

## EARTHQUAKE ENGINEERING RESEARCH INSTITUTE NEWSLETTER

Editor Mark Yashinsky  
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

Reproduction with attribution is permitted.

## EARTHQUAKE ENGINEERING RESEARCH INSTITUTE

PRESIDENT  
Craig D. Comartin

PRESIDENT-ELECT  
Thalia Anagnos

VICE PRESIDENT  
Farzad Naeim

SECRETARY-TREASURER  
Marshall Lew

BOARD OF DIRECTORS  
John L. Aho  
Thalia Anagnos  
Jonathan D. Bray  
Craig D. Comartin  
Richard K. Eisner  
Polat Gülkan  
Laurie A. Johnson  
Marshall Lew  
Farzad Naeim

EXECUTIVE DIRECTOR  
Susan K. Tubbesing

## News of the Institute

### 2007 Annual Meeting: Challenges in Our Changing Urban Environment

Don't miss the 59th EERI Annual Meeting on "Seismic Challenges in a Changing Urban Environment," February 7-10, 2007, at the Universal City Hilton in Los Angeles, California. Several sessions will focus on the multi-dimensional aspects of the new urban environment, including the financial and political realities of aging infrastructure and the challenges of aging underground distribution systems (see page 1 of the October *Newsletter* for additional information). The recent Kona, Hawaii, earthquake reinforced concerns about the special needs of schools, hospitals, and essential facilities. A presentation on the earthquake will focus attention on issues of critical importance in all seismic regions.

This year's meeting will have something for everyone, from seasoned professionals to younger members and students.

*continued on page 5*

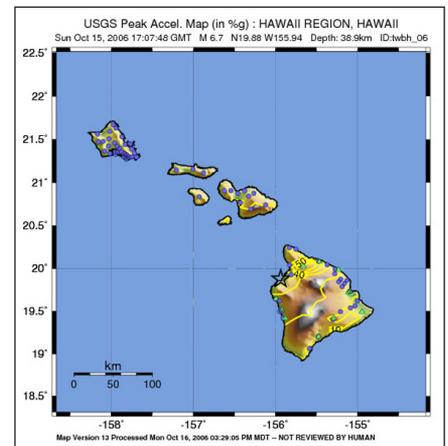
## Learning from Earthquakes

### Identifying Lessons from the M6.7 Kona, Hawaii, Earthquake

EERI is carrying out field reconnaissance to identify preliminary lessons from the  $M_w$  6.7 earthquake that struck on October 15, 2006, off the island of Hawaii. EERI members and other professionals based in Hawaii are documenting the earthquake's effects on structures, including

*continued on page 8*

*The Hawaiian Islands were well-instrumented. ShakeMaps were made available soon after the earthquake.*



## Editorial

### Uniting Earthquake Science and Engineering

*by Norman Abrahamson*

*Seismologist and former member of EERI's Board of Directors*

Reflecting on the 100th Anniversary of the 1906 Earthquake Conference that brought together earth scientists, earthquake engineers, and emergency planners, Chris Poland wrote an editorial (page 1, August 2006 *Newsletter*) advocating that we need to build on the success of the conference and unite these three groups to accelerate progress in achieving seismic safety worldwide. I agree with Poland, but how do we do it? To get started, I offer some recommendations that address part of the problem of uniting earthquake science and earthquake engineering.

*continued on page 6*

## News of the Institute

### Search for New Editor for *Spectra*

In December 2007, Farzad Naeim will complete his term as Editor of *Earthquake Spectra*, EERI's professional journal. During his term, the journal has flourished, and a variety of innovations have been implemented to further automate the submission, review, and production process, and to significantly reduce the time from manuscript submission to publication in *Spectra*.

In preparation for a smooth transition, we are seeking applications and nominations for journal Editor to serve a five-year term, starting in January 2008. The Editor, with the support of the Editorial Board and the Managing Editor, has responsibility for both the printed and online editions. The Editor makes publication decisions based on recommendations of the Editorial Board and reviewers, and has ultimate responsibility for ensuring that manuscripts meet the high-quality professional standards established for technical content, format, and timeliness. As chair of the Editorial Board, the

Editor has responsibility for overseeing journal publication policies, developing recommendations for theme issues, identifying nominees for the Editorial Board, and developing consensus recommendations for Outstanding Paper Award nominees for consideration by the Honors Committee.

All individuals interested in either nominating someone or applying for this position are encouraged to contact a member of the EERI Executive Committee (Craig Comartin, Thalia Anagnos, Farzad Naeim, or Marshall Lew).

## Student Chapter Activities

### University of Michigan

The University of Michigan EERI Student Chapter learned about recent advances in earthquake engineering by organizing a successful series of five seminars during the 2005-06 academic year. Speakers included Bozidar Stojadinovic of the University of California, Berkeley, on the topic of hybrid simulation; Andrew Whittaker of the University at Buffalo on seismic protective systems; Kincho Law of Stanford University on finite element structural analysis, Sergio M. Alcocer of the Instituto de Ingenieria, UNAM, Mexico, on rehabilitation techniques in Mexico; and Luis B. Fargier-Galbaldon of Ingenieria de Estructuras in Venezuela on the collapse and rehabilitation of a viaduct in his country.

In addition, the chapter participated in the EERI Friedman Family Visiting Professional Program by hosting Thomas A. Sabol of Englekirk & Sabol Consulting Structural Engineers in Los Angeles, California. The title of his talk was "When in Doubt, Make it Stout: Will this Keep Earthquake Engineers out of Trouble?"

A chapter representative participated in the 100<sup>th</sup> Anniversary Earthquake Conference in San Francisco, California. The chapter's web site is <http://www.engin.umich.edu/soc/eeri/>.

### Oregon State University

Three members of Oregon State University's EERI Student Chapter gave presentations on several occasions to middle-school and high-school students on geotechnical and structural earthquake engineering, including demonstrations using a liquefaction simulation model and a portable structural frame shake table.

