



A Review: Analysis of Altitude in Twin Tower Under Seismic Loading

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ABSTRACT

Researchers have presented lots of research papers in the field of twin tower height in terms of lateral load resisting system in which various techniques are discussed and optimized against parameters and constraints. But comparable twin tower frame that will used to resist lateral load, never used as a complete system so as to increase the lateral load resisting capacity of multistorey building or skyscrapers higher than codal provision. In this review work various research papers are studied and analyzed against several constraints and parameters taken for analysis so far and hence the problem statement is identified for further research

Keywords—Twins Tower, Efficient, Height, Lateral Loading, Response spectrum analysis, Seismic Effects, Staad pro software

INTRODUCTION

We are living in that world where the voracity for taller structure will be increasing day by day. Although the requirement of high rise building is in demand but the structural safety is always a matter of concern because we would not take risk with human life. As the structural safety is primary concern but the frugality of project is also important so we must have to maintain the poise in economy of project along with structural safety. So for making our structure safer, various structural arrangement have been developed with the increasing demand and necessity some of them are shear wall, bracing etc.

For Structures taller than 15 to 20 stories, pure stiff frame system is not sufficient because it does not provide the necessary sideways stiffness and causes extreme deflection of the building. These requirements are pleased by two ways. initially, by increasing the members dimension above the necessities of strength but this approach has its restriction and secondly, by changing the structural form into more steady and stiff to restrict deformation. This increases the structure's constancy and strictness and also restricts the deformation necessity.

LITERATURE REVIEW

This study of literature review enlightens the efforts made by the author to obtain the result which provides constructive behavior for any kind of changes. Various papers are studied and compared the sole effect of buildings with and without base shear reduction techniques against various cases of multistoried building and all the statistics were represented their own view were analyzed the outcomes were exceptionally good.

Overview of paper

After observing the various papers which has been related to seismic resistant multistorey building, the short explanation about methodology managing is discussed.

Literature review

HUANG Kunyao, SUN Bingnan, LOU Wenjuan, In the structural analysis proceeded for the double-tower connected tall buildings, there are two kinds of simplified methods in dealing with the connection substructure. One is to separate the towers and neglect the connection effect while the other is to treat the two tower floors and the connection floor as an entire floor with infinite stiffness. The former cannot take the connection effect of the substructure into account, while the latter may lead to considerable error as the connection is not so stiff. In this paper the substructure was treated as an elastic beam which can avoid the shortage of the simplified methods. The history analysis was utilized to study the influence of the connection stiffness on the seismic response and the applicable premise of the simplified methods was discussed.

Lou Yu Wang Hongqing Chen Yiming, Based on analyzing two example structures, a new concept that the same vibrational mode has two mode shapes in two-tower structure or two-tower structure linked by spatial corridors, both with enlarged base, is presented. The principle of choosing

vibrational mode numbers in a seismic analysis for this type of highrise building structures is discussed. Their calculating results are compared, and some questions in aseismic design are emphasised. In the end, the useful results for structural aseismic design are given.

R.J. Smith and M.R. Willford, This paper describes the structural design of two similar 60 storey towers in Manila using performance based procedures for seismic and wind actions. High-rise buildings designed by performance based methods not only perform better than conventionally designed ones, but are also less expensive to construct. The buildings incorporate the Arup Damped Outrigger System, and the savings realized by this are discussed.

Surendra Chaurasiya, Sagar Jamle

World is now globalized in the globalized world need of metaphorical towers increased. This tower fulfilled the need with its specifications. Twin tower lists are increasing day by day in today's modern world. This paper shows the need and necessity of these towers now a day. These types of structure are connected with each other by bridge. These bridges are made up of steel or R.C.C frames.

Wensheng LU and Xilin LU, The paper briefs about the tests of some scaled high-rise multi-tower structure models on the trembling table. By considering the effect of flexible transfer floor in a new analytic model is shown. The test result considers the theoretical dynamic behavior comparison. The combination floors between towers at top levels, and the stiffness of foundation role to structural dynamic behavior is also described in this paper. Many suggestions and theoretical guidelines are also accomplished.

Surendra Chaurasiya and Sagar Jamle, As per author, they suggested about the different types of structures used in this current scenario. Now a day's Architectural vision of multistoried building design is in the demanding growth. They suggested the need of high rise building in this modern world to beat the competitors. Their studies suggested the parametric study of total 13 cases abbreviated from case A to M of G+12 twin tower high rise building. Response spectrum method is used in this approach. In Storey displacement and storey drift calculation, Case M will be the best of all, comparatively percentage decrease has proved to be around 20 percent and Z direction by around 18 percent. Around 90 percent of mass participation factor has achieved in their study as per Indian Standardizations. Plan of the structure divides whole part into two parts from podium itself suggested in their topic.

