Hurricane Katrina struck the U.S. Gulf Coast on August 29, 2005 in southern Plaquemines Parish, Louisiana, as a Category 4 hurricane. It has since resulted in over 1,200 lives lost, thousands of injuries, extensive damage to infrastructure, and disruption of economic and other social activities within the affected region and indirectly to the nation. When the final accounting takes place, this disaster will likely be found to be one of the deadliest and most costly natural disasters in U.S. history.

Much of the physical damage to infrastructure and disruption to social and economic systems resembled the aftermath of a major earthquake. Using expertise gained from reconnaissance missions following earthquakes around the world, MCEER assembled a multidisciplinary team of experts to survey the damage, primarily caused by wind, storm surge and subsequent flooding, and to examine the financial, political and social considerations that led to the decisions that hospitals and other organizations made before, during and after the hurricane from a multi-hazard perspective.

Primarily sponsored by the National Science Foundation, several reconnaissance groups were assembled and deployed to the region at three different times. The first team visited the stricken area the week after the storm, from September 6-11, 2005. The team used remote sensing technologies and the VIEWS™ system to rapidly collect video surveys of damage over large geographical areas. They focused on damage to large engineered structures, primarily bridges and commercial buildings.

Led by Gilberto Mosqueda, Department of Civil, Structural and Environmental Engineering, University at Buffalo, the team was divided into two groups. Shubharoop Ghosh, ImageCat Inc. and J. Arn Womble, Wind Engineering Research (WISE) Center at Texas Tech University, focused on collecting available remotely-sensed data of damage. Gilberto Mosqueda, Keith Porter, California Institute of Technology, Jerome O’Connor, MCEER, and Paul McAnany, a volunteer professional engineer, investigated the scope of structural damage, primarily in southern Mississippi.
Katrina Reconnaissance
(Continued from page 1)

In early October, a second team consisting of structural engineers, social scientists and remote sensing experts was deployed, to focus on the city of New Orleans. Their purpose was to examine structural damage, gather valuable data about how hospitals, transportation agencies, utility companies and building managers decided to adhere or, alter, their emergency response plans before, during and after Hurricane Katrina, and to use remote sensing technologies and the VIEWS™ system to collect video surveys of damage.

Gilberto Mosqueda and Keith Porter returned as part of this second team to investigate damage to commercial buildings and lifelines, including electric, gas and phone lines. They also interviewed utility crews and decision-makers to find out how they responded to the disaster. Daniel Hess, Department of Urban and Regional Planning, University at Buffalo and Lucy Arendt, School of Business, University of Wisconsin at Green Bay, focused on evacuation plans of various organizations and the factors leading to decisions made once New Orleans was flooded. Shubharoop Ghosh of ImageCat Inc. also returned to the area, and with Carol Hill, Louisiana State University, focused on correlating damage detected by satellites with measurements taken in the field, using digital cameras. The VIEWS™ system was again used to quickly correlate digital pictures extracted from the video with the satellite imagery. The team was in the New Orleans area from October 5-11, 2005.

A third team will travel to New Orleans on October 17-22 to study environmental and health issues. This team includes James Jensen, Department of Civil, Structural and Environmental Engineering, University at Buffalo, who will focus on water quality and wastewater treatment, and Pavani Ram, Social and Preventive Medicine, University at Buffalo, who will focus on public health issues.

The reconnaissance team’s findings are available as Preliminary Damage Reports and Preliminary VIEWS™ Deployment reports from the MCEER website at http://mceer.buffalo.edu/. The images and GPS coordinates obtained during the first deployment of the VIEWS™ system have been integrated with Google Earth, and are also available from the MCEER website.

Some of the preliminary reports are augmented with the work of a group of MCEER researchers at Cornell University. Led by Arthur Lembo, Department of Crop and Soil Sciences, the group created an Internet Map Server (IMS) application to support the reconnaissance effort. Field survey data (photos, data logs, video, textual descriptions, etc.) of the damaged areas are being integrated spatially and made available via the IMS. Specific maps for many of the sites visited by the team were created and are available in the preliminary report. MCEER Bulletin

MCEER Establishes Industrial Consortium to Investigate Seismic Behavior of Restraint and Isolation Systems for Equipment

MCEER and several industrial partners joined forces to form a new consortium to examine the seismic performance of seismic restraints and isolation devices for large institutional equipment, such as HVAC systems. The work is funded by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) through its Technical Committee 2.7. The Committee is interested in developing testing and certification standards to allow individual components of a system to be certified so that the capabilities of the entire system can be evaluated without testing it as one unit. Saeed Fathali, Ph.D. candidate in the Department of Civil, Structural and Environmental Engineering at UB, is conducting the research under the supervision of Andre Filiatrault, Professor of Civil Engineering and MCEER’s Deputy Director.