Five OSU students competed this year in the Pacific Earthquake Engineering Research Center's shake table competition at the 100th Anniversary Earthquake Engineering Conference in San Francisco to design, test, and predict performance for a model balsa wood building subjected to three different ground motions. After repairing some damage to the model caused by shipping, the team placed seventh overall, as the model suffered from high displacements and high peak accelerations. What the team learned this year, they passed on to next year's team.

This year, the EERI student group, in conjunction with the OSU ASCE

Student Chapter, hosted inductions into the "Order of the Engineer," a ceremony started last year. Two students participated in the PEER Scholars Program, traveling to four host universities to learn about seismology, geotechnical engineering, structural engineering, and public policy.

## Announcement

### Notre Dame Faculty Position

The Department of Civil Engineering and Geological Sciences at the University of Notre Dame invites applications for a tenure-track faculty position in the area of structural engineering and civil engineering materials. Required: a Ph.D. in civil, structural, or materials engineering or a related field. Qualified candidates at all levels will be considered.

Of particular interest are applicants with a research focus on the development, performance assessment, and implementation to civil infrastructure of innovative civil engineering materials, components, and systems. Review of applications has begun and will continue until the position is filled. For application information, visit <http://www.nd.edu/~cegeos/News/positions.htm>.

## News of the Institute

### EERI/FEMA Professional Fellow



Bruce Maison

Bruce Maison, associate civil engineer at the East Bay Municipal Utility District (EBMUD), has been selected as the 2007 Professional Fellow in Earthquake Hazard Reduction, awarded by EERI under a cooperative program funded by

the Federal Emergency Management Agency as part of the National Earthquake Hazards Reduction Program. The fellowship is designed to provide an opportunity for a practicing professional to gain greater skills and broader expertise in earthquake risk reduction. The Institute extends thanks to the review committee, consisting of Thalia Anagnos, San Jose State University; Craig Comartin, CD Comartin, Inc; Marshall Lew, MACTEC Engineering; and Farzad Naeim, John A. Martin & Associates.

Maison will work in the United States and Japan to correlate performance-based methodology with tests of Japanese buildings to determine (1) how well current and proposed methods describe actual collapse, (2) whether certain methods are consistently at odds with actual performance in experiments, and (3) whether practical improvements to current methods can be suggested given the findings from the experimental research. The research will

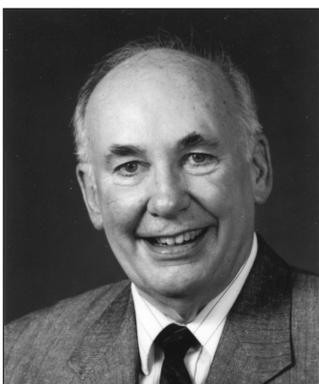
be conducted under the direction of professors Gregory Deierlein of Stanford University and K. Kasai of the Tokyo Institute of Technology. It is anticipated that Maison's work will have significant implications for the future research and development of collapse performance assessment.

Maison is a licensed structural engineer. For the past 13 years, he has worked with EBMUD, where he is responsible for capital projects related to water systems lifeline earthquake engineering. His expertise is in the areas of design, analysis, risk studies, and software development. Maison holds an M.B.A. from the University of Chicago, an M.S. from the University of California, Berkeley, in structural engineering, and a B.S. in civil engineering from the University of Illinois.

The Professional Fellowship is awarded annually and provides a stipend of \$30,000 for tuition, fees, and living expenses for a 12-month period.

## Obituary

### Ted Algermissen



S. T. "Ted" Algermissen

Long-time EERI member S. T. "Ted" Algermissen died suddenly of heart failure on September 19, 2006 at the age of 74. Ted had a distinguished career in geophysics that spanned more than four decades and had a significant influence on

his profession. During the 1960s, he developed a seismic hazard map for the United States while working as chief of the Geophysics Research Branch at the U.S. Coast and Geodetic Survey in Rockville, Maryland.

His 1969 deterministic ground-motion map was used in the *Uniform Building Code* as the basis for determining the lateral force coefficients in seismic design until the 1990s. A reorganization in 1973 moved Ted's geophysics group to the Geologic Division in the USGS. The first national probabilistic earthquake ground-motion map (1976) was his idea. Ted pioneered working with the engineering community to use the probabilistic hazard map in the national building codes. In 1983, he wrote the classic *An Introduction to the Seismicity of the United States*, which became part of EERI's original monograph series.

Ted was an effective force in initiat-

ing USGS's interaction with foreign countries in bringing their hazard estimation procedures up to modern standards. He also pioneered in loss estimation for major U.S. cities at risk and in urban hazard studies of various sorts. Ted's work with the insurance community was also influential. For his contributions, he received the USGS Meritorious Service Award and the CERESIS Prize for Contributions to Seismology in South America. Ted's work, his advice, and the help he gave others in the profession touched many lives in a positive way.

Ted earned B.S. degrees in geology and German (Missouri School of Mines, 1953) and a Ph.D. in geophysics (St. Louis University and Washington University, 1957). Late in his career he formed a consulting company, GeoRisk Associates. He is survived by his wife Sandy, two sons, a daughter, and seven grandchildren.

## News of the Institute

# Summary Minutes of the Board of Directors Meeting of June 1, 2006

President Craig Comartin called the meeting to order at 8:05 a.m. Also present were Directors John Aho, Thalia Anagnos, Jon Bray, Richard Eisner, Polat Gulkan, Laurie Johnson, Marshall Lew, Farzad Naeim via teleconference, Executive Director Susan Tubbesing, and Administrative Assistant Valarie Austin.

### President's Report: Post-conference opportunities and next steps:

Comartin observed that the energy and visibility created by the successful 100th Anniversary Earthquake Conference have provided an opportunity for the Institute to promote awareness of seismic hazards. "Hands-on" mitigation at the local level is the most effective way to create greater protection. The Board agreed to support the Northern California Chapter as it develops and undertakes new programs and activities in response to the conference.

