EARTHQUAKE ENGINEERING RESEARCH INSTITUTE
NEWSLETTER

Editor Thalia Anagnos
Associate Editors Sarah Nathe
Gerald Brady
Editorial Assistant Eloise Gilland

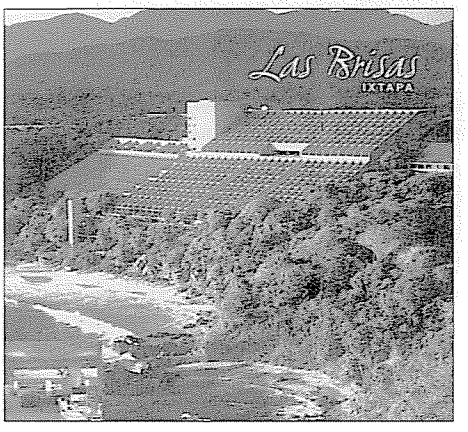
Earthquake Engineering
Research Institute
499 14th Street, Suite 320
Oakland, California 94612-1934
Phone: 510/451-0905
Fax: 510/451-5411
E-mail: eeri@eeri.org
Web site: http://www.eeri.org

ISSN 0270-8337

News of the Institute

EERI's 57th Annual Meeting Like No Other

Be sure to mark your calendar for February 2-6, 2005, to join your colleagues in Ixtapa, Mexico — you won't want to miss this EERI Annual Meeting! It will be unlike any of the previous 56. In addition to providing an outstanding technical program, the exciting format will allow for lots of free time to enjoy the unique venue, see the sights, and get your feet in the water.



The Las Brisas Hotel sits on a secluded bay and boasts 423 rooms with spectacular views of the sea. The hotel's web site is ***www.brisas.com.mx.***

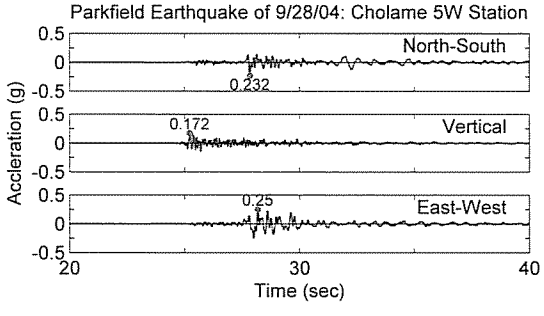
Almost two years ago, a cooperative agreement was established between EERI and its Mexican counterpart, SMIS (Sociedad Mexicana de Ingeniería Sísmica). The location of the 2005 Annual Meeting was chosen to celebrate that cooperation. Our Mexican colleagues have been fully integrated into the planning of the technical and social aspects of the program. There will be several informal opportunities to mingle and share common interests. Mexican students will present posters alongside their U.S. counterparts. The meeting will observe the 20th anniversary of the great 1985 Mexico City earthquake,

continued on page 8

Learning from Earthquakes

Anticipated Earthquake Hits Parkfield

The long-anticipated Parkfield (central California) earthquake occurred at 10:15 a.m. PDT on September 28, 2004, with a magnitude 6.0 and a hypocenter at 35° 49' N, 120° 22' W, and a depth of 8 km or 5 miles. From this point on the San Andreas fault, about 7 miles SW of the town of Parkfield, it ruptured primarily northwest along the fault. Strong shaking during this event lasted for about 10 seconds.



Ground accelerations recorded at the Cholame 5W Station during the Parkfield earthquake (Data from CISN/CSMIP).

