

CUREE is a nonprofit corporation devoted to the advancement of earthquake engineering research, education, and implementation.

Golden Gate Bridge Outdoor Exhibition Project

The Golden Gate Bridge, Highway and Transportation District has received a \$3 million grant from the National Science Foundation to create a permanent outdoor exhibition at the south end of the Bridge to provide engineering insights about the famous structure to the general public. CUREE was the lead developer of the proposal on behalf of the Bridge District and functions as project manager, heading a talented team of subawardees who will carry out several tasks: master plan the area where the exhibition space will be, allowing for a future museum; design and fabricate exhibits; study visitors; hold an international conference on the theme of using public works infrastructure as learning resources about science and engineering; present the history of the Bridge, investigate the variety of research conducted on the Bridge since its early design and analysis phase in the 1930s; and develop web content to complement the physical exhibits for the District's 100,000 hit-per-day website.

In response to the RFP CUREE issued to the CUREE membership in 2008, CUREE members Maria Garlock, Sarah Billington, and Thalia Anagnos are part of the funded team. Professor Garlock's role, based on Princeton University's longstanding expertise in creating museum-quality models of bridges for exhibitions, is to create a very large (92-foot-long) scale model of the Bridge, which will be the centerpiece of the outdoor exhibits. Around this "table of contents" will be individual exhibits explaining aspects of the Bridge – towers, main cables, lower lateral bracing added to increase torsional resistance under wind loading, vertical suspender ropes, etc. Professor Anagnos will be the lead technical writer on the project to ensure content is effectively presented to the public. Professor



Conceptual drawing of proposed outdoor exhibit (source: R. Reitherman)

Billington is in charge of a scholarly investigation on the research conducted on the Bridge over the past eight decades.

In the words of the Chief Engineer of the Bridge, Denis Mulligan, "Ten million people a year come to the Bridge, in tour buses, by car, on foot, or by bike. They come as sightseers, but will leave with the experience of having their curiosity piqued by innovative science and engineering exhibits."

The NSF Program Director for the Division of Research on Learning in Formal and Informal Settings, Dr. Al DeSena, commented in the press release for the project announcement, "The Golden Gate Bridge proposal represents an exemplary project that went through the rigorous NSF merit review process in competition with several hundred

submissions in 2009. The project is innovative, involves a strong collaborative effort, and is expected to have an impressive impact on the learning of science and engineering by the public. We are pleased to that the Bridge, an international icon visited by millions, will come alive with interactive educational exhibits." ■

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Message from CUREE's President

Professor Andrew Whittaker, University at Buffalo, SUNY

The poor state of the economy has affected us all. One of the things the CUREE Board of Directors has done is to reduce the dues of its University Members, cutting them approximately in half. We have also been searching for "new" money outside the traditional NSF engineering research budget, an effort which is now bearing fruit.

Over the years, the organization has managed to obtain funding for projects and provide subcontracts to faculty at all of our University Members, or to provide support for development of proposals by them.

I am happy to announce the completion of CUREE's election for the Board of Directors for terms beginning January 1, 2010 and running for two years, following the close of the balloting, vote counting, and confirmation of results by CUREE Secretary Bill Holmes.

Directors Elected for 2010 and 2011 Terms



Shown above (left to right):

- Maria Garlock, Princeton University
- Bill Iwan, California Institute of Technology (Caltech)
- Bozidar Stojadinovic, University of California at Berkeley
- Andrew Whittaker, University at Buffalo, SUNY

Professor Garlock and Iwan were re-elected, along with myself, and Professor Stojadinovic has previously served on the Board. All of us have been active in generating proposals for CUREE. Special mention should go to Bill Iwan, one of those who founded CUREE in 1988, who has continuously served on the Board and as the organization's first President and currently as Vice-President. Maria Garlock is carrying out the central role in the development of exhibits for the Golden Gate Bridge exhibition described elsewhere in this newsletter, along with serving on the Strategic Planning Committee. Boza Stojadinovic has helped develop initiatives regarding research on bridges and power plants, efforts that CUREE would like to continue to nurture into funded projects. I have been honored to serve as CUREE's President and am looking forward to continuing to apply myself to further strengthening the organization. The organization has a strong portfolio of research and education projects and prospects for bringing in more such funding that provides opportunities for our members.