Henry Petroski, The skyscrapers final design, especially tallest one in the world cannot be developed from only with architect's drawings. It is very challenging to design the superstructure of the building. Among the first decisions in front of structural professional Thornton and his acquaintances at Ranhill Bersekutu (Malaysia) was the selection between concrete and steel.

H. emreilgin, Accelerated wind at ground level caused by Tall buildings, which may affect the safety and comfort of the pedestrians. Tall buildings are huge projects demanding extreme management and logistics. They cause national economy, building industry, and require huge amount of financial investment.

Erik hallebrand and wilhelmjakobsson, In this paper it is studied that the factors of response spectrum that affect the structure such as acceleration and resonance frequencies should be noted down. Different models are studied and the parametric values such as moments, forces are noted down. The variation between prefabricated model and concrete structure are mentioned in their analysis with comparative analysis of their investigation.

H. emreilgin January, The paper examines the strategies and critical design factors that guarantee to achieve sustainable or high-performance high-rise buildings with innovative technologies. This paper shows that by adopting the appropriate strategies high performance tall buildings are achievable.

MindalaRohini, T. Venkat Das, An earthquake occurs by seismic waves due to unexpected discharge of force and results in ground quaking. When earthquake occurs, seismic waves spread through the soil which results in structural harm because of movements in the earth's crust. It affects building Components like foundation, underlying soils and also overall structure behavior. The behavior of a building depends on strength, distribution of mass and stiffness during earthquake. The buildings are generally subjected to various types of forces all through their existence. Because of dead and live loads the forces can be static forces and dynamic forces due to earthquake. In this study, the analysis is carried out for seismic response of (G+15) residential building for zone-III and Zone-V regions through time history method and response spectrum method into ETABS. For specific zones the parameters like storey displacement, storey drift, and storey shear are observed.

Akashkumar ,Er. kundankulbhusan, To study the all common parts of building at the story level to high level, also consider the gravity load, dead load, wind load or seismic forces, and drift forces. Currents more use full design of high rise building by the structural design software. These are software design of building frames in beams, columns, slabs of structures and also design the bending moments, shear force, stiffness, rotations, torsion

and deflection in frames and its other parts of the structures. We have to consider better design to make a high rise building. In India show that 54% of the land living is unsafe to earthquake. Earthquakes are very serious problems since they are evaluate that this phenomena by some techniques as base isolation, dampers, wire and other methods. Also works to better design to resist the seismic waves. We have to take better high quality materials and given better factor of safety in design process.

Critique

The present topic motivated towards the concept of twin tower height criteria over an entire multistoried building in which dual system as shear wall at core used in the building. The review of taken from several research papers is found significant and justifiable enough to understand the problem statement of this study. Author of this study have cited various research paper and short the captions given previously that includes problem statement, literature review, methodology adopted bestowing to the constraints and situation selected by the authors, results obtained by performing analysis and conclusion drawn from the study. With this research of review done by author, it was seen that a very few work is performed on this problem but there had not been any such kind of concept is came into existence that provide stability of entire structure or its behavior under shear wall effect in combination with different height twin tower cases. The issue raised by the research review should be further studied and examined to acquire desired results that will provide a strong base to determine such kind of typical structural configuration makes possible in the reality also considering monetary issue.

Need of the Present Study

On the basis of research paper reviewed it was identified that the research have done till now, focused on various seismic condition regarding lateral load resisting system with various arrangements like bracing, shear wall and other systems but there would not be any such kind of traces found that deals with twin tower height effect. Also the optimization of parameters is the prime focus in this study. On keeping in mind the above problem statement outline for new research work is proposed in the form of conclusive outcomes given below:

1. To know the best combination case for twins tower with different heights.
2. it is very necessary to analyse the seismic effect on the twin tower rested over the same podium along with its behavior.
3. Consider various aspect for analysis of twins tower building.
4. Analyze the behavior of the twin tower building during the seismic forces in the seismic zones considering its seismic zone
5. For RC frames dynamic analysis is done with considering the various various parameters for analyzing the effect and behavior of the structure which is to be connected with each other
6. To study the various cases in twins tower with different heights

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