ATC 73

NEHRP Workshop on Meeting the Challenges of Existing Buildings

Prioritized Research for Reducing the Seismic Hazards of Existing Buildings

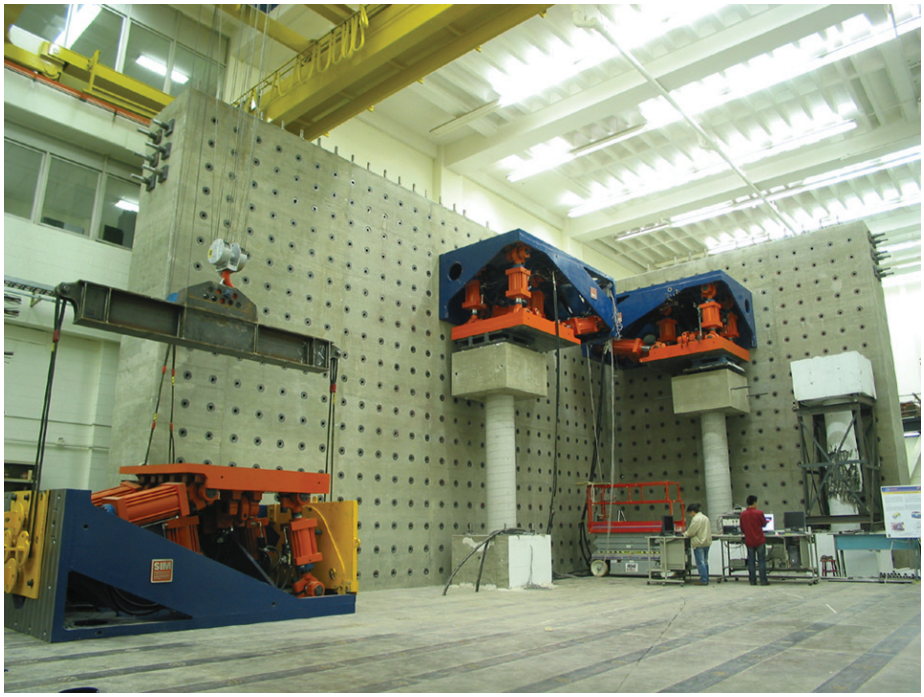

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Photo: Multi-Axial Full-scale Sub-Structuring Testing & Simulation Facility, University of Illinois at Urbana-Champaign, one of 15 geographically-distributed, shared-use, next-generation experimental research equipment sites in the National Science Foundation-funded Network for Earthquake Engineering Simulation (NEES). Courtesy of Amr Elnashai, Director, Mid-America Earthquake Center.

ATC-73

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A Consensus Perspective of Practicing Design Professionals and Other Stakeholders Developed for the NSF-Funded Network for Earthquake Engineering Simulation (NEES)

Prepared by

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Preface

In April 2007 the Applied Technology Council (ATC) was awarded a grant from the National Science Foundation (NSF) to identify and establish community-based priorities for research on existing buildings to be conducted using the NSF-funded George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES), a regionally distributed state-of-the-art network of research facilities established by NSF in 2004. The research needs were to be based principally on the perspective of seismic design practitioners and other stakeholders.

The research needs identification process was combined with efforts already underway to plan and conduct the *NEHRP Workshop on Meeting the Challenges of Existing Building,* an event held in September 2007 that was co-organized by ATC and the Earthquake Engineering Research Institute (EERI). In addition to support from NSF, funding was provided by the other three principal agencies of the National Earthquake Hazards Reduction Program (NEHRP): the Federal Emergency Management Agency (FEMA), the National Institute of Standards and Technology (NIST), and the U. S. Geological Survey (USGS). This workshop included the participation of practicing engineers, building officials, policy makers, researchers, owner/developers, industry product suppliers, and service providers involved with seismic evaluation and rehabilitation of existing buildings.

This ATC-73 report provides a description of the desired coordinated and prioritized NEES Research Program to reduce the seismic hazards of existing buildings, including a vision for the program, program goals, and more than 50 specific research needs, grouped into categories, ranked in terms of relative importance, and assigned to one or more of seven coordinated goals.

This report is one of several in a collection of planned reports arising from the NEHRP Workshop that includes the ATC-71 Report, *NEHRP Workshop on Meeting the Challenges of Existing Buildings, Part 1: Workshop Proceedings*, which summarizes the findings and conclusions from the workshop, the ATC-71 Report, *NEHRP Workshop on Meeting the Challenges of Existing Buildings, Part 2: Status Report on Seismic Evaluation and Rehabilitation of Existing Buildings*, and the ATC-71 Report, *NEHRP Workshop on Meeting the Challenges of Existing Buildings, Part 3: Action Plan for the FEMA Existing Buildings Program*, which contains

guidance for FEMA's future activities related to the creation, update, and maintenance of seismic evaluation and rehabilitation documents for existing buildings.

ATC is indebted to the ATC-73 Research Needs Working Group who led the development of this document: Gregory G. Deierlein, Robert D. Hanson, John D. Hooper, James O. Jirsa, and Maryann Phipps. The affiliations of these individuals are included in the list of Project Participants.

ATC also gratefully acknowledges Joy Pauschke (NSF Program Officer) for her input and guidance, and Peter Mork for report production services.

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