The three year effort began in April 2005, with the aim of providing guidance on the seismic design and retrofit of equipment with restraint and isolation systems obtained from shake table testing. Experimental seismic fragility curves for various limit states will also be constructed based on the test data. All the experimental work will be conducted in the Structural Engineering and Earthquake Simulation Laboratory (SEESL) at the University at Buffalo.

A Technical Oversight Committee (TOC), chaired by James A. Carlson of Omaha Public Power District, has overall responsibility for the project. Other TOC members include Patrick J. Lama, Mason Industries; Patrick C. Marks, York International Corporation Engineered Systems, North America; Greg Meeuwsen, TRANE, An American Standard Company, Acoustics & Analysis Technology; Paul Meisel, Kinetics Noise Control; and Robert Simmons, Amber/Booth Co. TOC members are volunteers, and are selected by ASHRAE. They will set goals and policy, approve research plans, budgets and final reports, and provide direct input of the project results to industry.

ASHRAE is an international membership organization founded to advance the arts and sciences of heating, ventilation, air conditioning and refrigeration and related human factors.

Shake table testing of HVAC equipment mounted on restraint systems is in progress at UB.

Continued on page 3
Strategic Partners Network Continues to Expand

MCEER welcomes four companies to its Strategic Partnerships Network. The new members add depth and breadth to the Center’s growing network of partners in business, industry and government. The following provides a brief introduction to these new partners.

Southern California Edison (SCE), one of the nation’s largest investor-owned electric utilities, joins the Strategic Partnerships Network as a Flagship Partner. The Edison International subsidiary serves more than 13 million people in a 50,000-square-mile area of central, coastal and southern California excluding the City of Los Angeles and certain other cities. Based in Rosemead, California, the utility has been providing electric service in the region for 119 years. SCE’s service territory includes approximately 430 cities and communities.

Oakland-based Rutherford & Chekene, a new Premier Partner, is one of California’s foremost engineering practices, providing structural, civil and geotechnical engineering. The firm’s staff of 75 provides multidisciplinary services that are of particular value to clients requiring cost-effective solutions to challenges involving the interface of the building with the site. The principals and senior engineers of Rutherford & Chekene are involved in ongoing research on building material characteristics and structural system performance analysis. They serve on many of the country’s most respected research councils focused on seismic design and building code development.

Trane, a business of American Standard Companies, has also joined as a Premier Partner. The company is a leading global provider of indoor comfort systems and comprehensive facility solutions. Its offerings include energy efficient heating, ventilating and air conditioning (HVAC) systems, service and parts support, sophisticated building controls and financial solutions. The company has offices, service operations, joint ventures and manufacturing facilities around the world. Trane is also represented on the Technical Oversight Committee of the MCEER-ASHRAE Consortium, a newly-formed industrial collaboration examining seismic behavior of restraint and isolation systems for equipment (see article on page 2).

NGC Testing Services, a new member at the Partner level, features one of North America’s most sophisticated and unique fully accredited testing facilities, providing full-scale fire, acoustical and structural testing at a single location. Headquartered near Buffalo, New York, NGC evaluates a wide range of materials and products, including building materials, construction systems and assemblies. Facilities include a complete acoustical testing complex and three full-scale furnaces in a 40,000-square-foot fire-testing laboratory.

Katrina Reconnaissance

(Continued from page 3)

Two Agencies Join IAB

MCEER welcomes the New York State Emergency Management Office and the Puerto Rico Highway and Transportation Authority to its Industry Advisory Board (IAB). The MCEER IAB comprises members of the Center’s Strategic Partnerships Network and representatives of strategic government agencies. Together, the membership provides guidance to MCEER research, education and outreach activities.

MCEER gratefully acknowledges the support and participation of all of its IAB member organizations.
New Jersey, like many eastern and central U.S. states, is located in a low-to-moderate seismic hazard area. Bridge engineers currently use the AASHTO seismic design and retrofit requirements, which are based on data considered to be 10 to 20 years out of date.

With the publication of the Recommended LRFD Guidelines for the Seismic Design of Highway Bridges, designers now have an alternate resource, which incorporates new research results with experiences gained from around the world in recent earthquakes.