This quake caused no injuries and minimal property damage, but is of great interest to American geologists. In 1984, the U.S. Geological Survey (USGS) predicted that a magnitude 6 earthquake would occur on the stretch of the San Andreas fault near Parkfield within five years of 1988. The prediction was based on a sequence of

continued on page 2

Parkfield Earthquake

continued from page 1

six similar earthquakes that occurred every 22 years (on average): in 1857, 1881, 1901, 1922, 1934, and 1966. Although the 2004 Parkfield earthquake struck over a decade later than predicted, its magnitude and behavior fulfilled the prediction. In anticipation, scientists from the California Strong Motion Instrumentation Program (CSMIP) of the California Geological Survey and the USGS placed a large and varied suite of instruments along the Parkfield segment of the San Andreas fault. The previous two earthquakes ruptured in the opposite direction from NW to SE along this section.

Nonstructural damage to a home office. The San Andreas fault runs through the backyard of this house (photo: Goel).

According to CSMIP seismologist and EERI member Tony Shakal, this single event has produced more near-source ground motion, within 15 km of the epicenter, than all previous California earthquakes combined. Because of this dense array of recording stations, it is the first time that scientists have seen an earthquake rupture with this level of detail. Shakal indicated that the near-field ground shaking shows much more variability than anticipated, from moderate to very steep gradients of peak ground shaking within short distances. At the present time, there is no simple explanation for this variation. Seismologists and geologists are beginning to work on understanding the source of the variability. Sorting it out will move the whole science and engineering base forward, as this knowledge can be taken into account in near-fault design force levels. On the positive side, the level of shaking in this earthquake was less than anticipated farther from the fault.

The following web sites have links to much of the data:

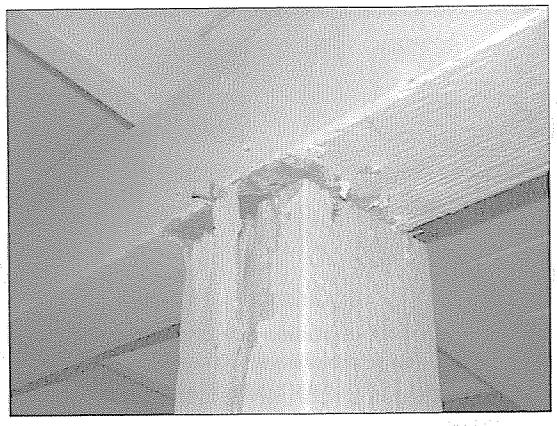
California Integrated Seismic Network (CISN): **www.cisn.org/special/evt.04.09.28/**;

Northern California Earthquake Data Center: **quake.geo.berkeley.edu/2004parkfield.html**.

Two engineering professors and EERI members from Cal Poly, Rakesh Goel and Charles Chadwell, went to the field immediately after the earthquake and prepared a report, which is on the EERI web site at **www.eeri.org/lfe/usa_centralcalifornia.html**.

Consistent with a moderate-sized earthquake in California, the damage that they observed, overall, was primarily nonstructural. The Parkfield area is rural and sparsely populated, with approximately 37 local inhabitants. The area's building stock consists primarily of low-rise, single-family timber construction with wood and stucco facades. Goel and Chadwell also investigated two bridges, one of which crosses the San Andreas fault. This bridge had apparently undergone a recent retrofit and performed adequately.

A preliminary report on the Parkfield earthquake will be an insert in a future *Newsletter*.



Damage to timber canopy outside the same house. Built in the 1950s, it had undergone renovations and upgrades (photo: Chadwell).

Faculty Position

Stanford University

Stanford University's Department of Civil and Environmental Engineering invites applications for a tenure-track faculty position at the assistant professor or untenured associate professor level in structural and geotechnical engineering with emphasis on infrastructure reliability and risk. Of particular interest are individuals who will pursue pioneering research that will contribute towards a new departmental initiative on engineering for a sustainable built environment. The department seeks candidates with a background in one or more of the following areas: probability and stochastic methods, random vibrations, modeling and simulation of natural and man-made hazards, life cycle analysis, infrastructure systems' risk and reliability, damage assessment, health monitoring, and advanced materials. The overall innovation and promise of the candidate's research are of higher priority than the specific research area. For information about the program and the department, as well as the position announcement, visit **cee.stanford.edu/**.