As always, I am open to suggestions from the CUREE membership, as is our Executive Director, Bob Reitherman (awhittak@acsu.buffalo.edu, reitherman@curee.org). Here are three questions that might spark some input from our members:

- What is the best thing CUREE has done in recent years for your or your university?
- If you feel you have not benefited from CUREE membership, what sorts of involvement or services would you like to see?
- Do you have any ideas on the development of a new project in which you would be involved as the principal investigator or in some other capacity?

CUREE Education & Outreach Services (E&O)

NEESR Education & Outreach Services Available from CUREE

CUREE is currently providing as a subawardee Education & Outreach services to three University Members for their NEES Research projects: the University of Nevada, Reno (Manos Maragakis, PI, seismic performance of nonstructural systems); University of California at Berkeley (Jon Bray, PI, soil-foundation-structure interaction on the scale of a city block); University at Buffalo (Andrew Whittaker, PI, squat concrete walls). Services include setting up and maintaining a project website that includes video interviews, summaries of tasks, and recent experimental results. As a percentage of total award, for NSF project where this is generally a criterion for proposal evaluation, education & outreach typically takes up about 10% of the budget. Another rule of thumb is that the smaller the research project, the less NSF requires E & O elements.

In June, 2009 NEES Consortium, Inc. contracted services with CUREE to produce a full-color magazine quality brochure on NEES for the National Science Foundation, as well as prepare and present an interactive exhibit on how buildings respond to the effect of frequencies generated during an earthquake. At the NEES 7th Annual Meeting held in conjunction with the CMMI convention held in Hawaii, local school children ages Kindergarten through High School, were invited to the poster session and exhibit area of the conference. The exhibits were interactive as students were encouraged to build their own test models, predicting how their models would react using open sided, or symmetrically braced buildings of various heights. They saw how tall buildings can twist, and how buildings can amplify vibrations to a destructive level.



CUREE special exhibit on shake tables draws large attendance at the NSF-CMMI Conference in Honolulu, HI. (2009)

NEHRP Consultants Joint Venture

NEHRP Consultants Joint Venture

CUREE and ATC (Applied Technology Council) formed the NEHRP Consultants Joint Venture to perform work over a five-year period for the National Institute of Standards and Technology (NIST) and successfully won the on-call contract in a national competition. To date, NIST has issued the Joint Venture funding for 13 different projects, totaling approximately \$4 million. Jack Hayes, the Director of the National Earthquake Hazards Reduction Program in which NIST is the lead agency, is the key leader of this series of efforts to transfer earthquake research into practical products.

CUREE members who have taken the opportunity to list themselves in the Member Database are automatically entered into the database of individuals wishing to be considered for funded roles in these projects. CUREE members can contact Associate Executive Director Reed Helgens (helgens@curee.org) to become part of that listing, which also showcases members' capabilities with regards to other consulting and research project opportunities.



The partnership has produced two technical briefs to date: NEHRP Seismic Design Technical Brief No. 1 titled *Seismic Design of Reinforced Concrete Special Moment Frames: A Guide for Practicing Engineers* and NEHRP Seismic Design Technical Brief No. 2 titled *Seismic Design of Steel Special Moment Frames: A Guide for Practicing Engineers*. Professors may be interested in using these two free publications as handouts for students, they can be downloaded from the website of the NEHRP Consultants Joint Venture at www.nehrp-consultants.org.