Even though the Guidelines have not yet been adopted by the AASHTO Subcommittee on Bridges and Structures, they are available for use. One of the benefits the Guidelines provide to bridge designers in low to moderate seismic risk areas is the “No Seismic Analysis Demand” method, by which seismic analysis is not required for most regular bridges as long as capacity design principles and minimum design details are provided. Other benefits include the treatment of new seismic load resistant systems, improved soil information, mandatory identification of the seismic load path by the designer, and providing a state of the art, performance based method of designing bridges for seismic loading.

In New Jersey, designers are encouraged to compare the results of the seismic criteria that is now contained in the AASHTO LRFD Bridge Design Specifications against the criteria contained in the NCHRP Report 472, Comprehensive Specification for the Seismic Design of Bridges. If the comparative analysis reveals that the NCHRP 472 criteria results in a lesser demand to the seismic demands of a bridge design, the designer is directed to advise the department. Based on the department’s assessment of the comparative analysis, the designer may be directed to complete the design with detailing that is based on either the AASHTO LRFD results or the NCHRP results.

NJDOT compared two bridges originally designed under the seismic criteria contained in the AASHTO LRFD Bridge Design Specifications.

Both were designed under a seismic Performance Level Category of “Critical,” and it was found that the impact to the required seismic construction detailing would be less when designed to the NCHRP 472 criteria. If the bridge structures had been assigned a seismic Importance Category of “Essential,” the opposite was observed. In both cases, costs were comparable, but the newer Specifications provide more explicit insight into structural behavior and give the designer more options and tools to ensure achievement of the desired performance levels.

NJDOT is currently assessing its soil characteristics to identify or establish soil site factors for the State. It is hoped that with this identification, the State will be in a better position to decide on the adoption of the NCHRP 472 criteria.

Submitted by Jose A. Lopez, New Jersey DOT

Alaska DOT Uses New Techniques in Recommended LRFD Guidelines

The State of Alaska DOT is using some of the new techniques available in the Recommended LRFD Guidelines for the Seismic Design of Highway Bridges. Many of the advanced approaches offered in the Guidelines are particularly appropriate for design in highly seismic areas such as Alaska.

As recommended by the Guidelines, Alaska Department of Transportation and Public Facilities (DOT&PF) bridge engineers commonly use cracked section properties in considering the rigidity of bridge piers (contrary to the current AASHTO Division 1-A, which uses gross properties), and find the ability to use soil pressures to resist seismic loads at the abutments useful for certain types of projects. Pile bents with concrete filled tubes are commonly used in Alaska, and the LRFD Guidelines contain the first provisions for the use of these tubes.

Design issues such as soil-structure interaction, liquefaction, structure displacement verification, P-Delta limitations, and short-period structure response adjustments are also addressed by the Guidelines. These and other state-of-the-practice design issues are addressed in the LRFD Guidelines and should be considered by bridge engineers until AASHTO adopts new seismic design provisions.

Submitted by Elmer E. Marx, P.E., Alaska DOT&PF

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1. The NCHRP 472 report summarizes the methodology used to develop new specifications, which are described in the four-part ATC-MCEER joint venture publication, “Recommended LRFD Guidelines for the Seismic Design of Highway Bridges.” The project was funded by the National Cooperative Highway Research Program under Project 12-49. The Guidelines are available for purchase from MCEER or ATC. The NCHRP report can be downloaded from http://trb.org/publications/nchrp/nchrp_rpt_472.pdf
FHWA Funds Research on Earthquake and Multi-Hazard Protection of Highway Bridges

New research is underway by MCEER investigators on earthquake and multiple hazard protection of bridges. The project is targeted to support the long-term bridge safety, reliability, and security, research and development program developed by the Federal Highway Administration (FHWA). Research is focused on four major areas:

- Multiple Hazard and Extreme Events for Structure Design of Highway Bridges
- Seismic Behavior and Design of Accelerated (or Modular) Bridge Construction
- Advanced Technology for Seismic Protection of Highway Bridges
- Technology Transfer, including the 5th National Seismic Conference (see page 12 for announcement), and international workshops, conferences and cooperative program enhancement

The recent professional development seminar on Accelerated Bridge Construction (see review below) is part of the second area, where engineering practitioners came to provide their input to the research team, and then shared their expertise with the broader engineering community.

The project advisory panel, chaired by FHWA’s Dr. W. Phil Yen, held its first meeting in Washington D.C. August 11, 2005. The Panel’s mission is to provide research direction and emphasis, help ensure that research results satisfy the needs of end users and bridge designers, recommend individuals to serve as task advisors/partners, and other issues as required.