Concrete Coalition: EERI is taking the lead with PEER and ATC acting as cosponsors. The coalition's mission is to act as a catalyst to develop technically sound, economically effective, and socially acceptable solutions to the risks posed by nonductile concrete buildings, and to advocate for actions that will reduce such risks. A senior advisory panel has been created to develop a clearly defined mission and objectives, formulate a management plan, establish steps for implementation, and author a written summary.

LFE update: Comartin reported that William Holmes has agreed to serve as chair of the LFE Advisory Com-

mittee. NSF has responded favorably to EERI's proposal but has indicated that funding will be less than previously awarded.

Secretary/Treasurer's Report: Overview of Revenue and Expense Report: Lew reviewed the Report of Revenue and Expenses as of April 30, 2006. The combined balance sheet showed an opening fund balance of \$150,076, which was augmented by \$457,205 in excess revenues over expenses. EERI's total liabilities of \$427,804 combined with the total fund balance of \$607,281 equaled \$1,035,085.

The Endowment Program's opening balance of \$750,028 was augmented by \$56,336 in excess revenues over expenses, for a total fund balance of \$806,364. Total liabilities in the amount of \$351,462 combined with the total fund balance of \$806,364 equaled \$1,157,826. The balance of the combined association, endowment, and technical programs equaled \$2,192,911.

Investment Report: The Investment Funds Report showed a balance of \$540,193. The balance in the interest-bearing checking account was \$218,340. The combined funds in both the General Administrative checking and investment accounts totaled \$758,533. The Endowment Fund balance totaled \$806,989; the Friedman Family Investment Fund totaled \$191,835; and the Shah Family Innovation Prize totaled \$159,012. The investment portfolio has held firm during the first part of 2006, and at the end of April it had regained much of the losses of the past few years.

100th Anniversary Conference: The conference seems to have produced modest revenue, although not all expenses have been received. Any surplus will be shared with SSA in a manner to be determined. It is estimated that approximately 4,000 people attended. The Board recommended that other op-

portunities for collaboration be developed with OES and SSA in the future.

**Executive Director's Report:** The *Spectra* special issue on the 1906 earthquake has been well received. This issue and the CD of the *Conference Proceedings* will be promoted actively. Johnson and the EERI staff will work with a video company to edit highlights of the keynote talks and run them on the conference web site along with the conference video. The video has been distributed to all libraries, school districts, and city governments in nine counties in the Bay Area. Johnson will advise the Executive Committee on possible members for a post-conference committee to suggest follow-on products and activities.

**Technical Seminars:** Comartin reported on efforts to develop a geo-technical seminar for early next year.

**Mitigation Center:** James Godfrey, EERI staff member, demonstrated the progress made in developing the Mitigation Center web site. Board members made several suggestions that Godfrey will incorporate, including a glossary of terms. Godfrey will also attempt to incorporate better search tools that will allow more sophisticated search technologies, and will add a subject index and thumbnails to indicate the primary audience for each resource. The Executive Committee will appoint a subcommittee to help Godfrey evaluate material.

**Publications Report:** Printed copies of the Bam and Niigata reconnaissance reports will be distributed on a "print-on-demand" basis. The Board decided to print a summary report of the Sumatra earthquake and Indian Ocean tsunami.

Anagnos expressed concern that the Institute will lose visibility if it ceases issuing printed copies of reconnaissance reports. The Board hopes that funding will be restored

making it possible to return to the customary practice of issuing printed copies in the future. The Board approved a motion by Naeim that reconnaissance reports, including the Bam and Niigata reports, be placed on DVDs and mailed free-of-charge to all EERI members.

**Demo of web-based video subscription service:** EERI staff members James Godfrey and Gabe Mulford demonstrated the new web-based video download service that will permit downloading and viewing of technical seminar presentations. Many specific decisions regarding structure, target audience, and pricing still need to be made.

**Publications Sales:** As of April 30, 2006, \$9,747 has been received in publications sales. The new Publications Catalog will be sent to members soon. The 100th Anniversary Earthquake *Spectra* issue and *Conference Proceedings* CD have been promoted widely through engineering and earth science newsletters.

**Membership Report:** Overall membership numbers have declined since January because members were dropped at the end of the March 31st grace period and many have not yet renewed.

**Proposed Bylaws changes:** The Board approved a motion to modify the Bylaws to allow for electronic voting in Board elections. During this discussion, the Board concluded that retired members should be given voting privileges. They also decided that all college students, whether full- or part-time, would qualify for the student membership rate. The changes to the Bylaws will be submitted to the members, who will be given the option of accepting or rejecting the modifications in toto.

**2007 Annual Meeting:** The Board reviewed a draft program of the 2007 Annual Meeting. They suggested some revisions, including integrating multidisciplinary perspectives and geotechnical, and geological components into the program.

Lew will convey the Board's comments to the Organizing Committee.

**Future international agreements:** Bilateral commissions need to be established for Japan and Canada with specific expectations, funding, and work plans delineated for each side. The Board determined that it is important to establish criteria to serve as a guide for decisions about signing new collaborative agreements.

**Committee reports from April meetings:** The Board discussed the reports submitted by the various committees that met during the EERI Annual Meeting. The New Madrid Chapter submitted a proposal and request to the Board for seed money to prepare a scenario of the New Madrid seismic region in preparation for holding the 2012 Annual Meeting in the St. Louis area. The Board indicated that it would like to encourage the development of this project. The Executive Committee will contact the chapter and provide appropriate counsel to the members about what specific information is needed.

The Board discussed a proposal for a workshop on hospitals received from Jim Jirsa and Sergio Alcocer, co-chairs of the U.S./Mexico Bilateral Commission. The Board is supportive of the proposed focus and plans, but will inform Jirsa that it is unlikely that EERI will be able to provide financial resources for the workshop in Mexico.

The Board considered a request to expand the oral histories to include important contributors from other countries, but concluded that the Institute does not have sufficient funds to do this at present. However, it was suggested that this effort could be undertaken in collaboration with our sister associations in other countries as part of our joint agreements.

The meeting was adjourned at 4:50 p.m.

