عنوان مقاله:

Shear Failure phenomenon In Column Under Level Difference on Sloping Ground

محل انتشار:

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خلاصه مقاله:

Poor behaviour of short columns is due to the fact that in an earthquake, a tall column and a short column of same cross-section move horizontally by same amount. However, the short columnis stiffer as compared to the tall column, and it attracts larger earthquake force. Stiffness of a column means resistance to deformation – the larger is the stiffness, larger is the force required to deform it. If a short column is not adequately designed for such a large force, it can suffer significant damage during an earthquake. One of them is the level difference originated from lot's slope which affects structures through short column phenomenon. The great stiffness of short columns enables them to absorb large amounts of energy. Inattention of some regulations such as Iranian earthquake regulations to this phenomenon necessitates paying further attention to it. On this basis, the present study employed computer modeling for a four-story reinforced concrete building on both a sloping and a flat lot using various softwares to show that the displacement of floors is greater for a flat lot building than a sloping lot building. However, the increase in shear was found to be quite greater in short columns compared to common ones and an enormous moment should be tolerated by sloping lot structures. The greater stiffness of the structure was also revealed by non-linear static analysis. According to the results, short column are required to have more resistant sections and are suggested to be reinforced with more bars. In addition, more steel should be used as stirrups than as longitudinal bars.

کلمات کلیدی:

Short Column, Reinforced Concrete, Level Difference, Slope, Earthquake