**Project Advisory Panel**

Harry Capers, New Jersey DOT  
George Christian, New York DOT  
Ian Friedland, FHWA  
Firas Ibrahim, FHWA  
Roy Imbsen, Imbsen and Associates  
Tim Ingham, T.Y. Lin International  
John Kulicki, Modjeski & Masters  
Joe Penzien, IEC, Inc.  
Rich Pratt, Alaska DOT  
Kevin Thompson, Caltrans  
Ed Wasserman, Tennessee DOT  
W. Phil Yen, FHWA, COTR and Acting Chairman  
George Lee, MCEER, Project Director  
Jerome O’Connor, MCEER Project Manager

**Accelerated Bridge Construction Seminar Attracts over 250**

Over 250 people viewed the professional development seminar Accelerated Bridge Construction on September 16, 2005 at the University at Buffalo, either in person or by live video conference and webcast. The seminar was organized by MCEER, FHWA and the University at Buffalo’s School of Engineering and Applied Sciences, and supported by three corporate sponsors, the engineering firms Bergmann Associates, LiRo Engineers and Hatch Mott MacDonald.

The presenters, Lloyd Wolf of the Texas DOT, Harry Capers of the New Jersey DOT and Bill Halsband of Mammoet, discussed significant changes in the bridge construction industry, giving a general overview of the state of the practice and discussing the techniques that have worked and some of their pitfalls. Their presentations, available for download at [http://mceer.buffalo.edu/education/webcast/Accelerated_Bridge_Construction/Default.asp](http://mceer.buffalo.edu/education/webcast/Accelerated_Bridge_Construction/Default.asp), were based on actual projects throughout the U.S. as well as internationally.

Those who attended in person were invited to a “Meet the Speakers” lunch and tour of the UB-NEES laboratory facilities. Employees from NYSDOT in Albany and Caltrans in Sacramento viewed the seminar by videoconference. The seminar was also available to the public via live webcast.
Remote Sensing for Disaster Response Workshop Focuses on Multi-Hazard Applications

The Third International Workshop on Remote Sensing for Disaster Response took place at Chiba University, Japan, on September 12-13, 2005. Hosted by Professor Fumio Yamazaki, the event was sponsored by Chiba University, MCEER, the EERI Learning From Earthquakes Program, and the University of California at Irvine (UCI).

More than 30 invited participants from the US, Europe and Asia attended the workshop. Papers had a multi-hazard focus that spanned earthquake, tsunami, wildfire and landslide/debris flow, and hurricane. The Day 1 keynote address by Professor Masanobu Shinozuka, MCEER Executive Committee member and Distinguished Professor and Chair of UCI’s Department of Civil and Environmental Engineering, endorsed this multi-hazard theme, with his overview of the ‘Application of Remote Sensing Technology in Natural Hazard Assessment.’ The Day 2 keynote address by Professor Shun’ichi Koshimura of Tohoku University provided an impressive overview of how ‘Remote Sensing, GIS and Modeling Technologies Enhance the Synergistic Capability to Comprehend the Impact of the Great Tsunami Disaster.’

Presentations during the workshop sessions addressed technical, theoretical, and applied remote sensing research being conducted for events including: the 2001 Arequipa (Peru), 2003 Bam (Iran), and 2004 Niigata (Japan) earthquakes; the Indian ocean tsunami; and hurricane Katrina. Research areas included the implementation of high- and moderate-resolution imagery for post-disaster damage assessment and recovery monitoring, the development of disaster management decision support systems, the implementation of the ImageCat/MCEER VIEWS™ field reconnaissance tool, and furnishing risk assessment models with remote sensing-derived hazard and exposure data.

Dr. Rick Watson from the University of New Mexico Center for Rapid Environment and Terrain Evaluation (CREATE) led an animated group discussion on the emerging research needs for disaster response. Findings were integrated into the broader workshop resolutions presented by Ron Eguchi (ImageCat) and Professor Fumio Yamazaki, which include: the establishment of a “benchmark” dataset for comparing and validating emerging approaches; and increased outreach by participants to involve the international emergency response community.


The Fourth International Workshop is planned for September 2006, and will take place in the UK.

Submitted by Beverley Adams, ImageCat, Inc.
Senior undergraduate mechanical engineering student Thomas Liebner completed a project this summer to evaluate the energy dissipation capacity losses from the deadzone in viscous fluid dampers. He worked under the supervision of MCEER’s George Lee and Mai (Mike) Tong of the Department of Civil, Structural and Environmental Engineering at the University at Buffalo.

The project formally began in January 2004, soon after Tom was inducted into the Tau Beta Pi Engineering Honor Society. Dr. George Lee was the speaker at the induction dinner, and his presentation was on using active dampers for mitigating earthquake vibrations. Tom was inspired by Dr. Lee’s presentation, and asked how he could become involved. That simple inquiry led to a year and a half project researching passive fluid dampers.

