

# CEE

Department of Civil and Environmental Engineering  
University of Illinois at Urbana-Champaign  
*Summer 2009*



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## CEE

CEE is published twice a year for alumni and friends of the Department of Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign.

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Front cover: ©spxChrome/istockphoto.com



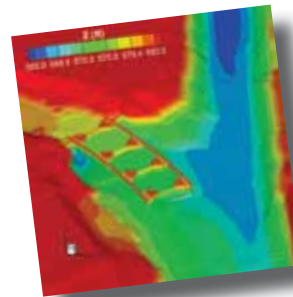
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## Amr Elnashai named new Head of CEE

Professor Amr S. Elnashai of the structures group is the new Head of CEE. Elnashai replaced Professor Robert H. Dodds Jr., who stepped down in June to return to research and teaching.

"I am looking forward to serving the department, taking advantage of national and international opportunities, and addressing the challenges posed by the economic climate and the evolving requirements for educating the engineers of the future," Elnashai said.

"Bob Dodds has set exceptionally high standards with regard to all aspects of leading a top-ranked academic department. I can only strive to maintain these high standards."

Elnashai is the William J. and Elaine F. Hall Endowed Professor in Civil and Environmental Engineering and a Fellow of the United Kingdom Royal Academy of Engineering. He is Director of the National Science Foundation (NSF) Mid-America Earthquake Center and the NSF Network for Earthquake Engineering Simulation facility at Illinois, and Director and Chair of the College of Engineering Council on Global Engineering Initiatives. He will step down from these positions to concentrate on departmental affairs.

A graduate of Cairo University, Elnashai obtained his M.Sc. and Ph.D. from Imperial College, University of London, UK. Before joining CEE in 2001, he was Professor of Earthquake Engineering and Head of Section at Imperial College.

"Amr Elnashai is a superb scholar and researcher, and an accomplished academic leader," Dodds said. "CEE is fortunate to have such an outstanding member of our faculty step forward into this key leadership position."

Dodds, who has served as Head for five years, will spend this coming academic year in collaborative research at the National Aeronautics and Space Administration Marshall Space Flight Center in Huntsville, Ala., and at the Oak Ridge National Laboratory in Oak Ridge, Tenn.

Elnashai will be the fourteenth Head since the department's founding in 1871. ■



*Professor Robert H. Dodds Jr., outgoing department head, left, with Professor Amr S. Elnashai, CEE's new Head.*

## Passing the reins

BY ROBERT H. DODDS JR. (MS 75, PhD 78)  
M.T. GEOFFREY YEH ENDOWED CHAIR IN CIVIL ENGINEERING

The past five years almost seem a blur and it is time to pass on the reins of leadership in CEE to Professor Amr Elnashai. It has been the greatest pleasure of my career to serve as the Head of our outstanding department. I remain in awe of the relatively very few faculty before me who have held this position, and who have led our department successfully since its founding in 1871.

Over the past five years, the national spotlight on our profession increased sharply. This has produced a near doubling in the number of our CEE undergraduate students with another large freshman class entering this fall. CEE at Illinois continues to attract the brightest young people from Illinois, our nation and worldwide to prepare for entry into our profession. We are especially pleased to see the increasing number of women students entering our program (33 percent of the incoming freshman class). CEE has a young, creative and exceptionally entrepreneurial faculty whose talents have raised annual research funding to an all-time record high.

Professor Elnashai assumed office this June and will carry on the great traditions of leadership we enjoy at Illinois. Amr is a superb scholar, thinker, researcher and teacher. He has enjoyed great success in research leadership and research administration at Illinois. These experiences will be invaluable in the coming years of leadership. Amr has been a valued, trusted colleague and personal friend since he joined the department almost 10 years

ago. His many years of living in London while first a student and then a faculty member at Imperial College left him with a wonderful, if somewhat British, sense of humor. I still occasionally require an explanation from him!

As you will read in Amr's first message as the new Head, he has exciting plans for programs to continue development and growth in education, research, and international outreach. He has a clear and compelling vision not only for CEE at Illinois but for our profession as well. Amr has extraordinary passion for the education of civil and environmental engineers to reflect a global perspective, enabling development of synergistic, multi-disciplinary teams to address wide-ranging infrastructure and environmental issues. He is already leading successful new efforts in this direction for the entire College of Engineering.

I ask that each of you join me in welcoming Amr as the 14th Head of the department. With the economic challenges facing our state and university, a strong department of faculty, staff and alumni united in support of the Head will be especially critical to our success in the coming years.

In closing, let me thank all the CEE faculty, staff, and alumni who have supported my tenure as the Head. I could not have asked for a more wonderful group of colleagues and friends. I will be on sabbatical this coming year and look forward to being back full time as a professor and teaching in CEE in the fall 2010 semester.

Have a terrific summer and go Illini! ■

# Uncharted waters

BY AMR S. ELNASHAI, PROFESSOR AND HEAD

WILLIAM J. AND ELAINE F. HALL ENDOWED PROFESSOR IN CIVIL AND ENVIRONMENTAL ENGINEERING

The true strength of an academic department is manifested by its broadly based talent and its ability to regenerate and reinvent itself to respond to prevailing challenges and to take advantage of transient opportunities. No other department at Illinois or elsewhere has shown more resilience and regeneration capabilities than CEE at Illinois. I therefore view the department head position at Illinois as part of an impressive whole, a "first amongst equals" and an implementor of internally generated and widely supported policies.

When I was contacted by the Dean of the College of Engineering regarding the outcome of the selection process for the new department head, I was as excited as concerned, in spite of mulling over the issue for several months. Leading CEE at Illinois is an enormous honor, as well as a grave responsibility. The responsibility appears even graver when I consider how high the bar was set by my dear friend and predecessor, Professor Dodds. Bob will be missed as a department head no doubt and also as a friend and a colleague during his well-deserved sabbatical.

During the long and demanding search process, I have shared initial ideas on education, research, outreach and development with the committee, the Dean's team, the leadership of the CEE Alumni Association, the staff and the faculty. I would like to share some of these ideas with the wider and varied community, the readership of our CEE magazine. It has become clear that both our undergraduates and their potential employers expect us to reassess some aspects of the undergraduate curriculum both in content and in educational model. It is therefore necessary to accelerate the process that has recently started in our department, in association with the College of Engineering iFoundry, to re-

view our curriculum, in order to provide a systems approach to problem solving and to inject enthusiasm about the role of civil and environmental engineering in serving society. We should emphasize that our role is to oversee urban development and the achievement of economic prosperity while protecting and enhancing the natural environment for future generations. We would like to provide our students with a systems framework where all the various curricular components fit to form the exciting mosaic that renders the study of our discipline so enriching and fulfilling. We should also extend such concepts to the graduate program and strive to enhance the appreciation of our graduate students for the synergies among the various sub-disciplines in civil and environmental engineering, as well as entice them to seek integrative opportunities with other disciplines in engineering, physical and social sciences.

The resourcefulness of our faculty in developing new research and application initiatives and transforming them into funding opportunities is second to none. I envision that the department will continue to facilitate such individual and "area" initiatives and add new avenues to pursue major opportunities in teaching and in research, nationally and internationally—opportunities that require resources beyond those that are readily available to individual faculty members. We will enhance by various means our international communications and outreach to a wide range of potential partners and stakeholders, while consolidating our national lead in service to the profession, education and research.


The foundation supporting our department and its academic excellence is our staff. They are the unsung heroes behind major successes. The stability of our financial and administrative systems is the envy



of many departments, thanks to our staff. We want to continue to recognize their contribution, provide them with every possible professional development opportunity and reaffirm how appreciated their contribution is.

The past few years have witnessed major progress in the development activity and its positive interaction with the communications group. The CEE magazine, the website and the impressive increase in our income from fundraising are testaments to the success of the expansion of our development and communications teams. We will do more. We will strengthen the development team with resources to enhance communications with our more than 12,000 alumni, as well as with companies and professional associations.

Of course, we have challenging and uncharted waters ahead of us because of both the economic environment and the evolving requirements from a top-ranked academic department in the global market place. But we are capable of navigating them, and charting a course on an even keel toward our goals of maintaining and enhancing our national standing, expanding our international engagement, and educating systems-oriented, globally-aware and multi-disciplinary-savvy students. While we address these challenges and take advantage of opportunities, we also want to continue to value personal contributions, celebrate our excellence, and consolidate our department-wide social fabric.

To close, I feel honored to have been appointed as the 14<sup>th</sup> Head of the Department of Civil and Environmental Engineering, and I look forward to working with our superb faculty, staff, students, alumni and supporters to secure an even brighter future for CEE at Illinois. 

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# New beginnings

BY KENNETH M. FLOODY, P.E., S.E. (BS 83)

PRESIDENT, CIVIL AND ENVIRONMENTAL ENGINEERING ALUMNI ASSOCIATION BOARD OF DIRECTORS

A new scholastic year will begin in just a few weeks and the College Engineering will be welcoming the incoming Class of 2013. The start of the school year marks a new beginning for the incoming freshmen as they arrive on campus to begin their transformation into tomorrow's engineers.


New beginnings are also underway in CEE as Professor Amr Elnashai begins his term as department head. I encourage all CEE alumni to join me in welcoming Professor Elnashai to his new position. I recently had the pleasure, along with fellow CEEAA board members John Carrato and Tracy Lundin, to hear Professor Elnashai outline his vision for the department.

Much of the history of civil engineering can be succinctly described as our attempt at controlling nature; to span canyons, dam rivers, build towers stretching toward the heavens and to tame the natural environment for our needs. Over the past decade, the concept of sustainable design has gained considerable momentum and has changed how engineers view our role in society. This change is reflected in what Professor Elnashai recognizes as the mission of civil and environmental engineers. In addition to the historical role of "serving the population's needs and aspirations for a modern built environment," he perceives the need for a "balance between economic development and preservation of the natural environment."

According to Professor Elnashai, the problems facing engineers of the twenty-first century will require "the expertise of individuals with different perspectives from different disciplines and often from different nations, working together." Preparing the next generation of engineers for these challenges requires an emphasis on systems thinking where "multidis-

ciplinary teams work collaboratively" to solve problems.

As the next head of the department of Civil and Environmental Engineering, Professor Elnashai will apply his vision to the task of preparing the students of today for the challenges of tomorrow. All one need do to understand the forces currently shaping the education requirements of CEE graduates is look at their employment destinations. There once was a time when the majority of CEE graduates found employment in Chicago, or more broadly throughout the Midwest. Today, University of Illinois CEE graduates are employed worldwide on projects of ever increasing size and complexity. The need for a multidisciplinary "systems" approach to educating CEE students has never been more appropriate. To meet this need, Professor Elnashai seeks to develop "exciting integrated curricula that respond to the new requirements of a global economy."

As he faces the challenges of preparing CEE graduate and undergraduate students for the future, Professor Elnashai will also be struggling with the challenges of the past, namely declining funding from the state, exacerbated by the potential for declining research and gift funds resulting from the present economic environment. I am as confident as ever that the CEE alumni will continue their strong support for the department and its new department head. With our continued support, the department of Civil and Environmental Engineering will maintain what Professor Elnashai values as our "national and international reputation for education, research and contributions to the profession." As the old French proverb states, the more things change, the more they stay the same. 



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# Yeh Student Center update

The design is complete for the M.T. Geoffrey Yeh Student Center in Newmark Laboratory, and the project has entered the bidding process. Pending approval by the University of Illinois Board of Trustees in September, construction on this long-awaited classroom addition to Newmark Civil Engineering Laboratory will begin in the fall with work expected to take less than a year.

