Seismic Response Control of Building Structures

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A Lesson from Severe Structural Damage during 1995 Kobe Earthquake

- From strength-based design to damping-based design

Recent Research Topics

(1995*～now)

- Identification of damping property of real buildings
- Development of efficient damping devices
- Development of smart seismic response control system with damping devices
- Formulation of an energy-based simple design method to predict seismic response of high-damping structures.

* Year of Great Earthquake in Kobe

Contents

Alternative Ways to Reduce Seismic Response of Building Structures

1) Base isolation structure

to place upper building on the flexible bearings to allow for large displacement at the base, decreasing the stress and the acceleration in the upper building.

2) Vibration control structure

to install special devices (dampers) with high energy absorbing capacity to minimize and to make stable the seismic response of the building .

1) Normal structure fixed to the base
2) Base-isolated structure with roller bearings at the base
3) High damping structure with a viscous damping device in the 1st story