Tom first spent about six months working with Dr. Tong to develop computer models to imitate the behaviors of a non-ideal damper device. After analyzing his simulation results, he presented an initial report which was followed by actual experimentation in the Structural Engineering and Earthquake Simulation Laboratory (SEESL) at UB in the spring of 2005.

According to Tom, “we were able to perform a simple steady state test of the fluid damper under a cyclic load. Although we were unable to test all of the characteristics of the damper, the results appear to confirm our initial assumption that the deadzone in fluid dampers does not result in a significant loss of energy dissipation.”

Tom has been accepted into Penn State’s Ph.D. candidate program in mechanical engineering. He said that even if he is not directly involved with earthquake research, his “experience working with MCEER has provided valuable insight into the research process which will be invaluable to my graduate career. It was a wonderful experience, and I had a great time working with Dr. Mai Tong.”

The research was partially supported through a Zimmer Scholarship, which is a special grant allocated to mechanical engineers to encourage undergraduate students to pursue research. The research must be overseen by an advisor, although the area of research is chosen by the student.

A paper reporting the results of the research, entitled “Earthquake Energy Dissipation: Evaluating Capacity Losses from the Deadzone in Linear and Sublinear Fluid Dampers” and co-authored with Mai Tong, is currently being prepared.

MCEER Information Service Offers eNews

MCEER’s Information Service (IS) offers a unique web-based newsletter, eNews, devoted to earthquake engineering and natural disaster mitigation content. The resource includes reviews of current events and literature in seismology, earthquake and structural engineering, hazards mitigation, and disaster management. It also includes news of the profession, calls for papers, book reviews, continuing education opportunities, seminars and meetings, government updates, and an extensive collection of tables of contents of relevant journals.

eNews replaces the former IS News, and is updated monthly. An e-mail notification is sent bimonthly, notifying patrons that the free PDF version is available and ready for download. Under the guidance of Sofia Tangalos, graduate students Dave Cavanaugh and Amit Sharma implemented the redesign effort. Please visit http://mceer.buffalo.edu/infoService/enews/ to view eNews and sign-up for the e-mail notification.
2005 Tri-Center Field Mission to Greece

Thirteen Ph.D. students associated with the three earthquake centers, MAE, PEER and MCEER, visited Greece as part of the 2005 Tri-Center Field Mission. Held July 5-13, 2005 and sponsored by NSF, this year’s trip highlighted the contrast between ancient and modern technologies. Participants toured earthquake resistant structures ranging in age from 1 year to over 3000 years, primarily in the cities of Athens and Patras.

The team, led by Professor Reginald DesRoches (MAE), included four MCEER SLC members: Swagata Banerjee (UC Irvine), Dan Fenz (University at Buffalo), Marlon Hill (Florida A&M) and SLC Chairman Mike Pollino (University at Buffalo).

The group’s first visit was to Patras, where they toured the recently completed Rion-Antirion Bridge and viewed the installation of massive fluid viscous dampers inside the bridge piers. They also visited the University of Patras laboratory facilities, listening to Professor Nicos Makris’ research on the seismic resistance of ancient Greek columns and viewing his efforts to reconstruct several columns in an ancient temple at Nemea. They also visited seismically isolated railway bridges over the Corinth Canal.

In Athens, the group gained an appreciation of ancient Greek technology through visits to the Parthenon, the National Archeological Museum and shake table facilities at the National Technical University. There, Professor Michael Constantinou, Department of Civil, Structural and Environmental Engineering, University at Buffalo, showed them the Mechanism of Anti-kithira, a 2100 year old mechanical computer. Later, Dr. Constantinou described the changes in building practice in typical urban reinforced concrete buildings from moment frame systems to shear wall type structures after a major earthquake struck Athens in 1999.

Students will prepare reports on the trip. More information and additional photos are available from the SLC website at http://mceer.buffalo.edu/SLC. The 2006 Field Mission is being planned by MCEER.

Submitted by Dan Fenz, University at Buffalo

2005 REU Symposium Held in Reno

At the 2005 Annual Tri-Center Earthquake Engineering Symposium for Young Researchers, held August 11-14 in Reno, Nevada and organized by MAE, twenty-two undergraduate students, sponsored by MCEER, PEER, and MAE, presented research conducted as part of the Research Experiences for Undergraduates (REU) 10-week summer program.