ALSO AVAILABLE : General Guidelines for the Assessment and Repair of Earthquake Damage to Residential Woodframe Buildings (Publication No. EDA-02) used in training insurance claims representatives

The General Guidelines for the Assessment and Repair of Earthquake Damage to Residential Woodframe Buildings published by CUREE in April 2004, and is now superseded by the 2007 published version. The revised guidelines is finding extensive use by insurance companies in training their field agents to assess building damage. The new guidelines include checklists to assist with a systematic damage survey and guidance for retaining and working with technical consultants. The target audience is homeowners, contractors, insurance claims representatives, and other non-engineers involved in post-earthquake damage assessment of woodframe construction (although it also contains valuable reference information for engineers). The publication can be purchased as a hardcopy or as a combination set that includes a CD that contains a high-resolution version of the General Guidelines that prints in color; separate checklists, reformatted for convenient printing; a PowerPoint overview of the Guidelines; and PDF copies of the technical reports EDA-01 through EDA-07. This publication received a SEAOC 2008 Excellence in Structural Engineering Award in the category of Study/Research/Guidelines.

Purdue Leads New NEES 5-year Program

As a result of a national competition, NSF selected Purdue University to manage the 2009-2014 NEES Operations program. The NSF program management continues to be headed by Dr. Joy Pauschke. The NEES Operations functions include: funding and oversight of the 14 NEES research sites; providing the central cyberinfrastructure capability that is a key feature of NEES; overall promotion of the NEES program; and systemwide education and outreach services which will feature an on-line NEES Academy for students and educators. Purdue professor and well-known earthquake engineering researcher Julio Ramirez is the principal investigator.



CUREE is currently working with Purdue University to develop multimedia to further promote the principles of engineering, documenting the past achievements of NEES as well as promoting NEES' full capabilities.



Kajima Funding for CUREE Member Research nears 20th Anniversary

The CUREE-Kajima Joint Research Program is now in its seventh multi-year phase, with funding going to the University of Colorado at Boulder, University at Buffalo, Stanford University, and North Carolina State University. Next year marks the 20th anniversary of the program, which is managed by CUREE vice-president and Caltech professor Bill Iwan.

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Winter 2009

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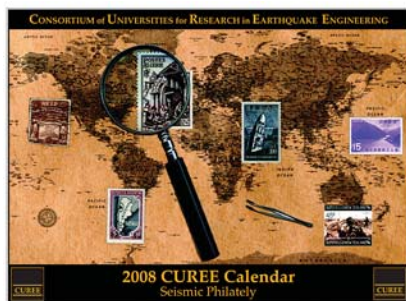
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CUREE 2008 Calendar wins recognition

The 2008 CUREE calendar featuring Seismic Philately won Second Place in EERI's Annual Graphics Competition. This full-color publication featured the collection of earthquake-related stamps and related postal artifacts of EERI Honorary member David J. Leeds. The publication is the first and only of its kind.

Next year's calendar theme takes a look at the nonstructural elements of a structure, how they can be deadly during an earthquake, and how these problems are being addressed by current NEES research.

Board Reduces CUREE Dues

At its October 23, 2009 meeting, the CUREE Board of Directors voted to reduce dues for its University Members, cutting rates roughly in half. President Andrew Whittaker commented, "The Board is aware of the tough economic times universities are going through, and although CUREE has had financial challenges in recent years, 2009 is marking a turning point in CUREE's finances. The Board adopted a reduced set of dues rates, retroactive to this year, and will re-visit the subject after three years of this new plan." The formula for dues is: \$200 for the University's institutional membership, and \$50 per individual faculty member.

The new membership rates will be reflected in the dues invoices being sent out for 2010, and will apply a credit for dues paid for 2009 that exceed the new

current rates. Dues invoices will be sent out by the end of the year. Any questions on dues invoices or past payments may be directed to our bookkeeper, Deborah Walter at "accounting@curee.org".

Reminder: Your CUREE membership entitles you to: Discounts on CUREE publications, notices on faculty position openings and funding opportunities, web publicity for Member Schools, as well as access to other Education and Outreach services.

International Initiative

A strategic plan for developing an international membership component of CUREE has been developed by Board members JoAnn Browning, Maria Garlock, and Tara Hutchinson. One element will be a web-based service to link up professors from other countries with researchers in the US.