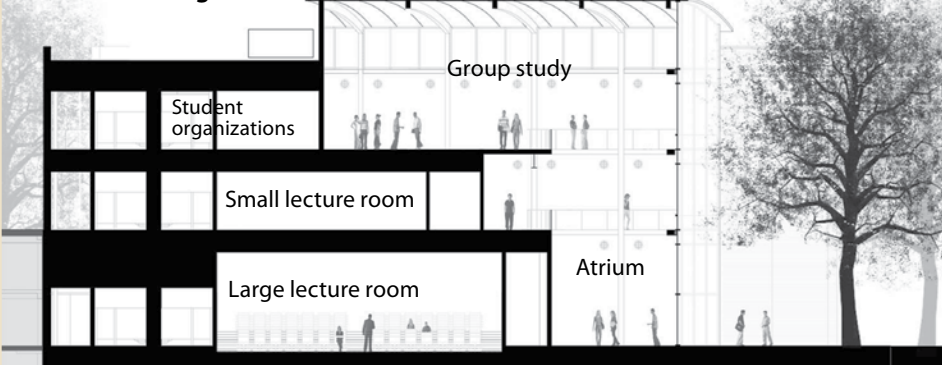
The addition will be named for alumnus M.T. Geoffrey Yeh (BS 53) in honor of his \$4 million lead gift. Additional funding from alumni and friends of the department is expected to total \$3 million; in early June the department was still approximately \$750,000 away from this goal. Contributions of \$1 million each from the College of Engineering and CEE will constitute the remainder of the funds necessary to complete this \$9 million project.

Chicago-area design firm Teng & Asso-

*Continued on page 10*



Section looking north



I consider it a privilege to be able to contribute my part to the extension of Newmark Lab as a way of expressing my gratitude and repaying the department for the education I received.



## NATHAN M. NEWMARK CIVIL ENGINEERING LABORATORY



By Alfredo H.-S. Ang (PhD 59)

The University of Illinois at Urbana-Champaign will always be close to our hearts. My wife, Myrtle Mae, and I went to Urbana-Champaign from the Philippines in 1955 for my graduate studies in structural engineering and structural mechanics. At that time, this was financially possible for me only through a research assistantship offer from Professor Nathan M. Newmark. On this basis, I was able to pursue my Ph.D., which I received in 1959. I remained on the faculty of the Department of Civil and Environmental Engineering, starting as Assistant Professor and rising to full Professorship in 1965 until I retired in 1988 as Emeritus Professor.

The U of I provided me the opportunity to build my career in academia; besides teaching and research in my field of interest, I also had the opportunity to do significant consulting, first with Professor Newmark on defense-related work, and later on my own in the field of risk/reliability and probability-based design of engineering systems. My colleagues professors Wilson Tang and Y.K. Wen and I developed and pioneered some of the significant advances in the field of structural reliability and risk analysis in civil engineering and initiated the teaching of applied probability and statistics in the department for undergraduate and graduate students. The department was one of the first in the country to require an undergraduate sophomore course taught by civil engineering faculty for modeling uncertainties and quantitative risk analysis in engineering.

I will always be grateful for being associated with the U of I as a graduate student and a faculty member in one of the premier universities for engineering in the world. I have always felt fortunate for this rare op-

portunity to learn from colleagues, among whom are giants in the field of civil engineering, and to direct the work of top-notch students from many parts of the world, including some who are now also world-renowned. One of the hallmark strengths of the civil engineering department is the encouragement of the faculty to be independent and innovative in research and teaching.

Through the years, until I retired from the department and left Urbana-Champaign in 1988 to accept a position at the University of California in Irvine, we made many lasting friends. Mae and I thoroughly enjoyed and treasured our years (from 1955 to 1988) in Urbana-Champaign. Our three children—Evelyn, Irene, and James—were born in Champaign and all of them attended the U of I. Irene received her M.S in Chemical Engineering, and James received his B.S. in Mechanical Engineering and went on to obtain his Ph.D. at the University of California, Berkeley; whereas Evelyn went on to received her MBA and law degree at Marquette University in Milwaukee. We also made many lasting friends and colleagues. Besides colleagues and their spouses at the University, Mae also made numerous friends through her private dress design business, including prominent luminaries in the community. For myself, I have many fond memories of colleagues at the U of I. For example, I can still vividly recall having lunch almost every Saturday with a group including Narbey Khachaturian, Len Lopez, Moe Amin, Bill Schnobrich, and others for cheeseburgers at a local restaurant close to the Newmark Lab (at that time, there was not much concern about high cholesterol).

As I remember, Newmark Lab was built

primarily as a research laboratory building for faculty and graduate student offices, and to house major research facilities. Through the years when I was on the faculty, I had often wished for classroom facilities in the building, so that faculty and students could meet more easily and have more convenient access to classes, especially in the wintertime, without having to struggle through bone-freezing cold, significant snow accumulation, and high winds to go to classes. The addition of the Student Center dedicated to student activities with classrooms and seminar rooms would be a great improvement in this regard and is long overdue. As a world premier department in civil engineering, it is fitting that there be modern classrooms and up-to-date teaching facilities.

I consider it a privilege to be able to contribute my part to the extension of Newmark Hall as a way of expressing my gratitude and repaying the department for the education I received and for the opportunity to establish my career in academia over the years. This represents our continued support of the U of I Department of Civil and Environmental Engineering, in addition to the Alfredo and Myrtle Mae Ang Endowed Fellowship for graduate students in structural engineering that Mae and I established in 2000. It is my wish that future generations of civil engineering students can have the same or better opportunities than me to build their careers in one of the best and noblest professions in the world. **I**

*Photos: Alfredo H.-S. Ang, top left, in a 2003 photo taken on campus. Professor Emeritus Narbey Khachaturian is standing. Seated are, l to r, Ang's daughters, Evelyn and Irene, Margaret Khachaturian and Mae Ang. Backdrop photo: Ang, circa 1975.*



I grew up there, so the civil engineering department is a part of me and a part of my family.

**A** love for the University and a desire to improve the experience of future CEE students motivated a \$100,000 pledge for the Yeh Student Center fund by Wilbur C. Milhouse III, P.E., (BS 94, MS 95). The president and CEO of Chicago-based Milhouse Engineering and Construction has good memories of his time at U of I, despite having faced multiple challenges while earning his degrees.

As a CEE freshman, Milhouse married another student, the mother of a 2-year-old. By his sophomore year, the couple had two children, daughters Jacquin and Melanie. The young family struggled financially, at one point applying for public aid only to be told, after hours of paperwork, that because they were students, they were “voluntarily poor” and didn’t qualify for assistance. Milhouse delivered pizza to make ends meet. He fought to keep his grades up in CEE’s demanding structures program, because he suffers from dyslexia and a poor short-term memory. During summer school, Milhouse sometimes had to bring one of his daughters to class with him.

Milhouse recalls a particularly challenging course taught by Professor Robert H. Dodds Jr. Trying to keep his grade above a C, Milhouse visited Dodds’ office at least once a week for help or extra credit.

“It was one of the hardest Cs I ever got,” he says. “To this day, I occasionally ask him if there’s anything I can do to bring it up to a B!”

Despite his challenges academically and personally, Milhouse found time as an undergrad to establish a CEE student organization called Engineers of Diverse Ethnicity. Open to everyone—what Milhouse calls a reflection of the real world—the group maintained a filing cabinet in the basement of Newmark Lab with notes from CEE classes so members could help one another with the coursework.

After graduation from Illinois, Milhouse worked for a series of engineering firms

in Chicago, gaining experience in bridge and railway design, site civil engineering, and management. In 2001, he decided to use what he’d learned to establish his own company. The first few years were difficult, partly due to an unforeseeable lag in construction following 9/11. Reluctant to give up the dream of running his own company, Milhouse turned to the part-time employment of his college days.

“During the day, I would put on my suit and walk around and try to get business or work on different smaller projects that I had, and at night I’d be out downtown delivering pizza,” he says. “It was very humbling.”


The night he found himself delivering pizza to a client’s secretary made for an embarrassing moment, he says.

Today, Milhouse can laugh about that night. His company has grown to 57 employees with revenues that last year totaled more than \$5 million. The firm’s clients have included the O’Hare Modernization Program, the Metropolitan Water Reclamation District of Greater Chicago, and the Chicago Park District.

His older daughter, Jacquin, 23, is a first-year law student. Melanie, 18, is a freshman at Penn State. His son, Wilbur, is 10 years old.

Milhouse’s professional involvements include serving as president of the Chicago chapter of the Illinois Society of Professional Engineers. He also serves on the CEE Alumni Association Board of Directors.

Through his gift to the Student Center project, he hopes to give future CEE students a centralized home on campus and the sense of community that will engender.

“I grew up there, so the civil engineering department is a part of me and a part of my family,” he says. “I love the University. It’s afforded me the ability to do so much. We’re very fortunate to be where we are today, especially in these hard economic times, and it all goes back to the skills I learned there. The University taught me how to think.” 

#### Yeh update


*Continued from page 8*

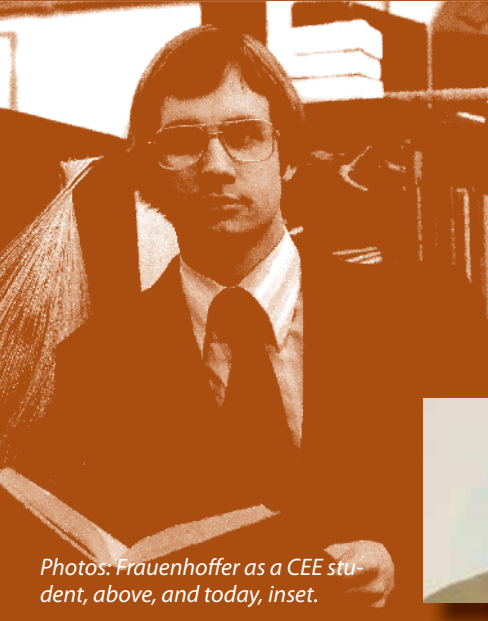
ciates Inc. completed design and construction documents this spring. The company has been involved with the project for more than a decade, having done the initial sketches in the 1990s. The design that will be implemented is very close to that one, with a few adjustments to reflect the department’s growth and changing needs, including bigger classrooms and the tiered lecture hall instead of an auditorium.

“We’ve successfully retained the strong look and feel of the original concept that was developed in the mid-1990s,” said Professor Robert H. Dodds Jr., who served as department head during this recent revival of the student center project. “We have the atrium, the barrel vault roof on top, and what are called clear stories to let in light. The building will be very student-accessible with 24/7 student access through card-key entry.”

The 22,500-square-foot addition will be entirely student-focused, providing critically needed classroom space, student design and meeting rooms, a large tiered lecture hall, and a three-story atrium entry that will offer both a more appealing entrance to the department and space for informal student interaction. The design allows for future implementation of a green roof with controlled access for teaching purposes. The building will meet the University’s requirement for a silver certification through Leadership in Energy and Environmental Design (LEED), a program of the U.S. Green Building Council. Additional features for a higher LEED certification are being analyzed.

“The Teng design team has been extraordinary to work with in order to match our instructional needs within the constraints of our budget and space available,” Dodds said.

To arrange a gift or pledge to the M.T. Geoffrey Yeh Student Center in Newmark Laboratory, contact John Kelley, Director of Advancement and Alumni Relations, (217) 333-5120, [jekelley@illinois.edu](mailto:jekelley@illinois.edu). 



Photos: Fraenhoffer as a CEE student, above, and today, inset.



## It just doesn't get any better.

JOHN A. FRAENHOFFER (BS 75, MS 79)

I have contributed to the Student Center Project because of my gratitude to the Department of Civil and Environmental Engineering, because it is important for CEE to have a student home in Newmark Laboratory, and because my grade in Finite Element Analysis was heavily dependent

upon Bob Dodds being in my student project group.

I have benefitted from my University of Illinois civil engineering education, because it:

1. gave me a portal to a professional life.
2. allowed me to found Fraenhoffer and Associates, PC, a civil engineering firm.
3. afforded me the opportunity to foster clients that have become lifelong friends.

It just doesn't get any better.

1

We all hold one certificate that has not declined in value; it's the one that begins with the words, *'By authority of the Board of Trustees of the University of Illinois.'*

By KENNETH M. FLOODY (BS 83)

Alumni that are not frequent visitors back to campus are often astonished at the growth of the campus over the last two decades. I have watched with interest and fascination at the expansion of the University of Illinois north of Springfield Avenue during my 10 years on the Civil and Environmental Engineering Alumni Association Board of Directors. The fields west of Newmark Lab, where civil engineering undergraduates once practiced surveying, have long since been paved over for the Beckman Institute, Coordinated Science Lab, and Micro & Nanotechnology Lab. To the east of Newmark now sit the NCSA Building and Siebel Center.

