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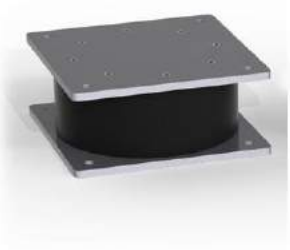
Seismic Protection



Description

The usual anti seismic design is based on the structural ductility that is the ability to undertake extensive plastic deformations which dissipate energy by hysteresis. In this kind of design large structural damages are allowed. Consequently, even if the structure collapse is prevented, expensive repairs are necessary after major earthquakes. No protection is guaranteed to the goods inside the structures.

However, for strategic structures, such as hospitals, power plants, control rooms, and primary bridges, the functionality after catastrophic events is a primary goal to be guaranteed in addition to the structural integrity.

The seismic isolation design, based on the concept of reducing the seismic energy transferred to structures, has proved to be the most effective design technology for protection against earthquakes; indeed not only the structure's integrity is guaranteed but also the goods inside.

The whole isolation of a structure is obtained by placing adequate elastic supports in suitable positions in order to disentangle the ground from the structure allowing relative displacements.

The isolation principle is very simple: the idea is to shift the structure vibration period from low values (typically ranging from 0.3 to 1 seconds for a fixed base structure) where the ground acceleration is pronounced to longer periods (2-3 seconds) where the acceleration is highly reduced.

Additional acceleration reduction can be obtained by adding damping capacity to the isolators (energy dissipation).

Seismic Bearing Systems

To solve a wide range of connection problems between bridge beams or decks and piers, under earthquake or wind loads, dampers or shock transmission devices can be both connected to the standard bearings to make a single device, compact and efficient. This kind of solution assure small dimensions, reduced weight and a very easy installation.