

Bearing with Fixed and Movable Functions in Earthquake Isolation System

The system, which uses the proposed bearing, is based on the following operations:

- interruption of the solidarity between the building and the foundation-soil complex, by making some cuts in the pillars located between the building and the foundation-soil complex;
- inserting into the above cuts proper devices with the double function of being fixed bearings in the absence of an earthquake and of being multidirectional movable bearings during an earthquake. The movable bearings may be with sliding or rolling friction, with or without the dissipating capacity of the sub-undulatory seismic energy and they may be of two different types: compound or monoblock.

In this system, the centering and the locking of the building after an earthquake are not self-performing, but they occur by means of the elastic reactions of the auxiliary pre-stressed springs, which are integrated parts of the bearings. The proposed system has the following characteristics:

- during an earthquake, rigid translation of the foundation-soil complex with respect to the building, which remains almost motionless, under the prevailing action of the weight force;
- average decrease of the seismic energy in the building by about 90%;
- possible application even to the structures in which the resonance threshold is very low;
- easy maintenance of the bearings;
- cost competitiveness in comparison with the systems by means of which the seismic energy is partially or totally transmitted to the building;
- application to buildings of any planimetric shape, due to the particular characteristics of the bearings, which are at the same time centering and locking.