New buildings and facilities have sprouted all over campus seemingly for everyone except civil and environmental engineering students. When one considers that the Civil and Environmental Engineering department is one of the most recognized and esteemed departments in the University system, it becomes obvious that the department is long past due for some new construction of its own.

One of the most important concepts in any university is the free exchange of ideas and a forum in which to exchange those ideas. Walk through any of the new buildings north of Springfield and you will note

how much space is reserved for students to congregate in informal settings. These spaces facilitate socialization, exchanging ideas, and team problem solving. Unless you count the crane bay (or a few tables in the basement below the crane bay), there are no comparable spaces available to civil and environmental engineering students within Newmark Lab.

The need for these spaces as well as additional classrooms for the department has been recognized for some time. Thanks to the efforts of Professor Bob Dodds and financial contributions from our alumni, current and future civil and environmental engineering students will soon have something that we never had—a home of their own. It will be a forum for problem-solving and socializing, as well as a place to develop relationships with other engineers who will become their future colleagues, consultants and clients.

The past year has been financially difficult for many. Most of us have had to watch the value of our stocks drop off a cliff. However, we all hold one certificate that has not declined in value; it's the one that begins with the words, "By authority of the Board of Trustees of the University of Illinois." The value of that certificate is intricately tied with the reputation of the University of Illinois Department of Civil and Environmental Engineering.



Floody and his wife, Elizabeth, with their children, l to r, Hannah, Ryan and Emilia.

College photo: Floody, left, with his roommate, Joe Bernes.

neering. By making a financial commitment to the department, we are in essence insuring the underlying assets of that certificate, namely the level of high regard with which the department and its graduates are held within academic and professional circles.

I find it personally rewarding to be able to assist the department in funding the Yeh Student Center. Take it from me, it's a sound investment.

1

# if not now, when?

A CEE alumna tells about building clean water systems and healthier communities in developing countries

By ANN-PERRY WITMER, P.E., (BS 02)

The pickup truck lurches through the arid Dominican Republic countryside on a bone-jarring, teeth-clattering ride amid the cactus and tall grass. To call the path the vehicle follows a road defies our understanding of the word. Washouts leave the dirt trail nearly impassible in spots, and the driver watches his rear-view mirror after each bump and bounce to make sure none of the passengers in the truck bed have been ejected.

A rider in the pickup's passenger seat grips the handhold above her window. The driver calls this the "Oh Jesus" handle, not because the vehicle belongs to a Roman Catholic mission, but because this is what passengers visiting from the U.S. routinely yell while lunging for something to grasp whenever the truck hits a rut and tips up on two wheels.

By the time they reach the Village of Manantiales, the occupants of the pick-up truck are rattled and windblown. Some are scratched from the branches that fly at them from the side of the road as they pass. Before them, a clearing opens revealing a dozen ramshackle structures of such poor construction that most people in the States would hesitate to park a car in them for fear of damaging the finish. They have no plumbing, no windows, no electricity. Several men sit in plastic chairs by the side of the road, playing dominoes in the shade. Haggard old dogs lying at their feet lift their heads in curiosity to eye the visitors and scrawny young pups excitedly bound over in hopes of getting some attention and, more importantly, some food. There's a startling silence about the village. No children are in sight. The schoolhouse stands empty.

Manantiales is the outback of the Dominican Republic. A community of 20

families and 500 acres of government-provided farmland in the province of Azua, the village rarely is inhabited by anyone other than the men, who toil to grow crops on the corner of their acreage, to which they can transport irrigation water through a cracked plastic pipe. The women and children have moved to nearby cities to work and go to classes, since no educator is willing to travel the rough terrain each day to teach at the Manantiales school.



*A puppy laps from the puddle formed by the sole distribution point for domestic drinking water in the village of Manantiales, Dominican Republic. Volunteers hope to replace the decrepit water hose with a sanitary transmission and distribution system that will provide spring water to both the village and the surrounding farm fields.*

Talk to the men who stay behind to scratch out a living as farmers and you'll find yourself conversing with bright, witty, even ambitious residents. Enrique has sold all his livestock save three animals to put his daughter through medical school, for example. Explain that you're there to bring the community a safe water supply and the men grow instantly excited. They couldn't care less about getting water to their homes. It's all about bringing irrigation to their fields so they can grow enough crops to sell, to earn money and to support their families.

This is a way of life that is utterly unimaginable in the United States but a basic reality for the majority of the world. What we take for granted as we shower each day, drive through the car wash, groom our pets and fill our pools is a measure of inconceivable wealth to those living in developing countries.

I first visited Manantiales this year as part of a grassroots team of engineers and health care and social service providers whose goal is to work with residents to design and construct a drinking water supply that will allow the village to grow and develop. Our diverse team of friends and colleagues who share a common interest in providing safe drinking water to communities-in-need is based in Wisconsin but spread across the world, with participants coming from as far as Germany.

Working with the Community of Saint Paul, a mission affiliated with the Catholic Archdiocese of Milwaukee that acts as an in-country agent for the community relief efforts, the secular group hopes to construct a 5-kilometer pipeline by year's end that will carry water from a plentiful spring atop a nearby mountain to the village and—more importantly to its residents—to its nearby farm fields for irrigation. Several team members and I traveled to Manantiales in January to survey the site and meet with the community. Throughout the spring, engineers worked on system design while service providers developed a health and nutrition education program and the Mission assisted the community to establish a water committee. This village-governed committee will be responsible for assigning residents to crews who will construct the water system, and they'll oversee its maintenance as well.

The evolution of this project was



*Clara, a 7-year-old Guatemalan child, carries water down the main street of Nueva Providencia for her family. With the construction of water systems there in 2006 and 2007 by Wisconsin engineers, Clara no longer bears responsibility for hauling water up the mountainside from a river to her community each day.*

years in the making. As a student at the University of Illinois, I followed the encouragement of my adviser, Professor Emeritus Vernon Snoeyink, and joined the American Water Works Association (AWWA). I was captivated by AWWA's Water For People charity but, with three small children at home, couldn't imagine becoming involved with the group. Still, there was something deeply appealing about using my engineering skills to help people in need of one of the most basic requirements for survival—water. After graduation and a move to Wisconsin, I immediately seized the opportunity to join the Wisconsin AWWA section's Water For People committee.

Throughout my progressively increasing involvement with the committee, a persistent voice kept asking the same question over and over—“If not now, when?” The question, of course, was self-evident, since the time would never appear perfect to commit to a full-scale

As we taxied to the runway, a wave of crushing panic overtook me. Middle-aged, Midwestern moms don't fly off to the jungles to build holding tanks and turn water wheels into pump drives, I thought.

project. One could only close one's eyes and plunge in. I remember that as we taxied to the runway headed for Guatemala City that first year—my adolescent son and daughter beside me on the plane—a wave of crushing panic overtook me. Middle-aged, Midwestern moms don't fly off to the jungles of Guatemala to build holding tanks and turn water wheels into pump drives, I thought, as I tried to quell the rising terror. But by the time we left the ground two weeks later to head home, this work seemed like the most natural thing in the world to do.

Wisconsin Water For People and its successor group, Wisconsin Water For the World, developed and built three separate water systems in the mountainous southwest region of Guatemala over the next few years. The area we focused on is populated primarily by indigenous Mayans, who receive little assistance from the government. With the gracious and unwavering support of my employer, Crispell-Snyder Inc., I've been able to apply the engineering knowledge I've developed as a municipal drinking-water engineer to these volunteer efforts each year. Every project brought new insights and new adventures, and each of my three children has made at least one trip with me to help build water systems, teach residents about the importance of protecting their health and their water supply, or interface with U.S. schoolchildren through satellite webcasts to introduce them to life and culture in a developing country. My dear husband, Steve, has patiently stayed behind without complaint each year to keep the household running during my travels.

As word of our work spread and more

people became involved, a network of support grew. It was not unusual to receive a call from other states, Europe or the Caribbean, as other care-giving organizations sought an exchange of ideas about technology or funding or some great need that had developed in their area. The time had come to bring the knowledge developed in Guatemala to other locales, and a loose coalition of friends, family and colleagues began talking of bringing our efforts down to a grass-roots level.

The opportunity arose last year when a missionary originally from Waukesha, Wis., who now lives in the Dominican Republic contacted me to see if help could be provided to Manantiales. It took no time at all to recruit volunteers for the project: a close friend's son who is a mechanical engineer in Minnesota; my sister, who is a massage therapist in Massachusetts; a Wisconsin Rural Water Association source water specialist; a recent fine arts graduate of the University of Wisconsin who worked with my daughter last year to develop and teach hygiene education to Guatemalan school children; an urban planner in Germany who had been an exchange student in Fond du Lac while in high school. The list continues to grow.

The team will be challenged to help Manantiales view its water as more than an agricultural commodity. Through education, the team hopes to teach the community about the importance of safe drinking water and personal hygiene for health. A reliable, protected water supply piped to the village for domestic use will allow Manantiales to grow beyond a farming outpost, perhaps even encouraging construction of a finished road

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Some recurrent team members refer to these annual projects as their yearly inoculations of the soul, describing the need to experience the simplicity of others' lives so they don't allow their own existences to become too complicated or cluttered.



that one day may bring a teacher to the schoolhouse so that families can live together again.

Perhaps the greatest challenge for the team in the current economic climate, though, will be to raise the approximately \$30,000 needed to lay PVC pipe down the mountainside, construct the needed break-pressure and storage tanks, and install a distribution system to carry water into the village and across the plain to the farms. Because the Dominican Republic is an island nation with a minimal industrial base, most of the materials needed to construct the system must be imported and shipped to the site, making even the most modest of supplies like PVC pipe extremely expensive to obtain.

Engineering design for technologically unsophisticated communities can be challenging because there are no trained system operators and very little understanding of how gravity water systems even work. Technology appropriate to the region's limited level of understanding must be used. This may mean constructing holding tanks using chicken wire and cement mortar mixed with hoes on the ground, or irrigating fields by flooding trenches that can carry the wa-

ter to where it's needed most. Pumps are out of the question because of the lack of electricity, and even if disinfection treatment is provided, the odds are good that residents will disable chlorination equipment because they object to the taste of treated water.

What inspires the professionals who travel to these remote sites to construct water systems for the residents? At the core lies a desire to do some good for others. For those who make the trip and see firsthand the conditions in which the majority of the world's population lives, it can be startling to realize how very much the same we are, despite our differences in language, skin color, education or family structure. In Manantiales, young men flirt with young women, fathers boast about their children's achievements, grandmothers worry whether their granddaughters are getting enough to eat. A farmer who can barely feed himself still has the compassion to rescue an abandoned and starving dog chained to a tree by the side of the road, bringing it home to nurse it back to health.

Some recurrent team members refer to these annual projects as their yearly inoculations of the soul, describing the need to experience the simplicity of others' lives so they don't allow their own existences to become too complicated or cluttered.

There is a profes-

*Above, Witmer smoothes a layer of mortar after applying it to a ferrocement tank constructed by hand in rural Guatemala.*

*Below, residents of Nueva Providencia, Guatemala, work side by side with U.S. engineers to build a distribution tank that will supply water to their community.*



sional benefit to taking part in service projects, too. Volunteers have found that working with communities whose needs are basic and skills are unsophisticated can strengthen team members' technical understanding, as well as their ability to function as part of a cohesive group. It's not uncommon on projects like Manantiales to have to employ some outside-the-box thinking and collaborative design to adapt an advanced technology to rudimentary conditions, and this type of thinking only increases the professionals' toolbox when they work on project management and design back home.

There is undeniably an element, too, of adventure. The occasional cactus nettle in the heel is a reminder of the wild countryside through which a water pipeline will have to be constructed. Having a village meeting interrupted by the steady



*Children like these Mayan youngsters are among the greatest beneficiaries of sanitary water systems, not only because it improves their health and hygiene, but because it frees them from the responsibility of carrying water to the home so that they can attend school.*

thwop-thwop of a military helicopter circling overhead in search of drug activity is a reminder of the fragile security with which these people live. And the great celebration of the team's collaboration with the village, marked with a ceremonial drum line and the slaughtering and stewing of a village goat, redefines one's understanding of festivity.