## Annual Meeting

*continued from page 1*

### Attention Undergraduates

We encourage academic and student members to let undergraduates know that the 4<sup>th</sup> Annual Undergraduate Seismic Design Competition will be held during the Annual Meeting, sponsored jointly by EERI and the Pacific Earthquake Engineering Research (PEER) Center. The contest involves students' assembling teams, constructing a commercial office building, and shipping it to the meeting. For rules, details, and entry information, visit <http://peer.berkeley.edu/students/seismic.html>.

### EERI Younger Members Committee

The EERI Younger Members Committee will meet during the Annual Meeting. This meeting will be open to all EERI members. Senior members are particularly welcome to attend.

Arzhang Alimoradi, chair of the Younger Members Committee, and other committee members invite young professionals to join them. They look forward to the participation and ideas of EERI's young professionals for active involvement with the Institute. The committee is planning a number of exciting projects to be carried out during the next three years. If you are interested, please e-mail Alimoradi at [arzhang@johnmartin.com](mailto:arzhang@johnmartin.com).

"Young Professional" is an appropriate category for members who have been working in the earthquake field for up to five years after graduation.

*Namazu:  
A giant  
Japanese  
catfish  
causing  
an earth-  
quake.*



## Uniting Earthquake Science and Engineering

*continued from page 1*

One of Poland's suggestions was that "As earthquake professionals, we need to...become knowledgeable in all related areas." In the earth science/engineering interface, the burden has been on the engineers to learn earth science. There are numerous university classes and short courses that teach the basics of earthquake science to engineers, but there are not similar classes to teach the basics of earthquake engineering to earth scientists. Until the earthquake scientists learn how their results are being used, the earth scientists will continue to stumble along guessing at what is really needed. I recommend that EERI, working with SCEC, develop a short course on earthquake engineering for scientists. This class should focus on how earth science information is used in seismic design of structures, with examples of the sensitivity of the design and structural performance to the ground motions. I also recommend that engineering departments in universities begin to offer such a class for earth science students.

Simply offering such classes for earthquake scientists is not enough. Getting the earthquake scientists to attend these classes will be a problem. In my experience in teaching seismic hazard analysis at several different universities over the last decade, fewer than 5% of the students taking this type of class are from the earth sciences. The earthquake science community needs to step up and do its part to become knowledgeable in the basics of earthquake engineering.

Poland also made the following suggestion: "Earthquake engineers need to take full advantage of site-specific seismic hazard information available from the earth science community and tailor their work to the specific hazard that has been

identified. And the earth science community needs to develop ground motion characteristics that better match the needs of other earthquake professionals and leave the loss estimates to the engineers."

I agree that the earth science community needs to improve its characterizations of the ground motion that will be more useful for engineers. However, while advocating uniting earthquake science and engineering, Poland's comment to the earthquake scientists to "leave the loss estimates to the engineers" does just the opposite. Earthquake scientists cannot develop better ground motion characteristics unless we understand the effects of ground motion on structures. So while we do not need to get involved in calculating large loss estimates, we do need to get feedback from risk calculations regarding what ground motion characteristics matter. In my opinion, improved flow of information from engineers back to earth scientists is the key to improving our characterizations of the seismic hazard.

Many earthquake scientists see providing seismograms ("time histories" to engineers) as the end all. They think that if we give engineers the full seismogram, then they will have all the information about the ground motion, and the earthquake scientist can stay out of the engineering side. The problem we face is that for a given earthquake scenario (magnitude, distance, style-of-faulting), there is a large variability among possible seismograms. In my opinion, the greatest difficulty in the earthquake science/earthquake engineering interface results from this large variability of ground motion for a given earthquake magnitude, distance, style-of-faulting, and site condition.

One approach to this issue of variability is to provide a large number of seismograms. For example,

SCEC has been conducting numerical simulations of ground motion for sites in southern California and has generated hundreds of thousands of simulated ground motions. Handing 100,000 possible ground motions to the engineers is not the solution, but simply handing a uniform hazard spectrum is also not the solution. The best hand-off between the hazard analyst and the engineer is in terms of specific earthquake scenarios. The difficulty is identifying a small number of appropriate scenarios (magnitude, distance, ground motion level) and a small set of appropriate seismograms for use by the engineers.

So how do we select a small number of appropriate scenarios? If we are considering the nonlinear response of structures, then asking the earthquake scientist to pick appropriate scenarios and seismograms is really asking them to take into account the nonlinear response of the structure. The earthquake scientist needs to get feedback from the engineer on the nonlinear behavior of the structure. This does not need to be a detailed model; rather, simple proxies that capture the gross nonlinear behavior of the structure are needed. For example, inelastic response spectral values with simple bilinear models could be used as a proxy for the nonlinear response of buildings; Newmark displacements could be used as a proxy for the nonlinear response of slopes.

One common view in earthquake engineering is that the hazard analysis for a site should be done independently of the properties of the structure. The argument in favor of this approach is that the site does not know about the structure, so the free-field hazard should be conducted without regard to the properties of the structure (SSI effects are a different issue). If the engineer does a complete evaluation of the structure for all scenarios in the hazard

(e.g., for each magnitude, distance and ground motion level), then this approach would work well; however, most projects only evaluate the structure for a small number of scenarios. If only a small number of scenarios are considered, then the properties of the structure need to be considered so that the appropriate scenarios and ground motion levels are selected for analysis.

If we need to consider the properties

of the structure in the hazard analysis, then how do we make national hazard maps? These maps, by their nature, are independent of the structure. While national hazard maps are useful for defining the general level of the ground motion and controlling earthquake scenarios, in general, they will not provide the best scenarios for a specific project. Site-specific hazard studies need to consider the properties of the structure.

To improve our characterization of the seismic hazard, we need to improve the flow of information on structural response from engineers back to earthquake scientists. One way to unite earthquake scientists and engineers is through simple models that can serve as proxies for the nonlinear response of the structures, which will allow hazard analyses to provide better characterizations of the ground motion to engineers.

