

EARTHQUAKE ENGINEERING RESEARCH INSTITUTE NEWSLETTER

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News of the Institute

Joint 100th Anniversary EQ Conference

Plan to be part of the most important earthquake conference ever held! It will take place in San Francisco, April 18–22, 2006 — the 100th Anniversary Earthquake Conference, commemorating the 1906 San Francisco earthquake. Jointly convened by EERI, the Seismological Society of America (SSA), and the California Governor's Office of Emergency Services (OES), the conference will be held at the Moscone Convention Center and will include the EERI Annual Meeting, the Eighth National Conference on Earthquake Engineering (8NCEE), the SSA 100th Anniversary Celebration and Annual Meeting, and the OES Disaster-Resistant California Conference. The conference will feature a gala anniversary reception, joint luncheon, technical sessions, field trips, and much more!

The conference will celebrate accomplishments in seismology, earthquake engineering, and emergency management, including themes such as:

- What do we now know about the great 1906 earthquake and California's seismic hazard?
- What are we doing to reduce earthquake losses today?
- What challenges lie ahead in the coming century?

Put the dates on your calendar now and watch for more information in the months to come at www.1906eqconf.org.

Khshae and Markarian Win EERI Student Paper Competition

Payam Khshae, a Ph.D. candidate in the Mechanical Engineering Department at Southern Methodist University (SMU), captured the top prize in the graduate student paper category in EERI's annual competition with his paper, "Damage-Based Seismic Design of Structures." Khshae received a travel grant to present his paper at the Annual Meeting in Los Angeles in February. This year Khshae was also named Young Engineer of the Year by the Texas Society of Professional Engineers. He is an adjunct lecturer at SMU, teaching undergraduate courses in structures and engineering mechanics, and has worked for Thornton-Tomasetti Engineers in Dallas and John A. Martin and Associates in Los Angeles.

continued on page 6



EERI student paper competition winners: (left) Andre Markarian, undergraduate winner, and (right) Payam Kashaee, graduate winner.

News of the Membership

EERI Member Firms Earn AISC Awards

The following firms with EERI members have been recognized by the American Institute of Steel Construction (AISC) in the 2004 Engineering Awards of Excellence Competition.

Walter P. Moore and Associates of Houston was a National Winner for its work on the National Football League's largest stadium, Reliant Stadium in Houston, home of the Houston Texans. It is the first NFL stadium with an operable roof, and at 3.75 acres it is the largest such roof in the United States. The composite steel/concrete supertruss/supercolumn system is believed to be the largest ever used in a building structure. Providing the integral moment connection between the supertruss and the supercolumn presented a major challenge due to the limited space. The company prepared a three-dimensional digital placement diagram of the anchor bolts and the maze of reinforcing bars atop the supercolumn to aid the contractor in placement.

Skidmore, Owings & Merrill LLP of Chicago was a National Winner for its work on the Schubert Club Band Shell in St. Paul, Minnesota. The Schubert Club sponsors performing arts and an annual concert series

at this outdoor location. Seasonal flooding precluded the use of closed shapes and required a robust base to resist impact from flood-borne debris. The band shell features a glass-covered stainless steel lattice that uses an innovative system of offset pipes and rod diagonals. A shell formed by a continuous surface resists loads by in-plane shear and axial forces and low magnitude out-of plane bending. The band shell's lattice resists loads in a similar manner. Pipes and diagonals acting together resist shear. The structure exhibits geometric nonlinear behavior. High-stress regions were softened so that geometric stiffness was reduced and loads were redistributed. The jury noted that the apparent simplicity was achieved with great consideration of every detail.

Middlebrook + Louie Structural Engineers of San Francisco received a Merit Award for its work on the James H. Clark Center for advanced research in the life sciences at Stanford University. The jury said that unusual architectural floor plans resulted in interesting engineering solutions. With the complex divided into three unequal, separate "pods" (east, west, and south), pedestrian links were designed with seismic joints and expansion joints to prevent the transfer of horizontal forces between pods. Lateral force resistance is provided by a dual system of eccentrically braced frames and

special moment-resisting frames (SMRF). The SMRF beam-to-column connection (welded flange plate) was subjected to two full-scale tests; one failed at 5% rotation, while the other was stopped at 4.5% rotation with capacity remaining, exceeding the 4% *FEMA-350* test criteria.

