

Earthquake Engineering Research Center

College of Engineering

University of California at Berkeley, Calif., USA

The Earthquake Engineering Research Center (EERC) is an organized research unit of the University of California at Berkeley dedicated to research, education, and dissemination of technical information in earthquake engineering. The Center was founded in 1967 and continues today as a world focal point for activities in the field of earthquake hazard mitigation.

The Center features a research team comprising faculty, visiting scholars, students, and professional staff with expertise in many disciplines. Test facilities, computer facilities, the EERC Library, and technical reference services are operated by the Center and are made available to the public. Research facilities and offices are housed mainly at the University's Richmond Field Station. Additional facilities are on the Berkeley campus. EERC welcomes visitors.

Research Programs

EERC offers access to one of the finest and most extensive earthquake engineering research facilities in the world. EERC encourages use of the facilities by industry and by researchers from other institutions. Research personnel provide expertise in a broad range of specialization, including seismology, seismic strong ground motion, coastal engineering and wave mechanics, geotechnical engineering, structural engineering, mechanical and control systems, architecture, and public policy. Research activities may be classified according to the following objectives:

- determining the characteristics of strong ground motions
- developing methods for evaluation and upgrading of existing hazardous construction
- developing analytical procedures for estimating potential damage effects to geotechnical, structural, architectural, and mechanical systems
- improving design methods and code requirements

- devising new systems for earthquake protection
- studying public policy issues in earthquake hazard mitigation

The centerpiece of EERC research facilities is the 20 ft by 20 ft Shaking Table. A recently engineered digital controller is capable of reproducing a wide range of recorded or simulated earthquake motions. Ongoing upgrades will add a second horizontal component of motion, expected to be completed by 1993. The Small Shake Table measures 4 ft by 4.5 ft in plan and allows motion in one horizontal direction. The Full-Scale Isolation Bearing Test Machine enables test to be carried out on full-scale and reduced-scale structural isolation components. Mounted on 60 ft by 20 ft structural test bed, the Large Reaction Frame is 34 ft high and capable of lateral loads of 1 million lb. Originally designed to test in-plane shear in masonry wall panels of approximately 8 ft square, the In-Plane Test Frame can provide a 110,000 lb dynamic horizontal load uniformly along the top edge of a test specimen while restraining the bottom edge. A servo-controlled Southwark-Emery universal testing machine with load capacities of 4 million lb compression and 3-million-lb tension enables testing of specimens up to 33 ft tall. The facilities use three High-Speed Data Acquisition systems for experimental work. The largest system has 128 channels; the smaller systems, providing 96 additional channels, are housed within two movable consoles.

The research programs are carried out with financial support from a wide range of funding agencies. Results are presented in the EERC Reports series.

Education Programs

EERC research forms an integral part of the training of graduate students from several academic departments of the Berkeley campus. In addition, EERC sponsors

and organizes seminars, workshops, and short courses for the professional and research communities.

to use research personnel from any source, including the faculty of any institution, to conduct testing or research within the Center's facilities.

Information Programs

In addition to educational activities, EERC carries out a wide range of research and professional information services for earthquake engineering. Many of these services are organized through National Science Foundation funding under the National Information Service for Earthquake Engineering (NISEE).

NISEE distributes computer software in support of earthquake engineering and related research. Source code with sample problems and user documentation are provided in most cases. The EERC Library contains more than 30,000 books, research reports, technical journals, conference proceedings, monographs, maps, and audiovisual materials on earthquake hazards and their mitigation. All are available to the engineering community and the general public. Earthquake Engineering Abstracts is an online database devoted to coverage of the world's literature in earthquake engineering and earthquake hazards mitigation. Informative abstracts and complete bibliographic citations make this database invaluable to anyone who needs current information on research in earthquake engineering. The database can be accessed via the Internet, modem or electronic mail. The *Abstract Journal in Earthquake Engineering* is the printed form of the online database and is available worldwide on a subscription basis. Coverage begins in 1971. In addition to reporting on current EERC research, the *NISEE/EERC News* provides up-to-date information on NISEE activities, library acquisitions, recently published EERC reports and computer programs.

Visiting Researchers

Visiting researchers are encouraged to contribute to research activities at EERC. Office space, research facilities, and professional services may be made available to researchers who apply through EERC faculty participants or the EERC Visiting Researcher Program.

Service to Industry

EERC provides service-to-industry testing and research for independent clients when such services are not obtainable from privately owned test laboratories in the United States. Service-to-industry clients may arrange