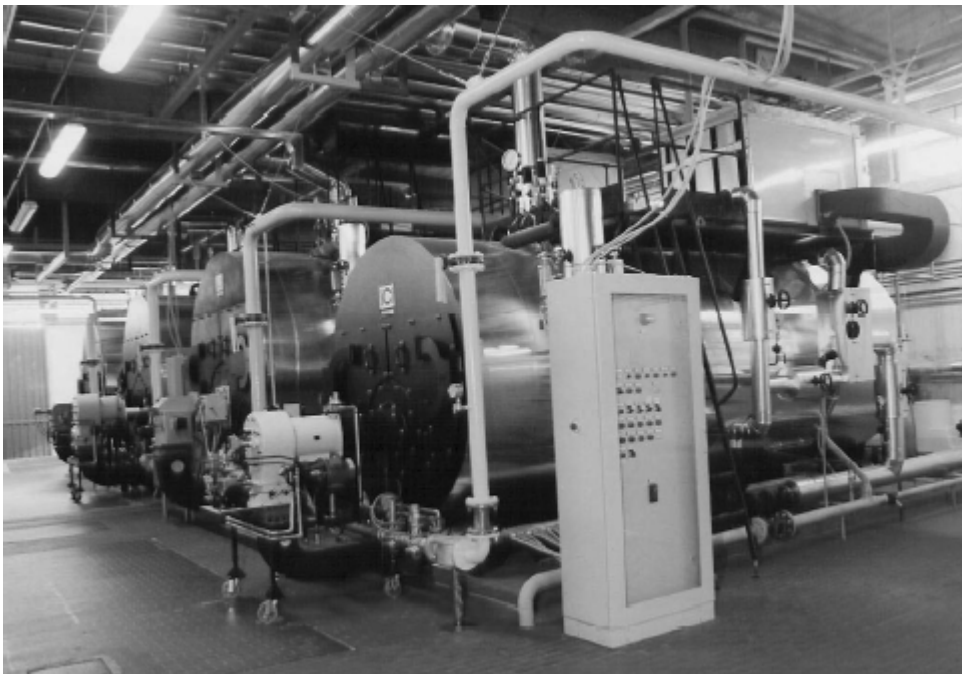


Proceedings of Seminar on seismic design, performance, and retrofit of nonstructural components in critical facilities



ATC Applied Technology Council



Multidisciplinary Center for Earthquake Engineering Research

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ATC-29-2

Proceedings of Seminar on Seismic Design, Performance, and Retrofit of Nonstructural Components in Critical Facilities

**October 23-24, 2003
Newport Beach, California**

by

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Preface

The Applied Technology Council (ATC) and the Multidisciplinary Center for Earthquake Engineering Research (MCEER) are pleased to provide these *Proceedings* of the ATC-29-2 Seminar on Seismic Design, Performance, and Retrofit, of Nonstructural Components in Critical Facilities. Held on October 23-24, 2003 in Northport Beach, California, and funded by the National Science Foundation, the ATC-29-2 Seminar is the third in an ATC-MCEER series on seismic design, performance, and retrofit of nonstructural components. The first seminar, the ATC-29 Seminar on Seismic Design and Performance of Equipment and Nonstructural Elements in Buildings and Industrial Structures, and the second seminar, the ATC-29-1 Seminar on Seismic Design, Retrofit, and Performance of Nonstructural Components, were held in Irvine, California in 1990 and in San Francisco in 1998, respectively.

Similar to the ATC-29 and ATC-29-1 seminars, the ATC-29-2 Seminar has been organized to present current research, practice, and informed thinking pertinent to seismic design, retrofit, and performance of nonstructural components in buildings. Components and systems covered include: supports and bracing for elevator systems, ceilings, partitions, cladding, glazing, contents, water piping systems, and mechanical and electrical equipment. Nonstructural components or systems in facilities with critical functions (e.g., computer centers, hospitals, manufacturing plants with especially hazardous materials, museums with fragile/valuable collection items) are of special interest.

The two-day seminar program was developed for design professionals, regulators, researchers, manufacturers and contractors, insurers, owners, and facility managers. The program includes 38 regular papers, competitively selected from submitted abstracts, and five invited papers. Topics addressed include: (1) current practices and emerging codes; (2) seismic design and retrofit; (3) risk and performance evaluation; (4) system qualification and testing; and (5) advanced technologies

These *Proceedings* contain the seminar program, additional information relating to the seminars in this series, and regular seminar papers and invited seminar papers submitted in time for publication and distribution on the first day of the ATC-29-2 Seminar. A separate companion volume, ATC-29-2A, *Abstract Volume, Seminar on Seismic Design, Performance, and Retrofit, of Nonstructural Components in Critical Facilities*, also published and distributed on the first day of the Seminar, contains abstracts of submitted technical papers and a CD-ROM containing electronic files of these *Proceedings*.

ATC, under contract to MCEER, had responsibility for planning, promoting, and conducting the seminar. Overview and guidance were provided by a Steering Committee jointly appointed by ATC and MCEER. The Steering Committee consisted of Christopher Rojahn and Tsu T. "Larry" Soong (Co-Chairs), Mircea Grigoriu, Richard Hess, George C. Lee, E. Manos Maragakis, Robert Reitherman, William E. Staehlin, Walter Vernon, and Andrew Whittaker. ATC and MCEER also gratefully appreciate the extensive and timely efforts put forth by authors of papers and those individuals responsible for organizing and arranging the seminar. Bernadette Mosby managed the distribution of seminar announcements and arranged seminar accommodations. Michelle Schwartzbach prepared the seminar announcements, these *Proceedings*, and the separate *Abstract Volume*. The affiliations of Steering Committee members and the other individuals involved in the planning and conduct of the ATC-29-2 Seminar are provided in the list of Project Participants.

ATC and MCEER also gratefully acknowledge the financial support provided by the National Science Foundation.

Michel Bruneau, MCEER Director
Christopher Rojahn, ATC Executive Director

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