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# Four Centers Develop Cooperative Research Program

*Research Focuses on Lessons Learned Following the Chi-Chi, Taiwan Earthquake*



■ *Figure 1. Surface faulting caused major damage to Shih-kang Dam*

A new cooperative research program was recently initiated between MCEER, the National Center for Research in Earthquake Engineering (NCREE) at National Taiwan University, the Pacific Earthquake Engineering Research (PEER) Center at the University of California, Berkeley, and the Office of National Science and Technology Hazard Mitigation in Taiwan to focus research on lessons learned following the recent Chi-Chi, Taiwan earthquake.

The proposed three-year effort aims to take advantage of areas of overlapping interest and strengths of the four Centers, and to capitalize on the extensive results collected by the research team in Taiwan's reconnaissance efforts. By joining forces and collaborating on these projects, the Centers can leverage additional funding, talent, use of equipment and facilities, and data/information. Two major areas of emphasis were identified:

- Analysis of new information to enhance model validation, and development of a better understanding that will lead to a new, more accurate knowledge base; and
- Code improvements and implementation specific to Taiwan developed by earthquake hazard mitigation professionals.

The research program will apply new reconnaissance information to projects already in progress. Proposed focus areas include the following:

- Ground motion attenuation, site effects, spatial variation and validation.
- Development of retrofit strategies for buildings shown to be vulnerable by the Chi-Chi earthquake. This includes two parts: development of specific retrofit ideas for 1-3 story and 8-12 story buildings; and development of evaluation and retrofit strategies for hospitals and selected manufacturing facilities, including contents.
- Development of evaluation and retrofit strategies, and system analysis of electric power and water systems.
- Using earthquake reconnaissance data collected following the 921 event, develop new system-related loss estimation methods for HAZ-Taiwan.
- Social and economic issues.



■ *Figure 2. Newly constructed buildings suffered severe damage*

The Directors of the four Centers plan to meet this September in Taiwan, together with other researchers, to discuss and develop the specific details of the research program. ❖