Magnusson Klemencic Associates of Seattle received a Merit Award for its work on Seahawks Stadium, which sits on liquefiable soils in a high seismic zone. The jury commented that designing the first-ever seismically isolated stadium roof reflected real ingenuity by the engineering team. In the event of an earthquake, the site's north and south ends could each move a foot to the north or south, potentially stretching or compressing the roof up to two feet. Special bearings known as "friction pendulum dampers" allow the ground and seating bowl to move independently from the roof during an earthquake, isolating the roof from movement and potential damage. By decoupling the mass of the roof from the rest of the building, it was possible to reduce the horizontal design forces on the pylons and foundations. With the potential for the roof to move up to two feet atop the dampers in the pylons, "hinged columns" support the roof around the back of the bowl to accommodate this movement.

News of the Membership

WJE Opens LA Office

EERI Subscribing Member Wiss, Janney, Elstner Associates (WJE) has opened a new Los Angeles office. Headquartered in Northbrook, Illinois, WJE now has offices in 20 cities.

EERI member Joe Valancius, a registered structural engineer in California and a former partner with the structural engineering firm of Karagozian & Case, will lead the new

seven-person office. Valancius has over 20 years of specialized expertise in the design and retrofit of commercial and industrial buildings and structures subject to service, blast, and earthquake loads. WJE's new office expertise includes conventional structural analysis and building design, risk assessment, and mitigation for hazards such as terrorist attacks and earthquakes. The new office also brings experience with design of hospitals in California and with design and analysis of structures for blast and weapons

effects.

WJE is a firm of structural engineers, architects, and materials scientists, dedicated to providing practical, innovative, and technically sound solutions to problems in existing structures. Since its establishment in 1956, WJE has successfully completed investigative, testing, and design projects involving virtually every type of construction material, structural system, and architectural component. For more information, visit www.wje.com/.

Announcements

Symposium on Steel Bridges

Organized by the French Technical Office for Users of Steel, the International Symposium on Steel Bridges is scheduled for June 23–25, 2004, in Millau, France. The symposium will focus on innovations that enable steel to be included in the design and construction of exceptional bridges, such as cable-stayed bridges, suspension bridges, bridges with very long spans, and arch bridges. Topics include challenging bridge design and construction, innovative design, bridge health monitoring and management, and use of high-performance steel for bridges. A day will be devoted to the design and construction of the Millau Viaduct, which is a spectacular illustration of a bridge with a steel deck. The symposium program is available at www.otua.org/events/.

International Strong-Motion Workshop

The International Workshop on Future Directions in Instrumentation for Strong Motion and Engineering Seismology will be held in Kuşadası-Efes, Turkey, May 17-21, 2004. The purpose of this workshop is to bring together the operators and users of strong-motion networks in a workshop setting to compare goals, operation techniques, and data utilization. It will be a joint forum for seismologists and engineers to improve understanding of earthquake strong motions and their recording, processing, and interpretation for building a safer environment.

The symposium web site is metu.edu.tr/home/wwwdmc. For additional information, e-mail Polat Gülkan, Middle East Technical University at pgulkan@ce.metu.edu.tr, or John G. Anderson, University of Nevada, Reno, at jga@unr.edu.

News of the Institute

Southern California Chapter News

Dr. Juan Baez of the Hayward Baker Company was the speaker for the EERI Southern California Chapter's March 17 meeting held at the Southern California Earthquake Center (SCEC) on the campus of the University of Southern California. Baez spoke on the topic of soil liquefaction and presented the various methods of soil liquefaction mitigation. He indicated that most of the remediation methods used in the United States are "vibro" methods, although other methods are being used more, including dynamic compaction, grouting, and soil mixing. Baez was presented with an official EERI Southern California Chapter sweater vest of a style available for purchase by members of the chapter.

The next chapter meeting will be at SCEC on Wednesday, May 26, 2004, from 4 to 6 p.m. The featured speaker will be Dr. Mark Legg, who will speak on "Tsunami Risk to Southern California Coastal Cities." Legg was the recipient of the 2002 EERI/FEMA NEHRP Professional Fellowship. His report is available from www.eeri.org/home/fellowships_professional_reports.html.

