

## Seismic Retrofit after 921 Earthquake

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### ABSTRACT

At 1: 47 a.m., local time, on September 21, 1999, a strong earthquake measured 7.3 on the Richter scale struck central Taiwan evoking another two earthquakes a few seconds later to wake up unprepared people of this small island. It caused 2,465 people killed, 11,305 injured, about 10,000 buildings collapsed, and around 41,000 severely damaged. The major concerns after the earthquake are how to retrofit damaged structures to prepare ourselves for next similar events by what we have learned from this natural disaster, and how to rebuild earthquake-proof buildings without rendering up safety within reasonable costs. Inevitable actions for redrafting the building codes have been taken to re-strengthen the existing and new structures. Structural analysis tools and computer programs adopted by most practicing engineers have been re-examined to take into account the effects of the vertical component of ground shakings on structural responses. Most private structures were repaired by traditional methods without considering upgrading seismic resistibility because of economical reasons. Buildings open to the public are under consideration, possibly enforced by making regulations, to be upgraded to satisfy revised building codes. In addition, new rehabilitation technologies such as structural control have been moving much faster than before, and have become accepted by the public due to frequent reports by media and specialists. Building codes related to base isolators and energy absorption systems are still under legislation, and expected to be published soon. Most of the new structures under construction, designed by the building codes promulgated before the earthquake, have been reconsidered to comply with the new codes even though it is not compulsory. Efforts have been made by the government, engineering and research communities, and universities in an attempt to reduce structural damage for future earthquakes and to construct, if possible, Taiwan as an earthquake-proof island.

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