MCEER sponsored nine REU students this year. Six of them completed their programs at the University at Buffalo (UB): Kelly Doyle from the University of Nevada, Reno; Elizabeth Goodwin from Texas A&M; Charles Ekiert and David Keller, both from UB; Tyler Ross from the University of Utah; and Richard Wood from Clarkson University. Three additional MCEER-sponsored students remained at their home institutions: Waleed Barnawi at Florida State University, Vicente Ruiz at Florida A&M and Said Sadek at the City College of New York. Both Waleed and Vicente traveled to Japan for a portion of their research work.

Symposium activities included tours of the Nevada Seismological Lab and the NEES Equipment Site, both at the University of Nevada, Reno. The students viewed a successful five-year, $10M seismic retrofit project at the Mackay School of Earth Sciences and Engineering and visited the engineering lab and shake table while testing was taking place. They also participated in a special activity focused on ethical considerations associated with engineering projects led by guest speaker, Dr. Charles Harris.

Students participating in the program are encouraged to pursue graduate studies in their field of interest. Symposium Proceedings will be available from MAE at http://mae.ce.uiuc.edu.
Florida A&M Team Takes Second Place at PEER Competition

The Florida A&M University Undergraduate Seismic Design team of Andrea Jones (Captain), Wally Barnawi, Vince Ruiz, Andrea Smith, and Karla Villarreal represented MCEER at the Second Annual PEER Undergraduate Seismic Design Competition, where they placed second overall. The FAMU team placed first in the presentation and workmanship categories. The PEER Competition was held April 29, 2005-May 1, 2005 at the University of California at Berkeley. Five other undergraduate teams participated in the competition. Oregon State University; the University of California at Berkeley; the University of California at Davis (two teams); and the University of Illinois at Urbana-Champaign (MAE representative) were the other participants.

Submitted by Marlon Hill, Florida A&M University

Gordon Warn, a Ph.D. student at the University at Buffalo, is working on a research project titled “Impact of Axial Load Variations on the Response of Isolated Bridges” under the supervision of Professor Andrew Whittaker. Gordy, who anticipates graduating in June 2006, decided to study structural engineering and seismic isolation after observing large-scale earthquake simulation testing of a structure outfitted with seismic isolation bearings as an undergraduate at UB.

“After witnessing the effectiveness of this technology, I decided to focus on this area of research while in graduate school,” he explains.

Gordy, an active SLC member over the years, plans to pursue an academic position after graduating. He is originally from Rochester, New York and when not studying, enjoys snowboarding, cycling and travel.

MCEER SLC Members Reach Out to Community

On June 17, 2005, members of the State University of New York Louis Stokes Alliance for Minority Participation (SUNY LSAMP) Program visited the Department of Civil, Structural, and Environmental Engineering at UB for a guided tour of the Structural Engineering and Earthquake Simulation Laboratory and a presentation given by SLC Chair, Michael Pollino. The SUNY LSAMP students consisted of undergraduate engineering majors from SUNY schools across the state. Following the tour, a presentation entitled “Engineering Graduate School and MCEER Research” was given by Michael Pollino. An open discussion was then held with the students to answer questions regarding applying to graduate school, academic coursework, research, etc. More information, including the presentation, can be found on the SLC website at http://www.mceer.buffalo.edu/slc.

Submitted by Michael Pollino, University at Buffalo

On February 14, 2005, former SLC Chair Jeff Berman visited Our Lady of the Sacred Heart School in Orchard Park, New York to give a presentation on tsunamis and earthquakes to the fifth grade classes. Jeff briefly introduced fault geology and how earthquakes cause tsunamis. This led into a discussion on earthquakes that included videos of structural testing from the Structural Engineering and Earthquake Simulation Laboratory at UB. Jeff finished his presentation by explaining MCEER and other research institutions are working to decrease society’s vulnerability to tsunamis and earthquakes. He then answered many very good questions which displayed the students’ interest and excitement for the subject.

Submitted by Jeff Berman, University at Buffalo

Members of the FAMU team pose with their model. Shown (from left) are Andrea Jones, Andrea Smith, Wally Barnawi and Vince Ruiz

Vince Ruiz, Andrea Smith and Andrea Jones prepare the structure for its seismic performance evaluation

Jeff Berman discussed earthquakes and tsunamis with a class of fifth grade students.
MCEER Investigators Receive CERF Award for Innovation

Long time MCEER investigators Michael Constantinou and Andrei Reinhorn, both of the Department of Civil, Structural and Environmental Engineering at the University at Buffalo, received this year’s CERF Charles Pankow Award for Innovation recognizing collaborative design, development and construction efforts. The two professors worked with WSP Cantor Seinuk, Enrique Martinez Romero S.A. and Taylor Devices Inc., all of which shared in the award, to develop a new system for bracing building walls. They applied the system to Torre Major, the tallest office tower in Mexico City. The new system should help the tower to withstand an earthquake and become operational again almost immediately afterwards.