## News of the Institute

### Naeim Prizes Awarded

The Farzad Naeim Prize Selection Committee has awarded the following prizes for reports to the EERI/IAEE (International Association for Earthquake Engineering) World Housing Encyclopedia:

1. A \$1,500 prize to Mohammed Farsi and Farah Lazzali of Algeria for their report on single-family reinforced-concrete frame houses.
2. A \$1,000 prize to Yogeshwar

Krishna Parajuli, Jitendra Kumar Bonthara, and Bijay Kumar Upadhyay of Nepal for their report on uncoursed rubble stone masonry walls with timber floor and roof.

3. A \$500 prize to Luis Gonzalo Mejia of Colombia for his report on clay brick/concrete block masonry walls with concrete floors (with a few seismic features).

For the third year of the Farzad Naeim Prize, the Selection Committee agreed that the focus would be on commonly used building types that received no or limited engineer-

ing design and were in high-risk earthquake zones. Some consideration was also given to geographical diversity. A number of excellent reports met these criteria and the Selection Committee ultimately selected these three reports. The committee members were Chris Arnold of the United States (chair), Dina D'Ayala of England, and Vanja Alendar of Serbia. The committee would like to thank ex-officio members Marjorie Greene, Svetlana Brzev, and C.V.R. Murty for their valuable assistance, and Farzad Naeim for his generosity in creating the prize.

## Endowment Fund Donors

EERI would like to thank the donors to the Endowment Fund shown below and acknowledge their recent contributions. EERI's Endowment supports those innovative projects that ensure the Institute's continuing leadership in the earthquake engineering professions.

### \$2,400

Farzad Naeim

Terry R. Lundeen

Robert V. Whitman

Stephen Kadysiewski

Peter L. Lee

David J. Leeds

George G. Mader

Joseph Maffei

Joseph P. Nicoletti

### \$1,000

Carl H. Josephson

### \$100-\$199

Mihran S. Agbabian

David M. Bergman

Roger D. Borchardt

Linda Bourque

David C. Breiholz

Arrietta Chakos

Fu Lien (Henry) Chang

Sheldon Cherry

Mary C. Comerio

Linda R. Emery

Sunil Gupta

Roy A. Imbsen

Ayhan Irfanoglu

Paul C. Jennings

### Other Amounts

Bedros Bedrosian

Jonathan D. Bray

William M. Elliott

Donald K. Jephcott

Leon Kempner, Jr.

James LaFave

Henry J. Lagorio

Gordon L. Laverty

Jia Li

Walter Silva

Fred Ziaripour

### \$200-\$499

William J. Correia

L. LeRoy Crandall

C. Terry Dooley

Juan Carlos Esquivel

Thomas L. Holzer

Robert P. Kennedy

## Announcements

### NSF Summer Institutes

The eight-week National Science Foundation (NSF) East Asia Pacific Summer Institutes (EAPSI) Program provides the following to U.S. graduate students in science and engineering: (1) first-hand research experience in Australia, China, Japan, Korea, New Zealand, or Taiwan; (2) an introduction to the selected location's science and science policy infrastructure; and (3) orientation to the society, culture, and language. The program initiates personal relationships that will improve participants' ability to collaborate with foreign counterparts in the future. The stipend amount is \$4,000. The application deadline is December 12, 2006. For information about proposal preparation, visit [www.nsf.gov/eapsi](http://www.nsf.gov/eapsi).

## Kona, Hawaii, Earthquake

*continued from page 1*

hospitals and schools, roads and highways, and the electric power system, and will also document the geologic, seismologic, and geotechnical engineering aspects of the event.

Gary Chock, a structural engineer and president of Martin Chock, Inc., in Honolulu, is coordinating the investigation into structural impacts. Professor Peter Nicholson of the Department of Civil and Environmental Engineering at the University of Hawaii at Manoa (UHM) is coordinating information on geotechnical effects.

Also contributing to the investigation are professors Ian Robertson and Horst Brandes from the Civil and Environmental Engineering Department at UHM and Edmund Medley of GeoSyntec Consultants in Oakland, California. Nicholson's and Medley's contributions are supported by the Geo-Engineering Earth-

quake Reconnaissance (GEER) Association, with funding from the U.S. National Science Foundation.

In addition to professionals in Hawaii, several California engineering and risk management firms, including Degenkolb Engineers and Risk Management Solutions, have sent investigators to document the earthquake's effects. These engineers will also coordinate with FEMA inspection teams in the field.

After the field investigation is complete, findings will be published as a special supplement in the *EERI Newsletter* and posted on EERI's web site. Images from the various investigators will also be posted on the web site and will be visible through Google Earth.

The earthquake struck 15 km off the northwest coast of the island of Hawaii (19.878°N, 155.935°W) at 7:07 a.m. local time. The earthquake occurred 38.9 km below the ocean floor and shaking lasted about 15 seconds.

The island of Hawaii is the youngest of a 5,000-km-long chain of volcanic islands in the North Pacific. These islands were formed by a stationary hot spot below the ocean floor crust. As the Pacific Plate moved over the hot spot new volcanic islands were formed while the older islands, no longer supplied with fresh lava, slowly eroded.

Most earthquakes in Hawaii are due to volcanic activity. Some are caused by the movement of magma, while others (like this earthquake) result from stresses that build up as volcanoes grow larger.

The earthquake did not produce a tsunami (a 20-cm wave was recorded at Kawai-hae Harbor). Peak lateral ground acceleration greater than 1.0 g (and peak vertical acceleration over 0.7 g) were recorded at the fire station in Waimea on the north flank of Mauna Kea, but spectral accelerations were low. This may be related to the unique nature of this kind of earthquake. Shake-Maps and recordings of ground motion were made available by the USGS soon after the temblor.

Preliminary damage estimates were \$46 million as of 10/17/06. Governor Lingle and President Bush declared a major disaster on the day of the earthquake, opening the way for federal aid. Damage to seven schools and to Kawai-hae Harbor accounted for most of the losses. Damage to businesses, homes, roads, and bridges accounted for the rest. Total losses may increase as inspections continue.