And until one has sat around a fire at night laughing with a dozen people though no common language is shared, sucking on the bones of a goat that earlier that day was lapping at the decrepit tube from which the villagers filled their stew pot, one truly can't appreciate the depth of connection that can be achieved between people from two very, very different worlds.

# Ready or not

MAE Center research explores the effects of a New Madrid Fault earthquake and helps shape FEMA's readiness plan

By MAEVE REILLY

In 1811 and 1812, a series of three major earthquakes, and many medium-sized ones, occurred along the New Madrid Fault, which stretches 120 miles in the central United States. The earthquakes were strong enough that "church bells were ringing in Boston," says Derek Estes, chief of the Catastrophic Planning Operations Management Division at the Federal Emergency Management Agency (FEMA). At that time, the area was not heavily populated and damage was relatively slight.

An earthquake of similar magnitude today would affect more than 44 million people and result in thousands of casualties, direct economic losses of more than \$250 billion, and indirect losses potentially totaling two to three times that amount, according to a three-year study by the Mid-America Earthquake (MAE) Center, headquartered in CEE at Illinois. What's more, scientists expect that such an earthquake is likely.

"It is generally accepted that there will be an earthquake on the New Madrid Fault in the future," said Amr Elnashai, Professor and Head, and Director of the Mid-America Earthquake (MAE) Center, headquartered within the CEE

department. "The impact of the earthquake will be quite scary. All hell will break loose."

The \$4 million study by the MAE Center, with support from the George Washington University in Washington, D.C., and Virginia Tech, was contracted by FEMA through the U.S. Army Corps of Engineers with the goal of improving understanding of the consequences of a major earthquake along the New Madrid Fault. A report on the study's first phase, released in the fall, has been downloaded about 6,500 times, and an additional 800 paper copies have been requested and mailed out, Elnashai says. The report is being used to shape earthquake preparedness plans in the central states. The project also created opportunities for about 14 CEE students to serve as research assistants, Elnashai says.

"This is the largest effort of its type," says Estes, who served as project manager for FEMA. "For the first time, this report allows us to look at how such a catastrophic event would play out and how we should respond to it. It's difficult to quantify a hazard, but the science and data provided by the MAE

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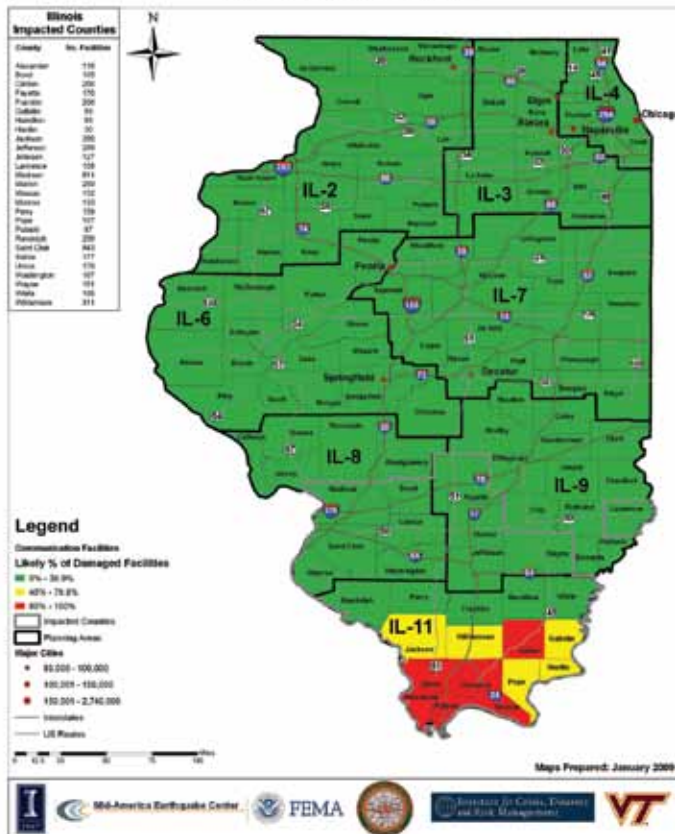
## About the writer

Ann-Perry Witmer, PE, (BS 02) is a senior project engineer with Crispell-Snyder Inc. in Madison, Wis. In addition to the CEE degree she earned from University of Illinois, she holds degrees in journalism and art history. Witmer was awarded the Harvey H. Jordan Award by the College of Engineering in 2002. In 2008, the Wisconsin Water Association awarded her the Leon A. Smith Award and elected her a trustee of the state's section of the American Water Works Association. Witmer, her husband, Steve, and their three children live in Verona, Wis.

Witmer is pictured here, at left, with colleague Katie Edgington, superintendent of the water utility in Janesville, Wis. The two are taking a break from constructing a water tank in El Adelanto, Guatemala, during a 2008 project.

## Illinois Communication Facility Damage

Map prepared by the Mid-America Earthquake Center  
Project #1: Amy Elnashai (2003/04), Project Lead; Thomas Jefferson (05/06)



*"It is difficult for people to grasp the enormity of damage in catastrophic disasters."*

Center backs up what could possibly happen."

"The fact that FEMA funded the project, instead of a university or private enterprise, makes it difficult to dispute the impact reported," says Elnashai. "The impact assessment software that we used was developed by FEMA and is accepted nationally and internationally."

The Hazard U.S. (HAZUS) software models the potential damage of natural disasters. Since many U.S. earthquakes occur in California, most of the HAZUS data comes from that region, but the software is still useful for other regions.

"The program is nationally applicable, though it should be improved to reflect regional characteristics for the most accurate assessments," says Lisa Cleveland, technical manager of the project for the MAE Center.

Cleveland updated the tool to include information on the New Madrid Seismic Zone, which is made up of eight states: Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.

"We obtained maps from the U.S. Geological Survey that define the hazards," said Cleveland. The MAE Center identified areas of intense and less-intense shaking along three different fault segments. During the 1811-12 earthquakes each of these three segments ruptured over the course of several months, Cleveland says, generating a massive earthquake each time. A major New Madrid event would likely do the same.

Cleveland created databases that described the population and infrastructure of the area, including buildings, utilities, hazardous materials, dams, levees and transportation infrastructure like roads and bridges. The HAZUS software used fragility functions to relate the intensity of shaking to damage.

"The surprising thing to me was the level of the impact—the number of people who would potentially be affected, the effect on the movement of goods, the ability to move around the area," Cleveland says. "It really pointed out the way things are interconnected."

According to the report, the state of Tennessee would incur the highest level of damage and societal impacts, but Missouri, Kentucky and Illinois would also suffer substantial damage and loss.

A report on the second phase of the project is expected to be available this fall. The second phase pursued the same

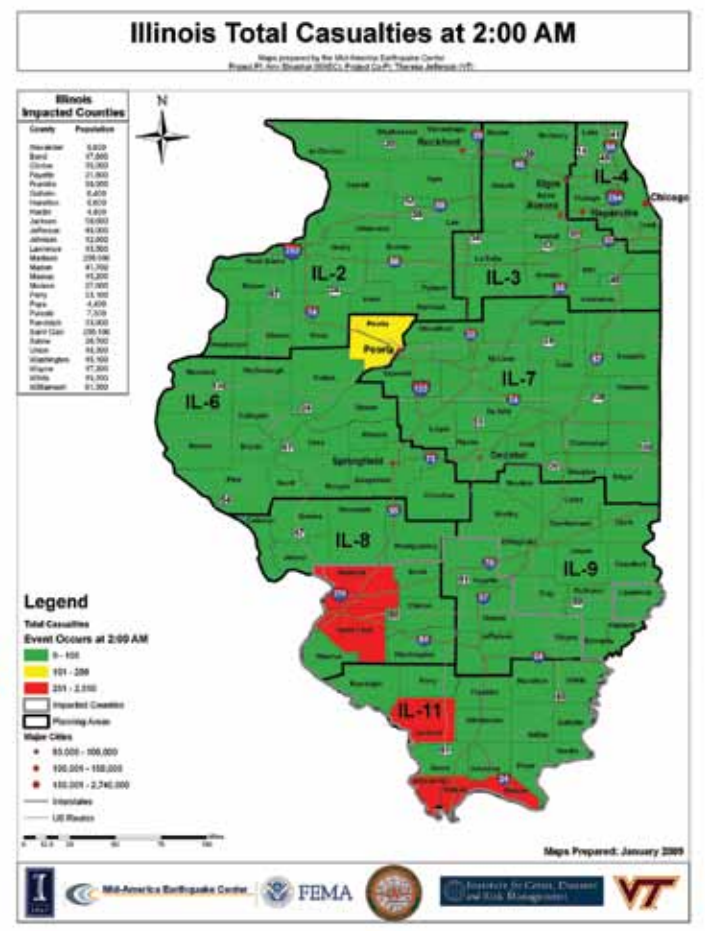
## Illinois Major River Crossing Damage

Map prepared by the Mid-America Earthquake Center  
Project #1: Amy Elnashai (2003/04), Project Lead; Thomas Jefferson (05/06)



The MAE Center report, "Impact of Earthquakes on the Central USA," available for download at <http://mae.cce.illinois.edu>, was the most frequently downloaded report in the College of Engineering for the month of June, the year-to-date, and overall, according to IDEALS, the Illinois Digital Environment for Access to Learning and Scholarship. In general, reports from CEE dominated the list, with four of the five top downloads coming from department sources.

"It is difficult for people to grasp the enormity of damage in catastrophic disasters, but after reviewing the MAE Center report and the additional supporting documents, the participants had a better understanding of what can happen."



# Taming the waters

## CEE researchers design a win-win solution for a safer dam on the Chicago River's North Branch

By JOYCE MAST

The Chicago River North Branch Dam, located at the confluence of the Upper North Branch of the Chicago River and the North Shore Channel and bordered on the north by a football stadium and on the south by River Park, is owned and maintained by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) and operated by the Chicago Park District. Like more than 90 percent of the two million dams in the United States and 1,300 in Illinois, it is a low-head dam.

Low-head dams have been called "drowning machines" because of the powerful currents around them. Proposed solutions to the danger they pose have included removal, limiting access, and design modifications, but competing interests make the solutions anything but clear-cut. Thanks to a CEE study funded by the MWRDGC and led by Professor Marcelo H. García, the Chicago River North Branch will be the site of a newly designed structure optimized to improve safety for boaters while addressing ecological concerns.

The small size of low-head dams belies the severity of danger around them. Water flowing over the drop forms a hole, or hydraulic, at the base that traps and re-circulates anything that floats. A victim caught in the backwash will be carried to the face of the dam where the water pouring over it will wash him under to a point downstream called the boil. There, roiling water from below surfaces and moves either downstream or back toward the dam. Air bubbles mix in the water, decreasing its buoyancy by one-third. The victim has a hard time

staying afloat, even with a life jacket. Once caught, he struggles to the surface, where the backwash again carries him to the face of the dam, continuing the cycle.

The area immediately below the dam may be scoured out, creating a hole that adds to the force of the recirculation. During periods of high water and heavy rains, the backwash current problems get worse as the reach of the backwash cur-



*Christiana Barnas sets up a Vectrino probe to take flow velocity measurements just downstream of the dam. She will leave the basin and go to the computer, which is connected to the probe, and start collecting data. The probe collects flow velocity data for 1-2 minutes. This is repeated for 50 points in a given cross-section. For each point, a time-averaged flow velocity is computed. This shows the velocity distribution in a given cross-section.*

rent is extended downstream and debris washed into the river becomes lodged at the dam making even more currents. Rescuing trapped individuals is dangerous and often unsuccessful.

One approach to the dam problem is to remove it—to the dismay of those who enjoy fishing near the dam and hearing the "waterfall" sound and the relief of ecologists who have shown that low-head dams limit the upstream distribution of fish species. Another is to create

"exclusion zones" that restrict paddling access 300 feet above a dam to 50 feet downstream. One such proposal, by Rep. Tom Cross (R-Oswego), is in response to the drownings three years ago of a kayaker and two men who tried to save him in the dam at Yorkville on the Fox River. The Illinois Paddling Council claims the exclusion zones would encompass many portages paddlers use to walk around dams and argue that the measure would make Illinois' rivers essentially off-limits, according to an April 14 story in the Chicago Tribune. Then there is the problem of enforcing the rule.