CERF, the Civil Engineering Research Foundation, is an affiliate of the American Society of Civil Engineers and works with the construction, engineering, design and environmental industries to promote innovation and improve productivity. The Pankow award goes to an organization involved in a collaborative effort that demonstrates innovation that’s transferred into practice, increasing productivity and performance.

Shinozuka Appointed to NRC Committee

Professor M. Shinozuka, MCEER Executive Committee member and long time researcher, was appointed to the NRC Committee on “Enhancement of Crisis Management: Improving the Use of Information Technology in Disaster Preparedness, Response, and Recovery.” The activity of this committee is within the domain of National Academies’ Computer Science and Telecommunications Board (CSTB). Professor Shinozuka is the only member representing civil engineering. The 14 members of this committee, which includes Ellis Stanley, chair of MCEER’s Industrial Advisory Board, all have IT experience related to crisis management. CSTB is “where the nation turns for independent and informed assessments of computing, communications, and public policy. Composed of leaders in information technology and complementary fields from industry and academia, CSTB is unique in its scope and its interdisciplinary approach to technical, economic, social, and policy issues.” His appointment was effective July 1, 2005.

John Kulicki Receives Lifetime Service Award

John Kulicki, Chair of MCEER’s Highway Seismic Research Council, received a lifetime service award in recognition of his work, particularly for his efforts in working toward AASHTO LRFD implementation. The award was presented by Bridge Engineering Association Chairman Khaled Mahmoud, Ph.D., P.E., at the New York City Bridge Conference on September 12, 2005. More information can be found at www.bridgeengineer.org.

ImageCat Wins 2005 Geospatial Solutions Applications Contest

The MCEER team at ImageCat, Inc. placed first in the 2005 Geospatial Solutions Applications Contest for their use of the VIEWS system following Hurricane Charley. The contest honors those who have used geospatial technologies in innovative and creative ways. Visit the Geospatial Solutions website at http://www.geospatial-online.com/geospatialsolutions/article/articleDetail.jsp?id=172058&pageID=1 for a description of the winning project.

MCEER Movers & Shakers

M. Constantinou

A. Reinhorn

M. Shinozuka

J. Kulicki

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100th Anniversary Earthquake Conference

Managing Risk in an Earthquake Country

The anniversary of the 1906 Earthquake is a valuable opportunity for earth scientists, engineers, policy makers, emergency responders and planners to take stock of how well we are protecting our communities and mitigating the dangers associated with earthquakes. Please join us for the premier disaster mitigation conference in 2006.

April 18 - 22, 2006
San Francisco, California
Moscone Center

www.1906eqconf.org

2006 Annual Meeting

February 9-11, 2006
Washington, DC

http://mcee.buffalo.edu

MCEER
Multidisciplinary Center for Earthquake Engineering Research

Staff News

Jill Tarabula has joined MCEER as Information Specialist with the Information Service (IS) office. She completed her MLS degree in May 2005, and was the Reference Research Assistant at IS last year while attending classes at the University at Buffalo. Jill will primarily be responsible for providing reference service to our patrons using a variety of resources, both electronic and print. She also manages our library collections, contributes to the newsletter, and reviews the Web site and handouts for revisions.

Hector Velasco, MCEER’s Graphic Media Specialist and Scientific Illustrator, was honored for 30 years of service at the University at Buffalo at a reception held on May 24, 2005. The reception, held for nearly 100 faculty and staff members invited for completing 40 and 30 years of service, was hosted by UB President John B. Simpson and Provost Satish K. Tripathi. Hector was also honored at a Service Recognition Ceremony by the School of Engineering and Applied Sciences (SEAS) on June 13, 2005.

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CERF, the Civil Engineering Research Foundation, is an affiliate of the American Society of Civil Engineers and works with the construction, engineering, design and environmental industries to promote innovation and improve productivity. The Pankow award goes to an organization involved in a collaborative effort that demonstrates innovation that’s transferred into practice, increasing productivity and performance.