Automatic switches shut down power-generating facilities on the major islands during the earthquake. The time required to bring power back varied. Since ground shaking on Oahu was small, the shutdown switches may need to be recalibrated. The Honolulu International Airport had a small emergency generator, but was unable to operate the airport, stranding travelers.

## News of the Profession

### Tsunami Runup Hazard for California

The California Land Commission has developed probabilistically-derived tsunami runup values for California's marine oil terminals. These values (shown at right) are included in the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS), which were approved by the California Building Standards Commission on January 19, 2005, and are codified as Chapter 31F (Marine Oil Terminals), Title 24, California Code of Regulations, Part 2, California Building Code.

An excellent report describing the modeling of San Francisco Bay for this project can be downloaded at: [http://www.slc.ca.gov/Division\\_Pages/MFD/MOTEMS.html](http://www.slc.ca.gov/Division_Pages/MFD/MOTEMS.html) (along with the MOTEMS and other data).

<b>TSUNAMI RUN-UP VALUES</b>	100-Yr. Return Period [ft.]	500-Yr. Return Period [ft.]
Location		
W. Carquinez Strait	3.3	4.0
Richmond Harbor Channel	7.6	13.5
Richmond Inner Harbor	5.9	10.6
Oakland Inner Harbor	4.7-5.5	7.5-9.5
Oakland Middle Harbor	5.9	10.5
Oakland Outer Harbor	7.9-9.1	15.1-17.6
Hunters Point	3.9-5.3	5.0-8.7
San Francisco S. of Bay Bridge	4.5-5.0	7.5-8.4
Ports of L.A. and Long Beach	8.0	15.0
Port Hueneme	11.0	21.0

## News of the Membership

### Murty Elected to INAE



C.V.R. Murty

EERI member C.V.R. Murty, a professor in the Department of Civil Engineering at the Indian Institute of Technology (IIT) in Kanpur, was recently elected to the Indian National Academy of Engineering (INAE).

The INAE, founded in 1987, comprises India's most distinguished engineers, engineer-scientists, and technologists, covering the entire spectrum of engineering disciplines. The goals of the academy are to advance the practice of engineering and technology and related sciences and to promote their applications to problems of national importance.

Murty is editor-in-chief of the EERI/IAEE World Housing Encyclopedia. His research in earthquake engineering has focused on the nonlinear behavior of buildings and bridges with the aim of improving earthquake-resistant design provisions.

He has published numerous papers, completed a number of sponsored projects, and participated in post-earthquake surveys to document lessons after all the significant Indian earthquakes in the last 14 years. He was team leader for a unique reconstruction reconnaissance survey

undertaken following the massive reconstruction operations after the 2001 Bhuj earthquake that resulted in EERI's publication, *Earthquake Rebuilding in Gujarat, India*.

Murty earned B.Tech. and M.Tech. degrees from IIT Madras and a Ph.D. from the California Institute of Technology.

---

## Hussain and Satari Receive Awards

EERI member **Saif Hussain**, managing principal of Coffman Engineers' Los Angeles office, recently received three awards on behalf of his firm for its Los Angeles Regional Transportation Management Center project: a Certificate of Merit from the Structural Engineers Association of Southern California for "Best Use of New Technology in New Construction," an Excellence in Engineering Award from the Structural Engineers Association of California (SEAOC) for use of seismic isolation, and a Finalist Project Award for the seismic isolation design, in the category of new buildings under \$30 million, from the National Council of Structural Engineers Association. When completed, the project will serve as the nerve center for all highway traffic and emergency management for Los Angeles and Ventura counties.

EERI member **Mohamed Al Satari** of Coffman Engineers' LA office won the SEAOC Young Engineer Award at Large. Satari was recognized for his work on the seismic isolation design of the Inland Empire Transportation Management Center. Satari was one of four at-large young engineers selected out of 22.



## Mahin Receives Best Paper Award

EERI member Stephen Mahin, Pacific Earthquake Engineering Research (PEER) Center researcher and Byron and Elvira Nishkian Professor of Structural Engineering at the University of California at Berkeley, was awarded the James D. Cooper Best Paper Award at the Fifth National Seismic Conference on Bridges & Highways in San Mateo, California. The paper, "Use of Partially Prestressed Reinforced Concrete Columns to Reduce Post-Earthquake Residual Displacements of Bridges," co-authored by Junichi Sakai and Hyungil Jeong, was presented on September 20, 2006. This work was funded by the State of California and the National Science Foundation through PEER.

The award was bestowed in recognition of an exemplary contribution to the profession and to society for a paper with great potential impact and high overall quality. This is the first year the award was given.

---

## News of the Profession

### Calif. DSA Academy

The Division of the State Architect (DSA) of the state of California has implemented its DSA Academy, which will serve as a major learning resource for anyone involved in the planning, design, and construction process. Its mission is to promote quality design and construction of educational facilities and other governmental buildings in California by providing centralized training. Classes offered by the academy seek to promote consistent knowledge and application of the codes and regulations needed for successful plan review, approval, and construction of public buildings under DSA's jurisdiction. The academy's web site is <http://www.dsaacademy.dgs.ca.gov/>.

## Subscribing Member News

### Seminar on PBD Using Nonlinear Analysis

EERI Subscribing Member Computers & Structures, Inc., (CSI) of Berkeley, California, is presenting a seminar on "Performance-Based Design (PBD) using Nonlinear Analysis" in San Francisco on November 29, 2006, 8:00 a.m. to 5:00 p.m.

The seminar will emphasize the use of CSI's PERFORM 3D® software, which is intended for performance-based seismic design. The instructor is Graham H. Powell, professor emeritus of civil engineering at the University of California, Berkeley.

Intended for structural engineers, building officials, educators, and students, the seminar will provide an overview of the process and detailed information on practical applications for frame and shear wall structures.

The registration fee is \$595, which includes continental breakfast, lunch, refreshments, seminar notes containing images and commentary and copies of some pertinent papers, and a CD containing the student version of the CSI PERFORM 3D software.