To make reservations for the May 26 meeting, contact Mark Benthien at benthien@usc.edu.



Juan Baez (left) receives EERI Southern California Chapter sweater vest from Chapter President, Marshall Lew (right).

Announcement

2004 SEAOC Annual Convention

The Structural Engineers Association of California (SEAOC) will celebrate its 75th anniversary at its annual convention, to be held August 25-28, 2004, in Monterey, California. Technical sessions will focus on recent projects or research and development efforts. Emphasis will be on the following topics:

- New seismic systems and components
- Next generation of codes and

Guidelines

- Improvements to current codes
- High-performance materials and smart structures
- Fire, impact, and blast
- Progressive collapse
- Foundations and geotechnical engineering
- Nonstructural aspects

For more information, contact Constantine Shuhaibar at constantine@shuhaibar.com.

Learning From Earthquakes

40th Anniversary of the Alaska "Good Friday" Earthquake Evokes Accomplishments of Public Partnerships

March 27, 2004, was the 40th anniversary of the M9.2 earthquake that rocked Alaska in 1964. The "Good Friday" earthquake was the second largest quake ever recorded in the world, topped only by an M9.5 event in Chile a few years earlier.

Research conducted after the quake revealed that the Pacific Plate pushed an average of 30 feet beneath the North American Plate, unleashing energy equivalent to 100 million tons of TNT exploding. The quake ruptured on a fault below the ocean 500 miles (800 km) long and 125 miles (200 km) wide.

Its effects are a cautionary story, not only for Alaska but also for the other 39 U.S. states most at risk from destructive earthquakes. The sea floor rapidly rose 36 feet in some places, generating associated tsunami waves that surged into and devastated coastal communities along the Pacific coast, killing people as far south as Crescent City, California. In all, 131 deaths occurred, most of which were caused by these tsunami waves.

A combination of shaking, tsunamis, landslides, and liquefaction destroyed buildings, houses, roads, and other infrastructure. Coastal land elevation changes of as much as 36 feet of uplift occurred in one area and six feet of subsidence in another over a region two-thirds as large as the state of California. This great earthquake was felt over a half million square miles and resulted in at least \$350-\$500 million in property damage in Alaska in 1964 dollars, a figure around \$2 billion today.

Anchorage, about 75 miles northwest of the epicenter, sustained severe damage. About 30 blocks of dwellings and commercial buildings were damaged or destroyed in the downtown area. An area of about

130 acres was devastated by displacements that broke the ground into many re-arranged blocks that were moved and tilted at all angles. Water mains and gas, sewer, telephone, and electrical systems were disrupted throughout the area.

Alaska, researchers agree, is ideally suited for earthquake research that helps save lives and property in the state and elsewhere. For the last century, an average of one M7 earthquake has occurred in Alaska every year. Yet when the Good Friday earthquake struck, only two earthquake-monitoring stations existed in the state, and scientists had very little direct information to help understand how earthquakes occurred there.

In response to the earthquake, Congress directed the federal government to develop a national research program, which became the National Earthquake Hazards Reduction Program (NEHRP), now in its 26th year.

Partnerships

An important recent partnership is the joint effort by the U.S. Geological Survey (USGS), the University of Alaska Fairbanks (UAF) Geophysical Institute, and the state of Alaska to improve earthquake monitoring and reporting capabilities as part of the Advanced National Seismic System (ANSS). In Anchorage, ANSS has funded 13 new seismic monitoring stations, which have been added to the existing 22 stations operated by the UAF Geophysical Institute, making Anchorage one of the most densely instrumented cities in the nation. Over the past eight years, about 40 new stations with modern instrumentation have been added to the 350-station seismic network in Alaska.

In addition, through ANSS, the USGS, the UAF Geophysical Institute, and the state of Alaska installed a 32-channel strong motion instrument array in one of the tallest structures in Alaska. Six nearby boreholes complement the instrumentation of the 20-story Atwood Building in Anchorage with sensors placed at depths ranging from 15 to 200 feet. The borehole sensors and the instrumentation in the building will measure how the ground and the building respond to the same earthquake shaking, information essential for engineers to mitigate future property damage and loss of life.

