

The centring is automatic and it takes place because of the presence of a sliding spherical bowl in each bearing.

In the presence of an earthquake, this bowl also permits the immobility of the building with respect to the horizontal translation of the foundation-soil complex, because its thickness variation is perfectly balanced by the corresponding elastic deformation of the main springs at every instant and for any value of the horizontal displacement.

The horizontal inertial force in the building does not modify its static equilibrium, because it is minor when using bearings with sliding friction

and negligible when using bearings with rolling friction.

The variation of the natural frequency of the building takes place during the vertical motion of the soil only during an emergency, characterised by an interval seismic frequencies including the resonance one. In fact, the presence in each bearing of a system of auxiliary springs, automatically started in this situation, permits the action of the main springs to be strengthened with a consequent increase in the natural frequency of the building and a drastic decrease in the vertical displacements of the building to values compatible with its safety characteristics.

## Aseismic system with magnetic insulators

F. BARTOLOZZI

*Via dei Carracci, 4, 21100 Varese, Italy, ciuciuzza@iol.it*

The system proposed is based on the following operations:

1. interruption of the solidarity between the building and the foundation-soil complex;
2. use of magnetic insulators.

Each bearing consists of two fast electromagnets at direct current, reciprocally faced with the same polarity. One of them is connected with the building, the other with the foundation. At the beginning of an earthquake the start of the electromagnets occurs by means of a devices system constituted of:

- an accelerometer or a seismograph;
- a current generator;
- an electronic control station.

During an earthquake the magnetic flux between the two electromagnets is able to lift the building, separating it from the foundation-soil

complex. The thin air stratum formed between the electromagnets makes it possible the rigid translation of the foundation-soil complex with respect to the building, which remains motionless. Appropriate devices, laterally placed, prevent that the variation of the magnetic flux, due to the soil motion, induces the translation and the rotation of the building. At the end of the earthquake, the magnetic flux stops and the building, by means of hydraulic dampers, vertically placed, gradually returns to the initial position of rest, after that an eventual small horizontal displacement of it has been annulled by a device with the function of the building centring.

The undoubted advantage of the proposed complex system, compared to all aseismic systems, is the total reduction of the seismic energy in the building.

## Foredeep basins: An introduction to models and real world situation

G. BERTOTTI

*Department of Tectonics, Vrije Universiteit, Amsterdam, bert@geo.vu.nl*

In foredeep basins, the accommodation space is created by vertical forces, usually a combination of the load of orogenic wedges and of "hidden loads" applied to the plate margin. Consequently, the system foredeep is subdivided in three domains where different phenomena take place. In the foreland bulge the basin substratum is elevated and might experience erosion. In the basin

domain, the substratum subsides thereby allowing for the accumulation of the basin fill. The load is the site where the shortening and thickening takes place.

During shortening and subduction, lithospheric regions move through these domains and single segments successively undergo uplift with possible erosion, subsidence and eventually