1994 Northridge Earthquake (M 6.7)

The "earthquake-resistant hospital" was the University of Southern California Hospital, which had a seismic isolation system.

At the eight-story seismically isolated USC Hospital in the center of Los Angeles (36 km from the epicenter), a maximum horizontal acceleration of 0.49g was input at the site surface and 0.37g directly under the seismic isolation device, but the response acceleration inside the building was 0.21g on the rooftop floor and only 0.10g to 0.15g on the first to seventh floors, and records were obtained that clearly demonstrated the effectiveness of the seismic isolation.

Not a vase or bottle fell from the 6-8 foot high shelves during this earthquake or the aftershocks that followed, and no damage was done to any of the equipment in the building, and the hospital functions are completely intact.

At 4:31 a.m., when the earthquake occurred, an emergency brain surgery was about to be performed at USC Hospital. Just as the surgeon was about to insert the scalpel, the shaking of the earthquake was felt. After simply waiting for the gentle shaking of the building to subside, the operation began immediately and was completed without any problems (D. R. Edens, USC Hospital).

The building, which has a total floor area of 30,000 m^2, is supported by a total of 149 seismic isolation devices, including 68 lead-plugged rubber bearings (LRBs) and 81 natural rubber bearings (NRBs).

USC Hospital is one hospital within the USC Medical Center. Many drug bottles had fallen in the nearby four-story pharmacy building. According to the New York Times, the total damage to other buildings (with conventional earthquake-resistant structures) within the center has reached 38.5 billion yen, and one wing of the main inpatient treatment ward has been closed due to further damage caused by aftershocks.

(Mitsuo Miyazaki)

University of Southern California (USC) Hospital　Photo: Mitsuo Miyazaki