To register and for more information, visit <http://www.csiberkeley.com/Powell/>.

---

## Call for Abstracts

### Disaster Management Conference

The Canadian Centre for Emergency Preparedness (CEEP) is calling for presentations for the 17th World Conference on Disaster Management (WCDM). The conference will be held in Toronto, Canada, July 8-11, 2007. Its theme will be "Emergency Management and Business Continuity Working Together." The

program includes speakers from many parts of the world and provides excellent opportunities for training and networking among those in emergency planning and management, emergency response, disaster management research, emergency communications, emergency health, risk management, environmental issues, and community planning.

The conference is expected to attract over 1,700 attendees from Canada, the United States, and from around the world. A major goal of the 17WCDM is to examine traditional concepts and methods and provide new ideas and approaches to problem solving with leading edge and topical presentations. Presentations should fall into one or more of the following categories in the disaster management field: lessons learned, emerging trends, the human element, technical issues, principles and practices, and research and development.

The deadline for abstract submission is December 3, 2006. To access the call for papers and to see a more detailed description of the program, visit <http://www.wcdm.org/>.

## NZSEE Conference

The 2007 Annual Conference of the New Zealand Society of Earthquake Engineering will be held in Palmerston North, March 30 to April 1, with the theme "Performance by Design—Can We Predict It?" The organizers strongly encourage consulting engineers to submit papers outlining practical performance-based solutions to earthquake engineering problems they have encountered. They invite abstracts of 100-200 words in the following categories: developments within design, understanding the inputs, assessing existing performance, improving existing performance, defining acceptable performance criteria, and planning for expected performance. Abstracts are also invited from those who wish to present a poster at the confer-

ence. The submission deadline is November 3, 2006. Full papers are due by February 5, 2007. For more information, visit <http://www.nzsee.org.nz/EVENTS/tcon07.shtml>.

## 24th International Bridge Conference

The 24th International Bridge Conference will be held June 6-8, 2007 in Pittsburgh, Pennsylvania. Abstracts should be submitted by October 31st to [www.eswp.com/bridge/abstract.htm](http://www.eswp.com/bridge/abstract.htm).

---

## Announcement

### Earth Institute Fellows Program

The Earth Institute Fellows Program at Columbia University provides postdoctoral scholars with the opportunity to build a foundation in one of the core disciplines represented within the Earth Institute, while at the same time acquiring the cross-disciplinary expertise and breadth needed to address critical issues related to sustainable development and reducing environmental degradation, poverty, hunger, and disease. The core disciplines are any of the social sciences, earth sciences, biological sciences, engineering sciences, and health sciences.

Fellowships are ordinarily granted for a period of 24 months. Candidates should submit a proposal for research based in one of the core disciplines mentioned above or in a thematic area represented by the crosscutting initiatives of the Earth Institute. Applications submitted by December 1, 2006, will be considered for fellowships starting in the summer or fall of 2007. For additional information, contact Hilary Dewhurst, phone 212/854-3893, e-mail [hd6@columbia.edu](mailto:hd6@columbia.edu), web [www.earthinstitute.columbia.edu/postdoc/](http://www.earthinstitute.columbia.edu/postdoc/).

## CALENDAR

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

### NOVEMBER

2-3. NEES Research Training Workshop, University of Colorado (CU). Info: [nees.colorado.edu/Workshop.php](http://nees.colorado.edu/Workshop.php) (10/06)

5-8. INFORMS Urban Transportation Modeling Session, Pittsburgh, PA. Info: [www2.informs.org/Conf/Pittsburgh06/](http://www2.informs.org/Conf/Pittsburgh06/) (6/06)

6-9. 3rd Annual Centrifuge Research and Training Workshop, Davis, CA. Info: [www.eeri.org](http://www.eeri.org) (10/06)

7-10. ASC Symposium on EQ and Tsunami Preparedness & Mitigation, Bangkok, Thailand. Info: <http://www.asc1996.org> (7/06)

9-11. 2nd World Conf. on Disaster Reduction, Mumbai, India. Info: <http://www.wcdr.gfdr.org> (8/06)

12-15. IAEM Annual Conference, Orlando, FL. Info: <http://www.iaem.com/events/annual/intro.htm#conference2006> (08/06)

16-17. 5th Int'l USMCA Symp., Phuket, Thailand. Info: <http://www.sce.ait.ac.th/rnus/usmca2006/> (8/06)

17. COSMOS Annual Meeting & Technical Session, Berkeley, CA. Info: <http://www.cosmos-eq.org/> (8/06, 9/06)

**29. Performance-Based Design Using Nonlinear Analysis**, San Francisco, CA. See page 10. (11/06)

### DECEMBER

7-8. 3rd ATC-35/USGS Workshop on National Earthquake Ground-Motion Mapping. Marriott Hotel in San Mateo, CA. Info: [www.ATCCouncil.org](http://www.ATCCouncil.org). (9/06, 10/06)

11-15. Seismogenesis & Tsunami

Hazards of 'Aseismic' Island Arcs. AGU Fall Meeting, San Francisco, CA. Info: <http://www.agu.org/meetings/fm06/> (9/06)

18-20. 13SEE-06, Roorkee, India. Info: <http://www.iitr.ernet.in/common/symposia/pages/about.htm> (8/06)

### 2007

#### JANUARY

19-20. PEER Annual Mtg, San Francisco, CA. Info: <http://peer.berkeley.edu/2007AM/index.html> (10/06)

#### FEBRUARY

TBA. EERI New Madrid Chapter Student Poster Competition, St. Louis, MO. Info: [www.eeri.org](http://www.eeri.org) (10/06)

7-10. EERI Annual Meeting, Los Angeles, CA. Info: [www.eeri.org](http://www.eeri.org). See page 1. (3/06, 9/06, 10/06, 11/06))

19-21. 3rd Annual Geo. Info. System Conf., Kuwait. Info: [www.gulf-gis.com](http://www.gulf-gis.com) (8/06)

