

EFFECT OF BAY WIDTH ON THE HEIGHT OF THE STRUCTURE USING PUSHOVER ANALYSIS

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ABSTRACT

Configuration is critical to good structural performance of buildings earthquakes. The important aspects affecting structural configuration of buildings is overall geometry, structural systems, and load paths. The buildings having simple regular geometry and uniformly distributed mass and stiffness in plan as well as in elevation, suffer much less damage than buildings with irregular configurations. The geometry of the building consists of height of the structure, width of the structure, number and size of columns, location and orientation of columns which affects the building performance. For tall buildings the bay width of a building is one of the important considerations than just the height alone.

In the present study nonlinear performance of different height of the structures with constant bay width and same number of bays is investigated. Six models are categorised based on the different aspect ratios, they are 0.62, 1.25, 1.87, 2.5, 3.12, and 3.75 for a varying height of 15m, 30m, 45m, 60m, 75m, and 90m are considered. The base width is taken as 24m fixed in both length and breadth side with 4m of bay width and storey height is taken as 3m for all buildings. The results for effects of different aspect ratios of buildings are presented in terms of roof displacements, base shear, drift and plastic hinge formations.

KEYWORDS: *Aspect Ratio, Base Shear, Pushover Analysis, Plastic Hinge, Displacements, Drift, SAP2000*

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