A third approach is to modify the dam to accommodate a fish passage with the goal of enhancing fish communities. In 2006 the Friends of the Chicago River (FOCR) commissioned a study by a Chicago environmental engineering firm to assess habitat and fish communities along the North Branch. Fish species commonly found in Illinois streams tend to avoid very high velocity water, making it unlikely they would swim up traditional fish passages

used on high-gradient waterways found, for example, in the Pacific Northwest. The FOCR had wanted the dam removed, but the structure serves to control the grade (bottom elevation) of the stream. Taking out the dam could cause upstream degradation of the riverbed, followed by stream bank erosion. And because of the challenges inherent in designing a dedicated fish passage, a multi-use structure was deemed more appropriate.

A combined canoe chute/fish passage



*This photo taken in August 2008 shows the view upstream at the confluence and dam. The Upper North Branch of the Chicago River flows over the dam at left, with the North Shore Channel at right. The width near the confluence of the two rivers is 150 feet, dam width is 80 feet, and the channel is 50-60 feet wide.*

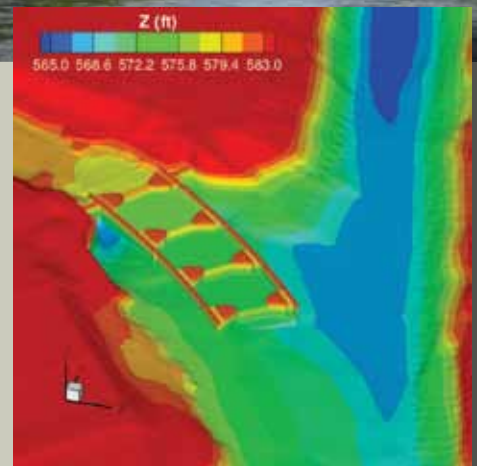
at the North Branch Dam site would allow local fish communities to safely pass upstream and recreational canoes and kayaks downstream. In addition, it would improve stream ecology in the Chicago River system by improving habitat conditions and connecting the Lower and Upper reaches of the North Branch. The additional turbulence generated as the flow cascades over the canoe chute drops would preserve the “waterfall” sound and increase the amount of dissolved oxygen in the river, improving water quality, particularly during the summer months when dissolved oxygen is low in the waterways. This last aspect motivated the MWRDGC to fund the CEE study to design the structure.

First, the MWRDGC surveyed the channel, the bank areas, and the river flow. These data were converted to cross-sections and a concrete basin 1/20<sup>th</sup> scale model built by CEE research staff in the Ven Te Chow Hydrosystems Laboratory.

Specifications were based on earlier research within CEE sponsored by the Illinois Department of Natural Resources. Graduate research assistant Christiana Barnas (BS 07) has taken flow velocity measurements in the model for the last two semesters as part of an independent study project. Data are being processed by academic staff assistant for the CEE hydro lab, Andrew R. Waratuke (BS 97, MS 99).

Jorge Abad (MS 02, PhD 08), a post doctoral researcher who worked on this project and will soon be an assistant professor at the University of Pittsburgh, is the first author of a paper showing the latest design of the canoe chute/fish passage in which the fish swim up both sides of the chute. A series of vertical baffles with offset openings from one to the next allows a sinuous flow path that decreases flow velocities within the fish passageways and provides relatively quiet areas for the fish to swim. His paper was presented in Kansas City, Mo., in May at a meeting of the Environmental and Water Resources Institute of the American Society of Civil Engineers.

Although the design is still being finalized, the structure is expected to be implemented at the Chicago River North Branch Dam within the year, García says, offering a solution for safety that will please recreationists and ecologists alike. ■

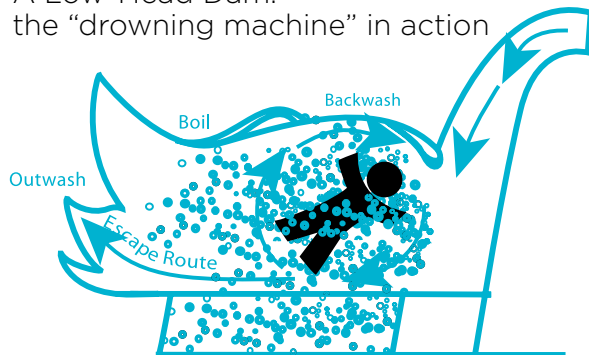


*Above, middle: Computer simulation image by Jorge Abad of the latest design of the canoe chute/fish passage.*

*Above, bottom: Proposed placement of the structure. There are four drops in the chute, each about one foot. All the flow of the river is put through the chute, which is attached to the front of the dam. The pools in the chute are 20 feet by 42 feet and at least 3 feet deep so that if boaters go sideways or overturn, they won't injure themselves on the concrete. The chute length along the center line is approximately 150 feet. An open area is maintained between the canoe chute and the western bank of the Lower North Branch to allow the continued usage at high discharges of the secondary overflow weir located on the left side of the existing dam (looking upstream).*

*Inset: Detail of the fish passage. A series of vertical baffles with offset openings provide relatively quiet areas for the fish to swim.*

### A Low-Head Dam: the “drowning machine” in action



Joyce Mast

# Great Lakes

## Steel Bridge Team places second

By BRETT MATTAS, STEEL BRIDGE CAPTAIN

The Steel Bridge Team traveled to the University of Notre Dame on March 26 to compete in the Great Lakes Regional Competition, sponsored by the American Society of Civil Engineers and the American Institute of Steel Construction. The Illinois team faced 11 teams this year from the Great Lakes region. Returning from disqualification during last year's competition, this year's team intended to prove

to be a deck bridge with the entire structure below the decking support. The final design for the bridge was a Warren Truss with 10 truss members covering the span. Prior to the competition the bridge was load tested to 90 percent of the competition load and, after an initial collapse and several re-welds, held the load with very little deflection.

Since construction speed and structural efficiency were taken into account during this year's design, our team was able to practice timed assembly until our time was reduced to 12:15 minutes and earned second place for both construction time and construction economy. Structurally the bridge performed very well, scoring first place in stiffness and third place in both weight and structural efficiency.

This year's vast improvement over last year was thanks to several factors, including design experience, an experienced welder, and veteran team members. However, the biggest cause was the sustained dedication of the entire team throughout the year. Due to a technicality not related to the steel bridge itself we are not invited to this year's national competition, but this should not overshadow the success achieved at the competition.

The prospects for next year are very promising. Three out of six current members are returning to form a strong foundation for the next generation, and the two seniors

*Timed construction: l to r, Kirk Atwater, Brendan Walsh, and Mark Bingham assemble the bridge.*

we can compete with any school and earned second place in the overall competition.

The rules for this year's competition dictated that the structure bridge a 20-foot-long theoretical river with a single span and sustain a 2,500-pound load spread over two random locations along the bridge deck. In addition to this, the bridge had to be designed for ease of construction, as construction speed is a large factor in determining the score at the competition. The defining change in this year's rules was that the bridge had



# Regionals 2009



Above, the team poses on their bridge after the competition: l to r, Julia Plews, Brett Mattas, Mark Bingham, Brendan Walsh, Tim Veldman, Kirk Atwater and Jared Thoele.

At left, l to r, Brett Mattas and Brendan Walsh apply 2500 lbs of load.

from this year will be partially involved at least through the design phase of the project and as consultants during the manufacturing phase. ■

For more information about sponsoring the team for the 2009-2010 school year, please contact team captains Kirk Atwater, [atwater1@illinois.edu](mailto:atwater1@illinois.edu), or Jared Thoele, [jthoele2@illinois.edu](mailto:jthoele2@illinois.edu).

## Canoe Team rallies after hull break

By EMMA KRESS-ISRAEL, Co-CAPTAIN, CONCRETE CANOE TEAM

After a year of many new ideas, the CEE concrete canoe team, the Boneyard Yacht Club, put together an innovative canoe for the 2009 Great Lakes Regional Competition at the University of Notre Dame. The team showed great spirit in salvaging the canoe after it broke during the races. Strong scores in the technical paper, presentation, and final product categories allowed the team to place seventh overall.

Past experience and a significant change in the competition rules motivated two major construction changes this year. In the past, teams were allowed to design their own hull shapes within certain requirements. This year, teams were given a specific hull design to replicate as closely as possible.

To improve both the accuracy of the hull shape and the exterior finish of the canoe, the decision was made to switch from a male mold to a female mold. The team was happy with the results of this decision. The accuracy of the hull shape contributed to our final product score, and the canoe required much less sanding to achieve a smooth finish than in previous years. Plans are already being made to improve this construction technique for next year.

The other major change this year was the switch from a traditional Portland cement-

based concrete to a geopolymers-based concrete. The geopolymer had a greater strength-to-weight ratio than traditional concrete but was difficult to work with. It also shrank more than was anticipated during curing, resulting in a large number of cracks. The team agreed that while the geopolymers have potential, it plans to return to



Team members carry the canoe down to the lake for the races.

more traditional concrete next year.

The success that was seen in recruitment last year was continued this year. We had several new members who made major contributions to the team. We are confident that they will provide strong leadership for the team in the future. The experience gained through the new ideas explored in the construction of this year's canoe, coupled with the enthusiasm of our team members, will undoubtedly produce an excellent canoe for the 2010 regional competition. ■

For more information about the Concrete Canoe Team, visit the team's website at <https://netfiles.uiuc.edu/ro/www/BoneyardYachtClub>



This year's canoe, the Rubber Ducky, on display at the regional competition.

# Department News

## Schmidt named Diplomat of AAWRE

**A**rthur R. Schmidt, P.E., (BS 83, MS 84, PhD 02), Research Assistant professor, was recently named a Diplomat, Water Resources Engineer (D.WRE) of the American Academy of Water Resources Engineers (AAWRE), a subsidiary of the American Society of Civil Engineers (ASCE).

The American Academy of Water Resources Engineers was founded by members of ASCE's Environmental and Water Resources Institute to improve the prac-

tice, elevate the standards and advance the profession of water resources engineering. The D.WRE represents strong professional ethics and a commitment to lifelong learning and continuing professional development.

From 1983 through 1994, he worked as a Hydrologist for the United States Geological Survey. From 1994 through 1999 he worked in private practice as a consulting engineer specializing in water resources engineering. He joined the CEE faculty in August 2003. For more information about AAWRE's Diplomat, Water Resources Engineer certification program, visit [www.aawre.org](http://www.aawre.org).



## Page named finalist for prestigious prize

CEE student Martin Page, center—pictured here with College of Engineering Dean Ilesanmi Adesida, left, and Page's adviser, Professor Benito Mariñas—was one of eight finalists for the prestigious \$30,000 Lemelson-Illinois Student Prize, which recognizes outstanding student inventors. Page was recognized for taking the initiative to develop water treatment systems for people in developing regions who do not have access to safe drinking water. His main contribution, SoChlor, combines solar and monochloramine disinfection, which makes possible the rapid inactivation of viruses in waters containing ammonia, making SoChlor an excellent option for improving drinking water quality in developing regions.

Associate Professor **Christopher P.L. Barkan** of the transportation engineering group and a former advisee, **Yung-Cheng Lai** (MS 04, PhD 08), are among authors of a paper selected to receive the TA Stewart-Dyer/Frederick Harvey Trevithick Prize. The paper, entitled "Machine Vision Analysis of the Energy Efficiency of Intermodal Freight Trains," was published in 2007 in the *Journal of Rail and*



*Rapid Transit*. Lai is now an Assistant Professor at the National Taiwan University. Other authors include colleagues from the University of Illinois, and collaborators from the International Institute of Information Technology in India, and BNSF Railway. This research was part of Lai's Ph.D. work at U of I.

CEE student **Mark Denavit** received the American Council of Engineering Companies (ACEC) of Illinois' Frank H. Gorham ACEC-Illinois State Scholarship. The \$1,500 scholarship is awarded on the basis of academic excellence.