#### MARCH

25-28. Ports 2007, San Diego, CA. Info: [www.portsconference.org](http://www.portsconference.org) (6/06)

**30-April 1. NZ Soc. for EQ Eng. Annual Conf.**, Palmerston North, NZ. See page 10. (11/06)

#### APRIL

30-May 2. 2nd Int'l Modal Analysis Conference, Copenhagen, Denmark. Info: [www.iomac.dk](http://www.iomac.dk) (10/06)

#### MAY

13-20. Coastal Sediments 07, New Orleans, LA. [www.asce.org/conferences/cs07/abstract.cfm](http://www.asce.org/conferences/cs07/abstract.cfm) (5/06)

14-16. SEE5 on EQ Risk Reduction in Developing Countries, Tehran, Iran. Info: [www.iiees.ac.ir/SEE5](http://www.iiees.ac.ir/SEE5) (7/06)

#### JUNE

1-3. 10th North American Masonry Conference, University of Missouri at Rolla. Info: <http://www.masonrysociety.org/NAMC/index.html> (3/06)

**4-6. 24th Int'l Bridge Conf**, Pittsburgh, PA. See page 10. (11/06)

13-15. COMPDYN 2007 Conf., Rethymno, Crete, Greece. **Deadline for abstract submission extended to November 15.** Info: <http://www.eng.ucy.ac.cy/compdyn2007> (8/06)

19-21. NEES Annual Meeting, Snowbird, UT. Info: [http://www.nees.org/About\\_NEES/Announcements/announcement.php?news\\_id=41](http://www.nees.org/About_NEES/Announcements/announcement.php?news_id=41). (9/06)

25-28. 4th Int'l Conf. on EQ Geotech. Eng. (4ICEGE), Thessaloniki, Greece. [www.4icege.org](http://www.4icege.org) (2/06)

26-29. 9th Canadian Conf. on EQ Eng. (9CCEE), Ottawa, Canada. Info: [www.9ccee.ca](http://www.9ccee.ca) (2/06)

### JULY

**8-11. 17th World Conf. on Disaster Management**, Toronto, Canada. See page 10. (11/06)

### OCTOBER

8-11. Modern Trends in Structural Engineering for Seis. Design, Ariel, Israel. Info: [ribakov@yosh.ac.il](mailto:ribakov@yosh.ac.il) (8/06)

### NOVEMBER

27-29. 2nd International Conference on Urban Disaster Reduction (ICUDR), Taipei, Taiwan. Info: <http://www.ncdr.nat.gov.tw/2ICUDR> (10/06)

### 2008

#### MAY

18-22. GEESD IV, Sacramento, CA. Info: [www.geesd.org](http://www.geesd.org) (10/06)

#### AUGUST

11-16. 6th Int'l Conf. on Case Histories in Geotech. Eng. (6ICCHGE), Washington, D.C. Info: <http://campus.umn.edu/6icchge/index.html> (4/06, 9/06)

### OCTOBER

12-17. 14th World Conf. on EQ Eng., Beijing, China. Info: [www.14wcee.org](http://www.14wcee.org) (12/05)

## News of the Institute

### The Mitigation Center: New Tool for Advocates

The Mitigation Center, EERI's new web site, gives earthquake professionals and private citizens easy access to information to guide earthquake-resistant construction and help promote seismic safety in communities in the United States and around the world (<http://mitigation.eeri.org>). The center makes available on one web site the many mitigation resources developed over the past decade by prominent organizations and agencies concerned with the reduction of earthquake risk. Previously, the documents, maps, and electronic media were in the physical and digital libraries of widely scattered agencies, but now it will be possible to retrieve these materials in pdf format directly from EERI, at no cost.

The center's database is arranged in categories for three different user groups: building professionals, homeowners, and public policy makers. The building professionals' section includes FEMA guidelines and reports on codes, performance-based design, and other design issues. Tutorials cover installation of nonstructural elements and include construction guides for materials such as adobe, masonry, concrete, and steel frames. Case studies are included, as are reports on specific building types, such as hospitals and schools.

The homeowners' section includes guides for securing a residence against earthquake damage, mate-

rials on earthquake preparedness and education specific to particular regions in the United States, and links to relevant web sites.

The public policy resources include FEMA's community mitigation guidelines, case studies of how various levels of government can encourage private mitigation activities, and other materials related to seismic safety policies and ordinances.

The Mitigation Center database is constantly expanding. Sarah Nathe chairs an advisory committee that will review the accuracy and relevance of materials and will guide the center as it grows. EERI's Webmaster-IT Manager Gabe Mulford maintains the web site. We encourage you to use the Mitigation Center and send Gabe your comments and suggestions for new resources ([gabe@eeri.org](mailto:gabe@eeri.org)).

### Logging on to Spectra Online

If you have never registered to use the *Earthquake Spectra Online* web site (<http://scitation.aip.org/EarthquakeSpectra>) or if you did previously but have forgotten what to do, check out the following basic steps to access this wonderful resource.

To register for access:

- E-mail [help@scitation.org](mailto:help@scitation.org); give your EERI member number, and

ask for the passcode to register for *Earthquake Spectra Online*.

- After receiving the passcode by e-mail, go to <http://scitation.aip.org/EarthquakeSpectra/subinfo.jsp>.
- Register with your EERI member ID number, the passcode, and your e-mail address.
- Select a username and password.
- Click on the box accepting the agreement and then click on "Register."

To download a manuscript:

- Browse for it at <http://scitation.aip.org/EarthquakeSpectra>.
- After selecting the format you want, provide your username and password. (If you know only one or neither, click on "Forget your password?")
- For assistance, e-mail or phone (U.S. and Canada 800/874-6383).

At any time, questions can be directed to online help at [help@scitation.org](mailto:help@scitation.org).



**EARTHQUAKE ENGINEERING  
RESEARCH INSTITUTE**  
499 14th Street, Suite 320  
Oakland, CA 94612-1934  
**ADDRESS SERVICE REQUESTED**

PRSRRT FIRST CLASS  
U.S. POSTAGE PAID  
Sundance Press  
85719