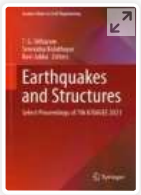

Earthquakes and Structures pp 145–159

Seismic Performance of Buildings in Hilly Regions with and Without Base Isolation and Cable Support System

V. S. Athira, S. Nair Minnu & S. C. Mohan

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Abstract

The construction of buildings in hilly areas faces several challenges, such as slope stability, suitable building configuration, etc. The capacity of buildings on the sloping ground reduces as it has to accommodate different length columns in a single storey. These buildings possess both vertical and horizontal irregularities. The current study is an effort to comprehend the effect of seismic forces on the buildings in hilly regions and suitable protection systems. A comparative study of a fixed base, base-isolated, cabled-supported, and base-isolated building with cable support is carried out. The base isolator is designed according to the UBC-97 guidelines. Seismic analysis results show that the base isolator building outperformed other protection systems. Moreover, the base-isolated building with cable support also performed equally sound as base-isolated building. The reaction forces in the cables reduced the stiffness requirement of the isolator. On the other hand, the cabled building did not show any effect on the building.

Keywords

Building in hilly regions **Base isolation** **Cable support**

Irregularity **Seismic analysis**

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