CEE student **Matt Eatherton** won the Diffenbaugh Fellowship. The award is given to graduate students who are or were residents of the State of Missouri. It provides a stipend of up to \$15,000 for the academic year, a full waiver of tuition, coverage of various fees, and basic dental and vision coverage.



Professor **Marcelo H. García** was named the 2009 Borland Lecturer in Hydraulics at Colorado State University's 29<sup>th</sup> Annual American Geophysical Union Hydrology Days in March. The lectureship

honors an outstanding individual in recognition of his or her contributions to the field of hydraulics.

Professor **Youssef Hashash** of the geotechnical engineering group has been named a recipient of a 2009 Xerox Award for Faculty Research in recognition of his

outstanding research accomplishments during the past five years. Hashash was selected because of his "outstanding leadership across multiple strands of geotechnical engineering both nationally and internationally," said Dean Ilesanmi Adesida.



Winners of the Mavis Fellowship are CEE students **Manish Kumar** (BS 2000), **Blake Landry**, and **Joshua Steelman** (MS 06).

The Precast/Prestressed Concrete Institute's Charles C. Zollman Award has been given to Associate Professor **Daniel A. Kuchma**, the Burton & Erma Lewis Faculty Scholar; Professor Emeritus **Neil Hawkins**, (MS 59, PhD 61); and CEE research assistants **Sang-Ho Kim** and **Shaoyun Sun**; along with colleague Kan Su Kim, an assistant professor for the School of Architecture and Architecture Engineering at the University of Seoul in South Korea. The award recognizes their co-authored paper, "Simplified Shear Provisions of the AASHTO LRFD Bridge Design Specifications," published in the May-June 2008 issue of the *PCI Journal*.



Professor **Praveen Kumar** has been appointed Editor-in-Chief of *Water Resources Research*. Published by the American Geophysical Union, the premier journal for hydrology, integrating research

in the social and natural sciences of water.

CEE Ph.D. student **David Ladner** (MS 05) won the WQTC 2008 Best Student Paper award at the American Water

*Continued on page 24*

## Professional Development Fair 2009

More than 70 companies and an estimated 450 students converged in the Newmark Lab crane bay February 27 for the CEE Professional Development Fair, an annual event that connects CEE students with potential employers.

Department alumni were on hand to critique student resumes, and many company representatives were CEE alumni. The department extends a special thanks to the following companies who sponsored lunch:



▲ **Adam Hardy** (BS 05, Gen Eng), center, Project Leader at Milhouse Engineering and Construction with colleagues Michelle Ross, Human Resources Manager, and Flashette McKee, Recruitment Manager.

### Gold sponsors

Greeley and Hansen  
MWH

### Silver sponsors

Bowman, Barrett  
Freese & Nichols  
Golder  
Walsh Group

### Bronze sponsor

Crawford, Murphy & Tilly Inc.



▲ **Sarah (Dolezal) Czaplicki** (BS 96, MS 97), a Structural Engineer at TranSystems, holds her daughter Aslin, 10 months. Aslin's sister, Marin, 2 ½, appears in the inset photo. Their father is Scott D. Czaplicki (BS 95), a Project Manager for TranSystems.

◀ **Candace Billek** (BS 03), Strand, speaks with a student.



# Department News

## Valocchi is AGU Fellow



Valocchi, left accepts his award from AGU President Dr. Tim Grove.

**A**lbert J. Valocchi, Professor and Associate Head, was elected a Fellow of the American Geophysical Union (AGU). Only one in each thousand members is elected to Fellowship each year.

The award was presented at the Honors Ceremony on May 26 at the Joint Assembly in Toronto, Ontario, Canada.

The AGU is a worldwide scientific community that advances, through unselfish cooperation in research, the understanding of Earth and space for the benefit of humanity.

Valocchi teaches undergraduate and graduate courses in water resources engineering, groundwater hydrology and contaminant transport, groundwater modeling and numerical methods, and stochastic analysis of porous media transport. His research focuses on mathematical modeling of pollutant fate and transport in porous media, with applications to groundwater contamination and remediation. ■

*Continued from page 23*

Works Association's Membrane Technology Conference for his paper and presentation, "Effects of Shear on Microfiltration and Ultrafiltration Fouling by Bloom-Forming Algae in a Seawater Desalination Treatment Train." Ladner's adviser is Professor Mark Clark.

Associate Professor **James M. LaFave** (BS 86, MS 87) was elected a Fellow of the American Concrete Institute in recognition of his contributions to the work of the Institute.

LaFave and Professor Emeritus Neil M. Hawkins (MS 59, PhD 61) received the Wason Medal for Most Meritorious Paper from the American Concrete Institute for their co-authored paper estimating drift capacity of post-tensioning slab-column connections subjected to lateral loads entitled "Post-Tensioned Slab-Column Connections," published in the April 2007 issue of *Concrete International*. The paper was co-authored with Assistant Professor Thomas H.-K. Kang of the School of Civil Engineering and Environmental Science, University of Oklahoma, Norman, Oklahoma; and Professor Ian N. Robertson of the Department of Civil and Environmental Engineering, University of Hawaii-Manoa, Honolulu, Hawaii.



Professor **Barbara Minsker** of the Environmental Engineering and Science group was named a University Scholar. The University Scholars program recognizes six faculty members who are nominated by their colleagues as among the very best in their fields. Minsker's research is focused on improving the management of complex environmental systems through new and innovative systems-analysis techniques.



*Continued on page 27*

## Geotech class gets in-depth look at Devil's Slide tunnel project

**C**ivil engineering students in a graduate-level geotechnical course got an in-depth look at one of the nation's most unique tunneling projects, the Devil's Slide Tunnels Project in California, when they took a class field trip to the Pacifica, Calif., area in December 2008.

The trip was the culmination of CEE598 TSR Tunneling in Soil and Rock. Through a unique instructional arrangement, the class was taught by CEE Associate Professor Youssef Hashash and CEE Professor Emeritus Edward J. Cording, who took time out of his busy consulting practice to co-teach the class pro bono. Four times during the semester, Cording flew in from his home in Savannah, Ga., to present two four-hour lectures on Friday evening and Saturday morning.

"It was really out of his dedication and commitment to Illinois that he did this," Hashash says. "And the students benefited tremendously."

Located along the California coast between Pacifica and Montara, the geologically unstable Devil's Slide region is notorious for rock- and land slides. Where the Pacific Coast Highway, Route 1, crosses this region, there has been a long history of road closures. In 1995, the road was closed for 158 days and cost almost \$3 million to repair, according to the California Department of Transportation (Caltrans).

Caltrans' Devil's Slide Tunnels Project will allow Route 1 to bypass this region through two inland tunnels being constructed beneath San Pedro Mountain. Each tunnel is 30 feet wide and 4,200 feet long. A 1,000-foot bridge and a realignment of the roadway are also planned. The project is scheduled for completion in 2011.

The complexity of the geology at the site, which includes various kinds of rock and several fault zones, makes the tunneling project uniquely challenging and an excellent one for students to study, Hashash says.

Cording is a National Academy of Engineering member and a world authority on tunneling in rock and soil, urban heavy construction, and the effects of excavation on building damage. Through his consulting activities, he had contacts in the Devil's Slide project and was able to arrange for the unique field trip.

Hashash is an expert in numerical analysis techniques and the seismic response of tunnels, and he has years of

experience in tunneling, both through industry practice and research.

Throughout the semester, the students, 17 in all, worked on group projects to develop both static and seismic designs for one of two real-life projects, the Devil's Slide project and the Beacon Hill Tunnel project in Seattle. The class culminated with the field trip to California December 4-7. There was no cost to most of the students for the trip; it was funded by the CEE department and a generous gift by Cording.

The trip was structured so that students were introduced to the project as practicing design engineers would view it, Hashash says. First they examined rock

cores from borings and hiked up the mountain to view the site. Later they visited the tunnel itself and observed the sequential excavation method in progress. They had meetings with geologists, Caltrans design engineers, and construction engineers for the contractor. Finally, they presented their designs to an audience that included engineers on the project.

"It was really just a fantastic experience—a unique experience," Hashash says. "It will be something the students will remember for many years. We were able to offer our students a very unique perspective and hence, hopefully, an edge in engineering practice." i



*Students in CEE598 Tunneling in Soil and Rock traveled to the Pacifica, Calif., area in December to tour the Devil's Slide Tunnels Project. They viewed the site from above (top photo) then toured the excavation (bottom photos.) Professor Emeritus Edward Cording and Associate Professor Youssef Hashash, front row, third and second from right respectively, taught the class.*

# Department News

## Herricks honored by FAA for avian radar research

The Federal Aviation Administration (FAA) presented a 2008 Excellence in Aviation Research Award to CEE Professor Edwin Herricks in a February 19 ceremony on campus. The award is given for research contributions that have resulted in a significantly safer, more efficient national airspace system. Also honored at the event was CEE student Phillip Donovan, who was named FAA Student of the Year.

"This award is well-deserved recognition of Professor Herricks' impressive contributions to understanding new safety technologies for airports," said David Lange, CEE Associate Head and Director of the Center of Excellence for Airport Technology (CEAT), a research center headquartered within CEE through which Herricks is the lead Project Investigator for the Wildlife Safety Program.

Herricks' area of expertise is ecological engineering. His research analyzes and interprets the influences of humans on ecosystems. A focus is the improvement of engineering design and environmental decision making. He is the lead PI for the Wildlife Safety Program through the Center of Excellence for Airport Technology (CEAT) in support of the FAA, Office of Aviation Research efforts in Airport Wildlife Hazard Abatement.

Herricks heads a research team that is conducting performance assessments of new safety technologies in airport settings. The technologies include avian radars and foreign object debris (FOD) detection systems.

The deployment of avian radars to six airports (Seattle-Tacoma, O'Hare International, John F. Kennedy, Dallas-Fort Worth, Vancouver International, and the Naval Air Station at Whidbey Island) both tests radars in airport settings and uses data from these radars to build a prototype national system for wildlife hazard information. The FOD detection systems are deployed and planned for three airports (Providence, R.I., General Edward Lawrence Logan International in Boston, and O'Hare). Radar and electro optical sensors have been installed at these airports and Herricks' team conducts performance testing to verify system capabilities. In both programs the research will support the development of requirements and standards for new safety technologies leading eventually to published FAA Advisory Circulars.

The Excellence in Aviation Research Award is the FAA's premier recognition of outstanding contributions by external partners. This designation is a highly competitive, non-monetary award that is presented each year to worthy individuals or institutions conducting research that enhances airport and aircraft safety, improves capacity, and/or contributes to the



Barry Scott, FAA Director of Research & Technology Development, left, poses with Professor Ed Herricks after the Feb. 19 ceremony at which Herricks was awarded the FAA 2008 Excellence in Aviation Research Award for his work evaluating avian radar systems.

development of the Next Generation Air Transportation System. This is the 11th year that the prestigious Excellence in Aviation Research Award has been presented.

For more information about Herricks' research, visit <http://ceat.uiuc.edu>.

Continued from page 24



Assistant Professor **Scott Olson** was selected to receive the 2009 Collins Award for Innovative Teaching. Olson developed a new course, CEE 380 Geotechnical Engineering, that provides graduate students with the skills

needed to conduct field exploration for ground characterization for development of civil infrastructure including bridges, buildings and other structures.

Assistant Professor **Timothy Strathmann** received the 2009 Xerox Award for Faculty Research given in recognition of his outstanding research accomplishments during the past year. Dean Adesida Ilesanmi cited Strathmann's "leadership in the field of interfacial reactions of organic and inorganic contaminants in natural and engineering aqueous environments, his research focusing on the application of engineering heterogeneous systems and strong oxidizing agents for the control of emerging water contaminants, numerous publications in high-quality peer reviewed journals as well as collaborative projects both on and off campus."



Professor **Erol Tutumluer** of the transportation engineering group and his advisee and co-author, Phillip




Donovan, are recipients of the Transportation Research Board's Geology and Properties of Earth Materials Section Best Paper Award for their paper, "Use of Falling Weight Deflectometer Testing to Determine Relative Damage in Asphalt Pavement Unbound Aggregate Layers."

