

FOREWARD

Recently, in Asian area particularly, big earthquakes occurred one after another, which include Niigata-ken Chuetsu earthquake of October 23, 2004, Sumatra-Andaman Islands earthquake of December 26, 2004, Fukuoka-ken Seiho-oki earthquake of March 20, 2005 and so on. In those earthquakes, a great number of people were killed or injured, and a great many houses, buildings, bridges and other structures were collapsed or heavily damaged. These facts remind us that there are endless subjects in research and development of earthquake resistant structures.

As regards my specialty, earthquake isolation and structural control, the effectiveness of seismic isolation was demonstrated in the Niigata-ken Chuetsu earthquake. This is the second demonstration in strong earthquakes, while the first one was in Hanshin-Awaji earthquake of January 17, 1995. There was a base-isolated building used for an old people's home in Ojiya-city when the Niigata-ken Chuetsu earthquake occurred on October 23, 2004. The superstructure of RC-structure has 5 stories and a 4,448 m² total floor area, and the seismic isolation system consists of 18 low-damping rubber bearings and 21 elastic sliding bearings. In this building, accelerations were measured on the foundation and 1st floor of the superstructure. In the NS- and EW-directions, the peak accelerations on the 1st floor (198 cm/s² and 205 cm/s² respectively) were reduced to 0.27 and 0.25 respectively of those on the foundation (740 cm/s² and 808 cm/s² respectively). It is expected that this demonstration will encourage progress of applications of seismic isolation in no only Japan but also many countries in the world.



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