Shinozuka Appointed to NRC Committee

Professor M. Shinozuka, MCEER Executive Committee member and long time researcher, was appointed to the NRC Committee on “Enhancement of Crisis Management: Improving the Use of Information Technology in Disaster Preparedness, Response, and Recovery.” The activity of this committee is within the domain of National Academies’ Computer Science and Telecommunications Board (CSTB). Professor Shinozuka is the only member representing civil engineering. The 14 members of this committee, which includes Ellis Stanley, chair of MCEER’s Industrial Advisory Board, all have IT experience related to crisis management. CSTB is “where the nation turns for independent and informed assessments of computing, communications, and public policy. Composed of leaders in information technology and complementary fields from industry and academia, CSTB is unique in its scope and its interdisciplinary approach to technical, economic, social, and policy issues.” His appointment was effective July 1, 2005.

John Kulic...
New Technical Reports

- **Proceedings of the Third PRC-US Workshop on Seismic Analysis and Design of Special Bridges**
  Edited by L.C. Fan and G.C. Lee, 4/20/05, MCEER-05-0003, 268 pages, $35.00

  The proceedings are the result of the third in a series of international workshops on seismic analysis and design of special bridges collaboratively arranged by MCEER and the State Key Laboratory for Disaster Reduction in Civil Engineering, Tongji University, Shanghai, China. The workshop series is sponsored by the Federal Highway Administration and the National Science Foundation of China. The workshop themes include bridge fragility analysis, construction materials for seismic resistant structures, near-fault ground motion, comparison of seismic bridge codes, nonlinear isolation bearings, test methods for bridge piers, risk assessment procedures, and case studies. This volume contains 20 papers addressing a wide range of topics, and includes the workshop agenda and list of participants.

  For more information, visit the MCEER website at: [http://mceer.buffalo.edu/publications/workshop/05-0003/default.asp](http://mceer.buffalo.edu/publications/workshop/05-0003/default.asp).

- **Approaches for the Seismic Retrofit of Braced Steel Bridge Piers and Proof-of-Concept Testing of an Eccentrically Braced Frame with Tubular Link**
  By J.W. Berman and M. Bruneau, 4/21/05, MCEER 05-0004, 168 pages, $30.00

  This report identifies, categorizes, and qualitatively compares several options for the seismic retrofit of truss braced steel bridge piers. Through these comparisons, two promising strategies that lacked fundamental research necessary for implementation were identified: laterally stable links for eccentrically braced frames, and design of supplemental retrofit systems for protection of existing elements. An initial theoretical and experimental investigation on the first topic, using links with hybrid rectangular cross-sections to achieve the desired performance, is described. Basic fractographic analysis of the failure surface of the link flange indicated a combination of ductile cyclic crack propagation followed by brittle fracture through the remaining material. Fracture was found to initiate at the toe of stiffener welds. Finally, the energy dissipation of the link was shown to be stable with increasing energy dissipation per cycle up to failure.

- **Seismic Safety in California Hospitals: Assessing an Attempt to Accelerate the Replacement or Seismic Retrofit of Older Hospital Facilities**
  By D.J. Alesch, L.A. Arendt and W.J. Petak, 6/3/05, MCEER-05-0006, 104 pages, $25.00

  This is the second of three reports to be published resulting from a project on overcoming obstacles to implementing hazard mitigation policies against extreme events. This report focuses on the development and implementation of a California law requiring enhanced seismic safety in acute care hospitals built before 1973, known as SB 1953. It traces the history of California’s efforts to enhance seismic safety by retrofitting buildings through legislation, leading up to the passage of SB 1953. It traces the history of California’s efforts to enhance seismic safety by retrofitting buildings through legislation, leading up to the passage of SB 1953. It then outlines the development of the provisions of SB 1953, and describes their impact and extent on the healthcare industry. Finally, the various responses of the healthcare industry are discussed. This case study will help to identify important insights into the implications of how public regulatory policy is designed, the importance of how programs intended to implement policy are designed, the importance of context to implementation, the unanticipated consequences of policy implementation, and how organizations that are impacted by the policies respond to them.
Fifth National Seismic Conference on Bridges and Highways

MCEER is organizing the Fifth National Seismic Conference on Bridges & Highways, to be held September 18-20, 2006 in San Francisco. It is the fifth in a series of biennial workshops sponsored by the Federal Highway Administration focusing on the highway infrastructure. With the theme of “Innovations in Earthquake Engineering for Highway Structures,” the conference’s purpose is to increase awareness of seismic and geological hazards and to enhance the technical expertise of engineering professionals so they can mitigate the risk of failure or damage to our bridges and highways.

More information, including the preliminary program, call for abstracts, discussion topics and registration information, is available from the conference website at http://mceer.buffalo.edu.

Save the Date

MCEER’s 2006 Annual Meeting will be held February 9-11, 2006 in Washington, DC

Visit http://mceer.buffalo.edu for more information

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