## Hall named Alumni Teaching Assistant

The 2009 winner of the CEE Alumni Graduate Assistantship for Teaching Excellence is Kerry S. Hall (MS 06), Ph.D. student of Professor John Popovics.

The annual assistantship award is made possible through gifts from CEE alumni. Its intent is to encourage promising students to consider careers in academia by offering recipients the opportunity to teach a class in the department for one semester and pursue their research for one semester.

Hall will teach CEE598 Non-Destructive Testing in Spring 2010. His research is on non-contact ultrasonic tomography for concrete elements.


He is the president of the American Concrete Institute student chapter at U of I. His career goal is to become a professor at a smaller university after he graduates next year. 




## Donovan is FAA Student of the Year

Phillip R. Donovan, a Ph.D. candidate in CEE, was honored as the Department of Transportation Air Transportation Centers of Excellence (COE) Outstanding Student of the Year on Feb. 19. Donovan, who is also a licensed Civil Engineer and United States Air Force Officer, is conducting his research through the Federal Aviation Administration Center of Excellence for Airport Technology (CEAT), headquartered within CEE at Illinois.

Donovan is performing research on the influence of offset wheel loads on the strength and durability of unbound aggregate layers in airport pavements. He has co-authored a number of archival journal articles related to his FAA-sponsored research.

The Department of Transportation recognized Donovan for his outstanding scholastic achievements, 



his service as an Air Force officer, and his contributions as a skilled researcher, engineer and practitioner. He received a \$1,000 award from his sponsoring organization and an opportunity to assume a short assignment with the FAA. 

# Department News



## *New faculty* Paramita Mondal


Engineering with a specialization in Structural Engineering, and a Ph.D. from Northwestern University in Civil and Environmental Engineering with a specialization in Structures and Materials. She wrote her thesis on the nanoscale characterization of cementitious materials.

Mondal will be teaching two courses in Construction Materials: CEE 300 Behavior of Materials and CEE 401 Concrete Materials.

She has research interests in various aspects of concrete microstructure, the use of nanotechnology to improve properties and performance of concrete and

other cementitious materials, and the design of innovative and sustainable construction materials.

Mondal belongs to the American Society of Civil Engineers, the American Concrete Institute, the American Ceramic Society and the Transportation Research Board. She serves on two committees within these organizations: ACI 236 Materials Science and AFN 15T Nanotechnology-Based Concrete Materials.

For more information about Mondal's work, visit <http://cee.illinois.edu/faculty/paramitamondal>. 

## *New faculty* Sotiria Koloutsou-Vakakis

The Environmental Engineering and Science area welcomed new Lecturer and Research Scientist Sotiria Koloutsou-Vakakis, a CEE alumna, to the faculty. She holds a Diploma degree from the National Technical University of Athens in Civil-Surveying Engineering (1985), an M.A. from the University of California, Los Angeles, in Geography (1990), and M.S. and Ph.D. degrees from the University of Illinois at Urbana-Champaign in Environmental Engineering (1993 and 1996).


Koloutsou-Vakakis teaches undergraduate and graduate courses in air quality modeling (CEE 445) and sta-

tistics (CEE202) and in fall 2009, she will introduce a new course on multinational environmental agreements.

An air quality researcher, Koloutsou-Vakakis has also worked on the policy-making aspects of climate change and ozone layer protection. In 1997, she held a postdoctoral appointment at the University of Illinois at Urbana-Champaign and from 1998 to 1999 she was a National Science Foundation-NATO postdoctoral fellow at the University of Athens, Greece.

Her research interests are in air quality, air pollution prevention, aerosol physical and chemical properties, and policy aspects of air pollution. She has worked



on characterization of physical and chemical properties of ambient aerosol particles, as these relate to climate change and urban pollution. She is a member of the Hellenic Association for Aerosol Research, the Air and Waste Management Association, and American Geophysical Union. 

## Global Leaders students visit Panama

Fourteen students from CEE's Global Leaders in Construction Management Program, accompanied by their professor, traveled to Panama in January to view some of the country's high-profile construction projects. Established in 2005 to prepare students interested in construction management for leadership roles in the industry, the Global Leaders program gives students an opportunity to visit major construction projects around the world and learn new methods. The Panama trip was the fifth international trip; previous trips included visits to Japan, United Kingdom, France, Dubai, and China.

"Currently, Panama is a strong international construction market with a diverse set of signature projects under construction," said Visiting Assistant Professor Carlos Arboleda, who accompanied the group.

For 12 days, the Global Leaders group visited a wide range of projects, including the expansion project for the existing Canal; the Trump Ocean Club; the Museum of Biodiversity, designed by Frank Gehry; The Tower of the Americas; and the expansion of several ports in both the Atlantic and Pacific oceans, such as Balboa, Manzanillo, and Cristobal Ports.

The trip's highlight was the visit to the Panama Canal, including a ride on a tug boat in Gatun Lake, access




*Students in CEE's Global Leaders in Construction Management program with Assistant Professor Carlos Arboleda pose at the Manzanillo Port in the Atlantic Ocean (Panama). Pictured are, (left to right): Tom Dieball, Pok-Ki Tsang, Lindsay Carpenter, Brandon Tonarelli, Jennifer Henry, Matt Bayer, Robert Schneider, Visiting Assistant Professor Carlos A. Arboleda, Louie Sevandal, Kevin Foster, Luke Bailey, Kevin Bayci, Stephanie Larson, Monica Shenouda, and Tamra Harkey.*

to some of the facilities built by the U.S. almost 100 years ago, and a field trip to the excavation of the new canal. Each of these projects presented different challenges such as equipment management, high rise construction, land reclamation, and massive excavations.

"The Panamanians were very proud of their achievements since the United States transferred the operation of the Canal Zone in 1999. Thus far they have been very successful in that task," Arboleda said. "As part of the trip, the students were exposed to all sides of the construction process and the Panamanian culture, including its music and traditional food."

In addition to job site visits, the group participated in meetings with real estate professionals, the Senior Commercial Officer of the U.S. Embassy in Panama, structural designers, and the President of the Universidad Tecnológica de Panamá.

The Global Leaders students who took the trip were undergraduates Jennifer Henry, Lindsay Carpenter, Louie Sevandal, Tom Dieball, Luke Bailey, Kevin Bayci, and Kevin Foster; and graduate students Tamra Harkey, Monica Shenouda, Stephanie Larson, Robert Schneider, Matt Bayer, and Brandon Tonarelli. 

# Department News

## Record number of women among fall '09 CEE freshmen

CEE anticipates a record number of women in its fall 2009 freshman class. An unprecedented 33 percent of accepted first-year undergraduates this fall, 58 out of 177, will be women, according to Professor and Associate Head David A. Lange.

Civil Engineering is increasingly attractive to the current generation of high school students who value service-oriented career paths, Lange says.

"Young women value the opportunity to help build our neighborhoods and cities and contribute to public safety and health," he says.

Increasing participation of women

is a priority of the College of Engineering through its Women In Engineering (WIE) program. Recruitment starts as early as middle school with summer camps such as the Girls' Adventures in Mathematics, Engineering and Science (GAMES) program. CEE has been a strong supporter of GAMES by sponsoring activity sessions during the week-long camp.

On campus, the College develops the camaraderie of women students through activities that encourage scholarship and social interaction.

"We see the incoming freshman class as an important opportunity to engage and retain women students," Lange says.



## Water quality students visit treatment plant



Students taking undergraduate- and graduate-level courses in Water Quality Control Engineering in fall 2008 traveled to Lake Bluff, Ill., to the Central Lake County Joint Action Water Agency Paul M. Neal Water Treatment Facility. The plant treats 50 million gallons per day of Lake Michigan water and serves nearly 200,000 people in 12 communities. Students learned about the various treatment processes performed in this state-of-the-art treatment facility including ozonation, coagulation, flocculation, sedimentation, multimedia (bio)filtration, and ultraviolet light disinfection. The trip was co-sponsored by CEE and the WaterCAMPWS. Pictured with the students are Associate Professor Eberhard Morgenroth (front row, left) and Professor Benito Mariñas, second row fifth from left.

# As much FUN as asphalt pavement

Featuring displays like "Asphalt Pavements are a Lot of Fun!", "What is Quick-sand?", "Railroad Engineering Extravaganza," and "Squiggly River Boat Race Challenge," the Hydrosystems Laboratory and Newmark Civil Engineering Laboratory opened their doors to the public March 13-14 for Engineering Open House 2009.

This year, CEE took the event's top honor, the prestigious Spirit of Illini Engineering Award, given to the department with the best overall presentations and presenters.

Engineering Open House (EOH) is an annual event held in March, in which engineering departments showcase the work of students and faculty. The entire event is student-run.

The department that receives the Spirit of Illini Engineering Award is presented with a traveling trophy, inscribed with the name of the department.

For more information about Engineering Open House, visit <http://eoh.ec.uiuc.edu/>.

### Photos:

1. The Spirit of Illini Engineering trophy, awarded to CEE for overall excellence at EOH.
2. Creative elements of the Drinking Water Treatment display.
3. Debakanta Mishra mans the display Asphalt Pavements are a Lot of Fun!
4. Scott Banjavcic uses gloves filled with various materials to elucidate relative density.
5. Nathaniel Hanna Holloway and Christiana Barnas demonstrate the canoe chute model.
6. Joel Dickhut invites visitors to explore the Hands-on Hydrologic Model.



## EOH Awards

In addition to CEE's Spirit of Illini Engineering Award, several individual CEE displays won Engineering Open House awards. They are:

### **The Hazards of Low-Head Dams** ✿ **First place, Encore: Non-Technical**

*By the student chapters of the International Association of Hydraulic Engineering and Research and the International Water Resources Association*  
Dangers of low-head dams, common throughout Illinois on rivers and streams

### **The Tale of Heavy and Light—The River under the River** ✿ **Second place, Just for the Fun of It: Hands-On Learning**

*By the student chapter of the International Association of Hydraulic Engineering and Research*  
Relative density, a basic rule of physics, and how density flows generate a river under the Chicago River.

### **Drinking Water Treatment** ✿ **Second place, Real World**

*By WaterCAMPWS students*  
Design and layout of a drinking water treatment plant through hands-on and visual demonstrations and a small-scale model



**A. Epstein Award**  
Angelia Tanamal

**Alvord, Burdick & Howson Award**  
Ryan Mercer

**Anna Lee and James T.P. Yao Scholarship**  
Johanna Gemperline  
John Sarsfield

**Asphalt Equipment Manufacturers Scholarship**  
Elizabeth Carrington

**Bates and Rogers Scholarship**  
Chuan Li  
Denglin Wu  
Krystian Powala

**Bowman, Barrett & Associates Outstanding Scholar Award**  
Mark Messner

**Carroll C. Wiley Traveling Award**  
Brian Hill

**Central Illinois Section of American Society of Civil Engineers**  
Matthew Sugihara

**CH2M Hill Environmental Engineering Scholarship**  
Derek Vardon  
John Jurevis  
Eric Shine

**Charles E. DeLeuw Travel Award**  
Eunseok Choi

**Chester P. Siess Award**  
Soheil Soghrati  
Xiaopeng Li

**Chicago Outer Belt Contractors Association Scholarship**  
Yunfei Yang

**Civil Engineering Class of 1943 Undergraduate Leadership Award**  
Claire Joseph

**Clement C. Lee Outstanding Scholar Award**  
David Yaksic

**Concrete Reinforcing Steel Institute Scholarship**  
Tieranny Baker

**Crawford, Murphy, & Tilly Inc., Award**  
Kevin Swanson

**Deep Foundations Institute Educational Trust Berkel & Company Contractors Inc. Scholarship**  
Isaac Chan  
Ryan Miller  
Manish Kapatel

**Delores Wade Huber Scholarship**  
Jose Garcia  
Ronald Halicke  
Hannah Suh



**Doris I. and James L. Willmer Endowed Scholarship in Civil and Environmental Engineering**  
Kimberly Parker

**Earle J. Wheeler Scholarship**  
Andrew Kustusch  
Lauren Valentino

**Eli W. Cohen – Thornton Tomasetti Foundation Scholarship**  
Danny Lee  
Dian Woon

**Ernest L. Doctor Memorial Scholarship**  
Debakanta Mishra

**George L. Farnsworth Jr. Scholarship**  
Sayo Chaoka  
Esvina Litia Choo Mei Seng  
Jessica Lambert

**Golf Course Builders Association of America Foundation Scholarship**  
Abigail Ekstrand

**Gordon and Monalea Dalrymple Undergraduate Scholarship**  
Lina Chan  
Laura Tarnawa

**Grant W. Shaw Memorial Scholarship**  
Adam Borhart  
Benjamin Zeman

**Harold R. Sandberg Scholarship**  
Peter Maraccini

▲ The recipients of the Walter L. And Carole A. Crowley Scholarship, Brian Schertz, left, and Adam Tate, right, with the Crowleys. Schertz and Tate also were the 2009 winners of the Ira O. Baker Prize.

