceability criteria as per the IS code provisions. STRAP features the state of art user borders, visualizations tools, powerful analysis and the design supports based on dynamic analysis capabilities, analysis and the design to the visualizations, modal generations and finally result confirmations. STRAP is the firm professional's choice. In earlier stages of analysis, dead load, live load, wind load, earthquake load, etc., are considered in the STRAP.

METHODOLOGY:

1. Working with Strap

Definition of the simple plane frame, using the strap's model wizard library. STRAP contains a library of standard structures that was enables the user to easily and the quickly defining the model geometry and loads by entering a small number of parameters. The library can extended to include that the additional models types. Utilization of "copy" feature for the defining diagonals in the upper stories. Strap's copy commands are powerful and sophisticated. The program refrains duplicating the existing beams. In example, the program will duplicate only the diagonals and not the other existing members (beams and columns).

2. Generation of Structure

The structure is generated using the Graphical User Interface. The structure is nothing but the combination of nodes and elements with specified distance with the help of co-ordinates.

The nodal distances are obtained from center line drawings. The final element spans are obtained from the finalized architectural plan. Double nodes can cause problems in the structure while running analysis. Properties of elements are changed according to the moments obtained. Member capacities are maintained to be within the prescribed value. Reinforcement bars minimum to maximum are specified. Grade of concrete and steel are specified to meet the requirements of the market availability. Cover is provided to the members which may vary with the type of member and its duties. The member parameters and the cross-section dimensions are managed to meet the requirements. Grouping of elements are done for minimizing the number of types of elements to minimize the confusion in execution.

3. CONCLUSION :

Many of the studies have shown unstable analysis of the RCC structures with totally different irregularities like mass irregularity, stiffness and vertical geometry irregularity. Due to the development of modern concrete, the desired properties of concrete such concrete strength and durability can be achieved for any type of construction but the quality and the performance of RCC are very important. For the analysis purpose basic parameter taken area unit lateral force, base shear, storey drift, storey shear and results are interpreted. It is suggested that point history analysis ought to be performed because it predicts the structural response a lot of accurately than the response spectroscopic analysis.

RESULT:

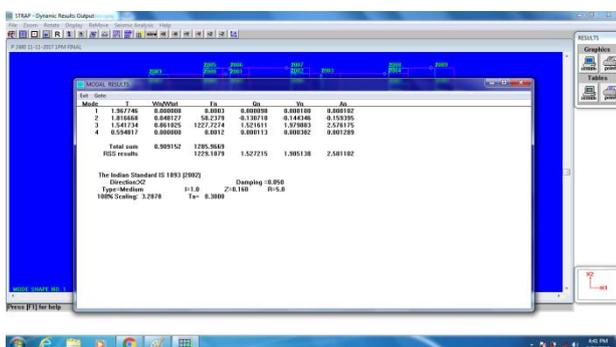


Fig.2 : Modal Result

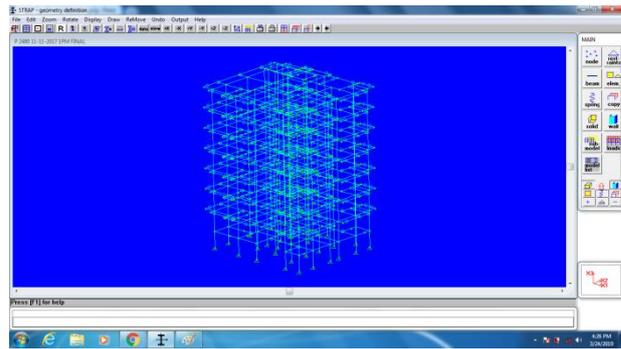


Fig.2: Geometric Definitions

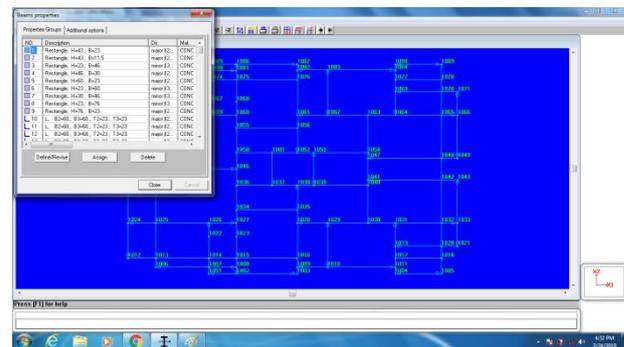


Fig.3: Building Properties.

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