The earthquake analysis system ShakeMap is being implemented by a partnership among the city of Anchorage, the UAF Geophysical Institute, the USGS, and NOAA's Tsunami Warning Center. It is designed to provide first responders with the information they need to assess the intensity and distribution of strong ground shaking in the minutes following an earthquake. The software tool also can be used by pipeline and utility operators and managers of critical facilities and infrastructure to assess likely damage and to minimize environmental damage and disruption to business.

Today, Alaskans have a better network of seismic stations and the consequent ability to monitor earthquake activity. Roger Smith, director of the Geophysical Institute at UAF, said, "Despite this considerable progress, much remains to be done. For example, much of the regional seismic network in Alaska still uses outmoded 1970s technology, and many areas of the state have no sensors at all. We all look forward to learning more about earthquake processes as a result of our partnerships in years ahead."

Announcement

CSMIP04 Seminar on Utilization of Strong-Motion Data

The California Strong Motion Instrumentation Program (CSMIP) in the California Geological Survey of the state's Department of Conservation will present its one-day seminar on "Utilization of Strong-Motion Data" on Monday, May 17, 2004, at the Sacramento Convention Center.

The purpose of this 15th annual seminar is to transfer recent research findings on strong-motion data to practicing seismic design professionals, earth scientists, and post-earthquake response personnel. It will provide information that will be useful immediately in seismic design practice and post-earthquake response, and in the longer term, in the improvement of seismic design codes and practices.

Organized into four sessions, the topics to be covered include ground motion data from the 2003 San Simeon earthquake, evaluation of nonlinear static procedures, CSMIP instrumentation building response analysis, visualization of seismic bridge motions, and instrumentation of the new San Francisco-Oakland Bay Bridge east span. The day will end with a field trip to the seismically retrofitted state capitol.

For additional information and to download a registration form, visit <http://www.consrv.ca.gov/CGS/smip/seminar.htm>.



Publication

New MCEER Reports

The fourth report in the series entitled "Engineering and Organizational Issues Related to the World Trade Center Terrorist Attack" is now available. *From the World Trade Center Tragedy to the Development of Disaster Engineering for Landmark Buildings — An Extension of the Performance-Based Earthquake Engineering Approach* advances an approach that combines knowledge accumulated in earthquake engineering design, hazard mitigation methods, and structural response control approaches with lessons learned from the WTC collapse. This newly defined "multi-hazard engineering" emphasizes an integrated and cost-effective disaster operation in dealing with all types of serious hazards. This report is available from MCEER Publications at 716/645-3391, ext. 105, or e-mail mceer@mceermail.buffalo.edu.

The ATC/MCEER Joint Venture, a partnership of the Applied Technology Council (ATC) and the Multidisciplinary Center for Earthquake Engineering Research (MCEER), has released *Recommended LRFD Guidelines for the Seismic Design of Highway Bridges*. It consists of specifications, commentary, and appendices that are compatible with the existing load and resistance factor design provisions (LRFD) for highway bridges published by the American Association of State Highway and Transportation Officials (AASHTO). The *Guidelines* are published in two volumes: Part I: Specifications, and Part II: Commentary and Appendices. The set includes a CD-ROM containing USGS Seismic Hazard Curves and Uniform Hazard Response Spectra for the United States and is available from both ATC and MCEER. To order, contact MCEER Publications, or ATC Publication Sales at 650/595-1542, or visit www.ATCCouncil.org.

News of the Membership

Kinematics to Install Seismic Monitoring System in Italy

The University of Trieste and the National Institute of Oceanography and Experimental Geophysics (OGS) in the Seismological Research Center (CRS) of Udine, Italy, have selected EERI Subscribing Member Kinematics to provide a state-of-the-art Aspen-based Seismic Network and Information System (SIS) that will provide fundamental assistance to the Friuli-Venezia-Giulia region mission critical earthquake emergency response. The University of Trieste (www.dst.univ.trieste.it/seismology.html) and OGS-CRS (www.crs.ogs.trieste.it), in collaboration with the Regional Civil Protection Agency in Palmanova, support the Office of Public Administration in the field of weak and strong ground motion monitoring, seismic risk assessment and reduction, and emergency management and preparedness.

