

Research Article

# A Review Study-Use of Different Shapes of Twin Towers High Rise building under Seismic Loading

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## Abstract

It is observed that there are different-different types of high-rise buildings in the world with different shape and sizes. These buildings are mainly designed for seismic and wind load. Therefore it is required to take new ideas of construction and research on that so that the chances of wind and seismic failure can be reduced. After reviewing various papers it is necessary to analyze different shapes of twin towers in multistoried building under seismic zone as per Indian standards.

**Keywords:** twin tower, different shapes, earthquake zone, seismic loading

## 1. Introduction

In the present world to counteract the ill effect of seismic force and wind forces, it is important to take new ideas of constructing skyscrapers. Due to the variation in the seismic forces it is more important to consider in various part of the world. Various efforts are made by the engineer and architect in this direction. Twin tower plays an important role in counteracting such problems it provides more stability to the structure especially in the highly seismic zone. To balance the movement and to provide connection between two building, bridge is constructed at a suitable height. There can be different shapes of twin towers such as U shape, rectangular shape, inverted U shape building which have high resisting tendency.

## 2. Different shape's figures

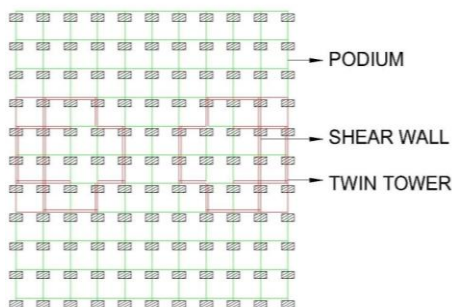


Fig.1 Shape U Twins tower

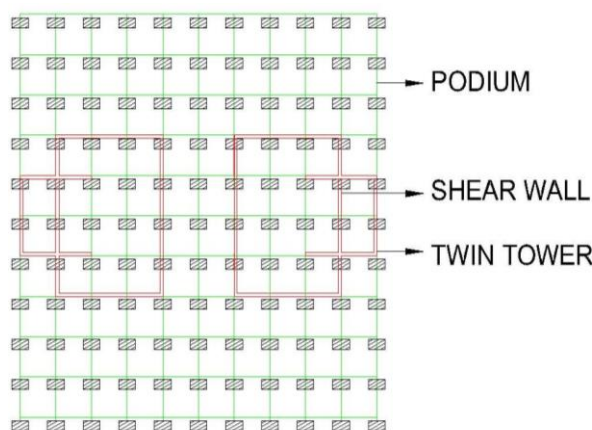


Fig.2 Shape V Twins tower

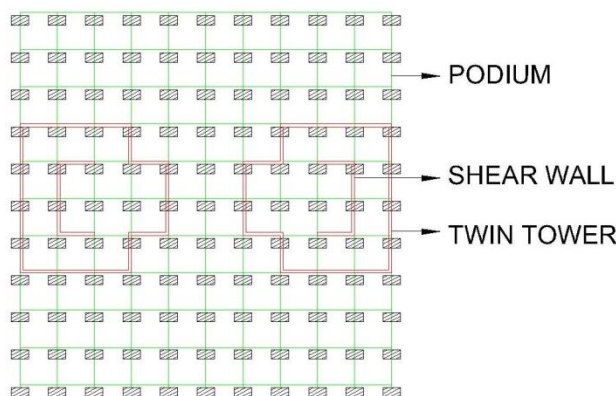
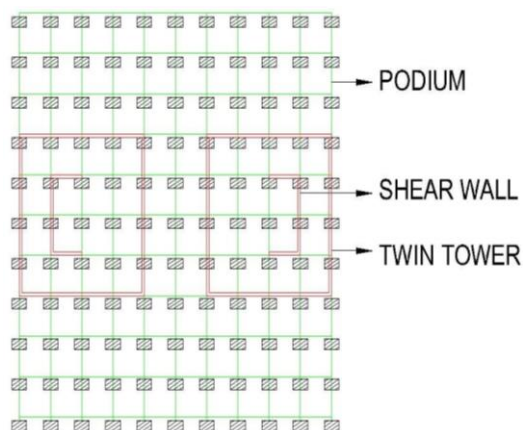
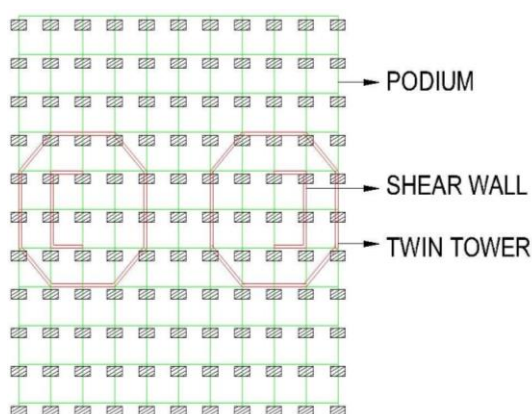


Fig.3 Shape X Twins tower

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**Fig.4** Shape Y Twins tower



**Fig.5** Shape Z Twins tower

### 3. Literature Review

#### Surendra Chaurasiya, Sagar Jamle

The metaphorical towers which fulfill all the structural state of relationship are in trend. These structures are not only constructed to deliver the present need but also to show the domination to all over the world. A numeral of structures were build till now and all of those are representative marvels like PETRONAS Tower in Kuala Lumpur, Huaguoyuan towers(China), Imperial Tower (India),Palm Tower(Doha) and the list is countless. Also a lot of twin towers are under construction. Such structures are made possible by bridging the breach between two towers by many ways like making the bridge or by RCC frame, steel connections etc.

#### 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 Persecute (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 wilhelm jakobsson

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.

### Mindala Rohini, 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.

### Akash Kumar , Er. Kundan kulbhushan

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.

### Conclusion

By reviewing and analyzing various research processes it is seem that in field of stability of twin towers against seismic and wind loads. It is required to observe that the structure with various possibilities of stability with its optimum location. By comparing simple shape building with non-uniform shapes such as U shape V shape it is observed that it is having high resisting tendency to seismic zone.

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