The system will provide data to the data centers located in Trieste and OGS-CRS, perform real-time data exchange between these two data centers, and also provide readily accessible, high-quality data for real-time exchange with other regional and global networks. Such data will be provided to academic communities and other scientific organizations for both basic and applied research. Data will be available on the Internet. The Friuli-Venezia-Giulia region seismic system is based on the Aspen System Solution: a real-time system configured to provide a comprehensive set of data and processed information for earthquake monitoring.

For additional information on the Kinematics Aspen, visit www.kinematics.com/aspen.html.

News of the Membership

Panza Elected to Italian Academy

EERI member Giuliano F. Panza, professor of geophysics at the University of Trieste, Italy, has been elected to membership in Italy's National Academy of Sciences (Accademia Nazionale delle Scienze detta dei XL). "Detta dei XL" refers to the academy's original founding in 1781 by Antonio Lorgna, who invited the forty most noted scientists in Italy to become members, 80 years before Italy became a unified kingdom. Panza is the only geophysicist chosen to be part of the academy and is the first representative of the University of Trieste.

He has contributed to many seismic hazard scenarios in such urban areas as Peking, New Delhi, Bucharest, Cairo, Rome, and Naples. With scientists from India and the Kamchatka Russian Academy of Science, he helped define the attenuation of seismic energy in the

Himalayan region. With scientists from the Russian Academy of Science, he analyzed seismicity in volcanic areas and studied seismic properties in Italy. In collaboration with scientists from St. Petersburg University, he developed an innovative theory to explain the generation of tsunamis, applied with success to modeling in the Adriatic Sea. Drawing upon petrography and geochemistry, Panza's studies on deep structures from the viewpoint of geodynamical evolution are valued in India, Antarctica, and Europe.

A model proposed for the first time in 1980 that predicted the existence of a radical lithosphere situated beneath major sections of mountain ranges is owed to Panza. The subduction of the continental lithosphere in the collision of continents is now generally accepted in the earth sciences. These achievements have been made possible by the Department of Earth Science of the University of Trieste and the Abdus Salam International Centre for Theoretical Physics.

Announcement

NSF Travel Grants

The National Science Foundation will provide partial travel support for U.S. participants in the two meetings listed below. Special consideration will be given to young and underrepresented researchers.

The International Symposium on Network and Center-Based Research for Smart Structures Technology and Earthquake Engineering will be held in Osaka, Japan, July 6-9, 2004 (www.se04.net). For an application, e-mail M. P. Singh at mpsingh@vt.edu.

The Third International Conference on Earthquake Engineering will be held in Nanjing, China, October 18-20, 2004 (<http://3iee.NJUT.edu.cn>). It will emphasize aspects of control, monitoring, and other new technologies. For an application, e-mail George Lee at glee@mceermail.buffalo.edu, Fuh Yuan at yuan@eos.ncsu.edu, or Peter Chang at pchang@eng.umd.edu.

Student Paper Competition

continued from page 1

Khashae's paper examines the influences of ground motion and structural characteristics on the damage potential of three steel buildings of different heights (7, 13, and 20 stories), using four sets of 40 accelerograms each, classified as soil sites B, C, D, and E according to IBC 2003. After considering the extensively used Park-Ang damage index, Khashae proposes a new damage index based on ductility and stiffness degradation. His results indicate that the proposed index is more meaningful and correlates strongly with the energy dissipated through inelastic action. He discusses the pros and cons of the strength-based design approach and outlines a seismic design procedure based on damage. A damage index can be used for the

strength, ductility, stiffness, and energy demands, whereas a response modification factor accounts only for the strength and ductility demands. In addition, a damage-based approach is better suited for structures in near-fault zones.

In the undergraduate category, Andre Markarian of the Georgia Institute of Technology submitted the winning paper entitled "Influence of Gusset Plates on Flexural Behavior of Simple Shear Tab Connections." It presents results from experiments on special concentrically braced-frame subassemblies. These tests are companion studies to near full-scale subassembly tests to be conducted at UC Berkeley (UCB). A summer intern in the "research experience for undergraduates" program, Markarian worked under the guidance of UCB structural engineering Professor Stephen Mahin.

His paper explains that due to the high cost and poor performance of moment frames, there has been an increased use of braced frames, which are effective in controlling lateral deflections because of the high lateral stiffness provided by the braces. His calculations confirm that beam-column connections, including gusset plates, cannot be analyzed as "pin" connections because they behave more like "rigid" connections. The calculations also show that the moment produced by the gusset plate and shear tab couple was near the capacity of the beam.

EERI extends its appreciation to the Student Paper Review Panel members: Student Activities Committee Chair Eric Williamson of the University of Texas at Austin, Clay Naito of Lehigh University, and Mason Walters of Forell/Elsesser Engineers.

CALENDAR

Items that have appeared previously are severely abbreviated. The issue containing the first, or most informative, appearance is indicated at the entry's end. Items listed for the first time are shown in **bold**.

MAY

3-5. 4th Annual Disaster-Resistant California Conf., Sacramento, CA. Info: www.drc.ca.gov (12/03)

7. 2004 L.A. Tall Buildings Conf., Los Angeles, CA. Info: www.TallBuildings.org (12/03)

16-19. Basin and Range Province Seismic Hazard Summit II, Reno NV. Info: www.nbmj.unr.edu (12/03)

16-19. Third UCLA Conf. on Public Health and Disasters, Torrance, CA. Info: www.ph.ucla.edu/cphd/conference.html (12/03)

16-20. Int'l Code Council Spring Mtg., Overland Park, MD. Info: www.iccsafe.org/springmeeting (4/04)

17. SMIP04 Seminar on Utilization of Strong-Motion Data, Sacramento, CA. Info: www.conservation.ca.gov/cgs/smip/seminar.htm. See page 5. (3/04)

20-21. NEES Annual Mtg., San Diego, CA. Info: www.nees.org (4/04)

22-26. Structures 2004, Nashville, TN. Info: www.asce.org/conferences/structures2004/ (8/02)

JUNE

7-10. SEM X Int'l Cong. on Experimental and Applied Mechanics, Costa Mesa, CA. Info: www.sem.org (10/03)

10-11. 4th Int'l Workshop on Structural Control, Columbia Univ., NY. Info: www.civil.columbia.edu/4IWSC (11/03)

20-23. 14th World Conf. on Disaster Management, Toronto, Canada. Info: www.wcdm.org/ (11/03)

23-25 Int'l Symposium on Steel Bridges, Millau, France. See page

3. (5/04)

JULY

6-9. Int'l Symp. Network & Center-Based Research for Smart Structures Tech. & EQ Eng., Osaka, Japan. Info: mahua@rch.eng.osaka-u.ac.jp. See page 6. (12/03)

12-15. 3rd European Conf. on Structural Control, Vienna, Austria. Info: www.samco.org/3ecsc (10/03)

18-23. Composite Construction in Steel and Concrete V, Kruger National Park, South Africa. Info: www.engconfintl.org/4ab.html (12/02)

26-28. ASCE Specialty Conf. on Probabilistic Mechanics and Structural Reliability, Albuquerque, NM. Info: www.esc.sandia.gov/PMCconferenceinfo.html (12/03)

AUGUST

1-6. 13th World Conference on EQ Eng. (13WCEE), Vancouver, British Columbia, Canada. Info: www.13wcee.com (7/02, 3/03, 4/04)

8-11. MOVIC 04 Motion and Vibration Control Conf., St. Louis, MO. Info: www.seas.wustl.edu/movic04/ (11/02)

25-28 SEAOC Annual Convention, Monterey, CA. See page 3. (5/04)

SEPTEMBER

14-17. NDE/NDT for Highways and Bridges 2004, Buffalo NY. Info: www.asnt.org/events/events.htm (12/03)

26-30. 2004 U.S. National EQ Conf., St. Louis, MO. Info: www.earthquakeconference.org/ (4/04)

29-Oct. 1. Annual Conf. on Deep Foundations, Vancouver, B.C., Canada. Info: www.dfi.org (12/03)

OCTOBER

18-20. 3rd Int'l Conf. EQ Eng., Nanjing, China. Info: 3icee.njut.edu.cn/ See page 6. (5/04)

25-Nov. 5. 7th Workshop on 3-D Modelling of Seismic Waves, Trieste, Italy. Info: agenda.ictp.trieste.it/smr.php?1586 (2/04)

NOVEMBER

15-19. Committee on Safety of Nuclear Installations Workshop on Seismic Input Motions, Tsukuba, Japan. Info: www.nea.fr/html/nsd/workshops/SEIS2004/index.html (4/04)

DECEMBER

8-20. 4th Int'l Conf. on Dam Engr., Nanjing, China. Info: www.dam04.com (1/04)

2005

JANUARY

13-16. Int'l Symp. on EQ Eng., Japan. (2/04)

FEBRUARY

2-6 EERI Annual Meeting, Ixtapa, Mexico. Info: www.eeri.org (4/04)

19-22. Int'l Assoc. for Bridge Struct. Eng. Conf., New Delhi, India. Info: www.iabse.org (11/03)

SEPTEMBER

20-23. 3rd Int'l Structural Eng. & Const. Conf., Shunan, Japan. Info: www.tokuyama.ac.jp/tcss1/ISEC_03/ (4/04)

2006

APRIL

18-22. 8th U.S. Nat'l Conf. on EQ Eng. (8NCEE), EERI Annual Meeting, SSA Annual Meeting, Disaster-Resistant Calif., San Francisco, CA. See page 1. (5/04)

Announcement

CRSI Foundation Scholarships

The Concrete Reinforcing Steel Institute (CRSI) Foundation has announced the availability of scholarships for the 2004-2005 academic year. The scholarships foster the development of practicing engineers in the field of site-cast reinforced concrete construction. Scholarships are \$2,500 for seniors and \$3,000 for incoming graduate students. Applications are due by June 7, 2004. For more information, contact Lisa Kelly at lkelly@crsi.org.

Publication

Putting Down Roots in Earthquake Country

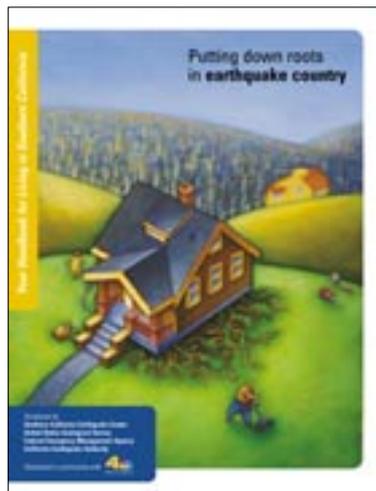
The Southern California Earthquake Center (SCEC) recently published a newly revised 32-page edition of the booklet for the general public entitled *Putting Down Roots in Earthquake Country: Your Handbook for Living in Southern California*.

This handbook provides the basic information that people should know about earthquakes, why they should care about earthquakes in Southern California, and what they can do to be safe and to reduce damage.

The first section on "Earthquake Basics" describes how earthquakes happen and how they are measured. The second part, "Southern California is Earthquake Country," describes where and how often earthquakes occur in Southern California. It also explains how earthquakes shake the ground and cause hazards such as liquefaction and landslides, the damage earthquakes can cause, and ways of reducing potential costs. The third section discusses "The Seven Steps on the Road to Earthquake Safety": (1) identifying potential hazards at home and fixing them, (2) creating a

disaster plan, (3) creating a disaster kit, (4) identifying a building's potential weaknesses and fixing them, (5) what to do during earthquakes and aftershocks, (6) checking for damage and injuries needing immediate attention after shaking stops, and (7) following a disaster plan when safe.

The media station KNBC is a distribution partner for the pamphlet, and many Home Depot stores have had copies of the pamphlet available for customers beginning in April, which



was Earthquake Preparedness Month. The American Red Cross is distributing 40,000 copies through all Southern California chapters at community events and preparedness trainings. Other large companies have paid for copies to be printed for thousands of employees and customers.

The new web PDF version is available for download at www.earthquakecountry.info, a portal created by SCEC with links to web sites that provide answers to frequently asked questions.

The pamphlet was prepared in collaboration with the U.S. Geological Survey (USGS), the Federal Emergency Management Agency, and the California Earthquake Authority. It was written by Lucile M. Jones of the USGS and EERI member Mark Benthien of SCEC, with contributions from, among others, EERI members Doug Bausch, Ned Field, James Goltz, Kenneth Hudnut, Charles Real, Hassaan Sughayer, Fred Turner, David Wald, and Chris Wills.



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