▼ The recipients of the Deep Foundations Institute Educational Trust Berkel & Company Contractors Inc. Scholarship, Ryan Miller, left, and Isaac Chan, right, with Assistant Professor Scott M. Olson.



# 2009 Student Awards



▲The recipients of the Norman Carlson Scholarship, Michael Wnek, left, and Brennan Caughron, right, with Associate Professor Christopher P.L. Barkan.



▲The winner of the Concrete Reinforcing Steel Institute (CRSI) Scholarship, Tieranny Baker, center, with presenters Jack Gibbons, left, CRSI's Center Region Manager, and Robert J. Risser (BS 87, MS 89), CRSI President and CEO.

**Harry R. Hanley Memorial Scholarship**  
Brian Hill

**Harvey Hagge Concrete Scholarship**  
Kerry Hall  
Austin Dodson

**Henry T. Heald Award**  
Jayce Locke

**Illinois Association of County Engineers Award**  
Robert Bates  
Alexander Brand  
Pamela Gronkowski  
Amanda Koenig

**Industry Advancement Foundation of Central Illinois Builders of the AGC Scholarship**  
Michael Martin

**Ira O. Baker Memorial Scholarship**  
Timothy Veldman  
Nicholas Warrens  
Nicholas Anchor

**Ira O. Baker Prize**  
Brian Schertz  
Adam Tate

**Klein and Hoffman Inc., Scholarship In Honor of Frank Klein**  
Michael Clark  
Amna Mahmud

**Koch Scholarship in Civil and Environmental Engineering**  
Michael Kehoe

**Lawrence J. Fritz Undergraduate Scholarship**  
Jared Thoele  
Peter Faletti

**Leigh F. J. Zerbe Scholarship**  
Eric Anderson  
Anna Cook

**Maude E. Eide Memorial Scholarship**  
Nils Jordahl  
Kelsey Flanagan  
Maria Quinones

**Max Whitman APWA Memorial Scholarship**  
Julia Plews

**Melih T. Dural Undergraduate Research Prize**  
Angelia Tanamal

**Moreland Herrin Scholarship**  
Lauren Payne  
Carrie Desmond

**Norman Carlson Scholarship**  
Michael Wnek  
Brennan Caughron

**Ravindar K. and Kavita Kinra Fellowship in Civil and Environmental Engineering**  
Ashna Chopra

**RJN Foundation Civil Engineering Scholarship**  
Matthew Landstrom

**Samuel C. Roberts Award in Civil Engineering**  
Mark Hirschi

**Walker Parking Consultants Undergraduate Scholarship**  
Justin Grasse

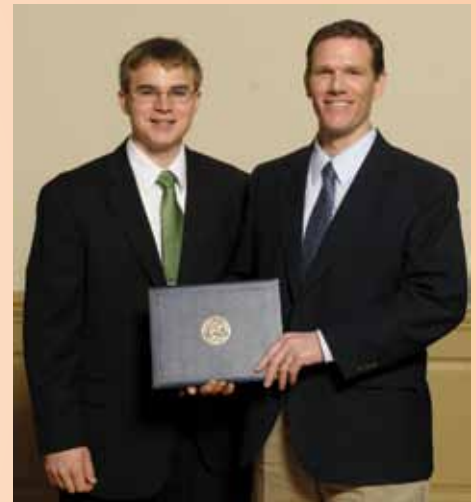
**Walter E. Hanson Graduate Study Award**  
Melissa Berena

**Walter L. and Carole A. Crowley Scholarship**  
Adam Tate  
Brian Schertz

**Wayne C. Teng Scholarship**  
Ahmed Ahmed  
Quinton Champer  
Spencer Koehler  
Elizabeth Rehwoldt  
Paul Vizenor

**Wilfred F. and Ruth Davidson Langlier Scholarship**  
Sayo Chaoka  
Ryan Mercer  
Derek Vardon

**William E. O'Neil Award**  
Kevin Foster



▲Assistant Professor Scott M. Olson, right, winner of the American Society of Civil Engineers' student chapter Outstanding Instructor Award, with student John Dohle.



▲The winner of the Eli W. Cohen - Thornton Tomasetti Foundation Scholarship, Danny Lee Dian Woon, left, with Daniel F. Marquardt, Managing Principal at Thornton Tomasetti



Each year, the Civil and Environmental Engineering Alumni Association honors outstanding alumni with the Distinguished Alumnus/Alumna Award and the Young Alumnus/Alumna Achievement Award, presented at the annual Chicago Regional Dinner Meeting. For more photos, see page 41.

# 2009 Alumni Awards

## Young Alumnus/Alumna Achievement Award



**Jess C. Brown**  
Manager, Research Group  
Carollo Engineers, Sarasota, Fla.

BA 1995, Harvard University  
BS 1998, University of Illinois  
MS 1999, University of Illinois  
PhD 2002, University of Illinois

*For high quality research and development of new biological drinking water processes, for incorporation of R&D results into innovative, full-scale treatment plant processes, and for exemplary industrial leadership in the area of biological treatment of drinking water.*



**Zaher M. Hashisho**  
Assistant Professor, Department of  
Civil and Environmental Engineering,  
University of Alberta, Edmonton,  
Alberta, Canada

BS 1998, American University of Beirut  
MS 2000, American University of Beirut  
MS 2007, University of Illinois  
PhD 2007, University of Illinois

*For highly innovative designs and unique research contributions in environmental engineering which are assisting society to advance technologically in a more sustainable manner.*

## Distinguished Alumnus/Alumna Award



**Robert W. Bailey**  
President, Water Business  
Group  
CH2M HILL, Orlando, Fla.

BS 1977, University of Illinois

*For exemplary performance and outstanding achievements in the consulting engineering profession, and for community and state leadership in the state of Florida.*



**William F. Baker**  
Structural and Civil Engineering  
Partner  
Skidmore, Owings & Merrill, Chicago

BS 1975, University of Missouri, Columbia  
MS 1980, University of Illinois

*For leadership in structural planning, design, and project management of numerous major high-rise buildings in the United States and overseas, and for generous support of the department.*



**Louis Bowman Jr.**  
Founder and Chairman  
Bowman, Barrett & Associates  
Inc., Chicago

BS 1951, University of Illinois

*For his expertise as a leader in major engineering projects and corporate management as well as business development, and for service and generous support of the department.*



**James R. Harris**  
President  
J.R. Harris & Company, Denver, Colo.

BS 1968, University of Colorado, Boulder  
MS 1975, University of Illinois  
PhD 1980, University of Illinois

*For outstanding leadership in practice and project management, for valuable contributions nationally to the profession of civil engineering, and for exceptional service to the department.*

# Alumni News

## 2000s

**Joshua Cantone** (MS 07), a Ph.D. candidate in Environmental Hydraulics and Hydraulic Engineering, was awarded a Sir Keith Murdoch Fellowship by the American Australian Association, a non-profit organization in the United States devoted to relations between the United States and Australia and New Zealand. Over the past 10 years, the Association has awarded numerous fellowships for advanced study in the United States. The fellowship is for \$25,000 and is aimed at building on existing strong social and economic partnerships and to foster intellectual exchange between the United States and Australia. Cantone's research focuses on developing a robust stochastic hydrologic model capable of simulating large urban combined sewer and stormwater systems. The work is part of ongoing research into the hydrologic and hydraulic behavior of Chicago's Tunnel and Reservoir Plan.

**Kyle R. Duitsman**, PE, (BS 03) and Katharine M. Hoogheem (BS 04) were married on Sept. 6, 2008, at The Old Cathedral Basilica of King St. Louis in St. Louis. He is employed by PSI, Denver, Colo., as a department manager. She is a staff engineer for Felsburg, Holt, Ullevig, Denver.

**Christopher Erickson** (BS 00, MS 01) married Angela McLaughlin on Sept. 15, 2007, in Downers Grove, Ill. He is employed by Power Construction in Chicago.

**Thomas M. Frankie** (BS 08) married Erin Stevig on July 12, 2008.

**Paik Kyungrock** (PhD 06) is an assistant professor in the School of Civil, Environmental, and Architectural Engineering at Korea University in Seoul. He assumed that position in March after two years as a lecturer at the University of Western Australia.

**Christoph Roden** (PhD 08) was the 2008 recipient of the Engelbrecht Fellowship. This prestigious fellowship honors Richard Engelbrecht, a pioneer in environmental pollution control with a distinguished career in water and wastewater treatment. The annual award is given

to a student near graduation who shows outstanding promise for success in environmental engineering. After graduation, Roden and his family relocated to Boulder, Colo., where he became a Senior Aerosol Engineer at SPEC Inc. One of his areas of interest is in designing instruments to understand particles, such as polar clouds. This spring Roden was working at the South Pole.

**Joshua O. Stewart** (BS 06) married Jenna M. Smith on July 26, 2008, in Plano, Ill. Stewart is an engineer with Reynolds, Higgenbotham and Jacobs. They live in Springfield, Ill.

## 1990s

**William J. Bohlen**, PE, (BS 94) joined HDR's Houston office as Ports and Harbors section manager. Bohlen has more than 15 years of experience planning and designing marine terminal, bridge, transit and special structures. He is a registered professional engineer in Texas, Louisiana and Washington.

**Erik Sorensen**, PE, (BS 97) a project engineer with MSA Professional Services in Madison, Wis., has earned Leadership in Energy and Environmental Design (LEED) accreditation.



John Carrato

## 1980s

**John L. Carrato**, PE, SE, (BS 79, MS 80) is President and Chief Executive Officer of Alfred Benesch and Company.

**Laura L. McGovern**, PE, (BS 86) is Chicago Assistant Division Manager for Alfred Benesch and Company.

**David J. Morrill**, PE, SE, (BS 78, MS 80) is Chicago Assistant Division Manager for Alfred Benesch and Company.

**Naneil R. Newlon**, PE, (BS 81) is public works director



Christoph Roden (PhD 08) at the South Pole.

for the city of Downers Grove, Ill. She has more than 17 years of experience in public works management.

**M. Ala Saadeghvaziri** (BS 82, MS 83, PhD 88), a professor at the New Jersey Institute of Technology, has been named a Fellow by the American Society of Civil Engineers (ASCE). Saadeghvaziri researches the effect on buildings and other structures of time, usage and loadings and the outcome of disasters such as earthquakes or explosions. He is a member of ASCE's committees on Bridge Security, and Blast Shock and Vibratory Effects.

## 1970s

**Douglas R. Brown**, PE, BCEE, (MS 79) was certified as an environmental engineer by the American Academy of Environmental Engineers. Brown is a Senior Process Engineer at CDM in Denver, Colo.

**Patrick J. Fennell**, PE, BCEE, (MS 77) was certified as an environmental engineer by the American Academy of Environmental Engineers. Fennell is a Principal Engineer at TRC in Windsor, Conn.

*Continued on page 36*

# Alumni News



## Nominations invited: alumni awards

If you know of a deserving colleague who graduated from CEE, please request a nomination form for the Distinguished Alumnus Award or the Young Alumnus Achievement Award from Carla Blue, Program Coordinator, 1117 Newmark Lab, 205 N. Mathews Ave., Urbana, IL 61801; fax 217-333-9464, blue1@illinois.edu. You must fill out the form, but we will assist

you as needed. Nominations are due no later than July 15 for consideration for the following year's awards. Please make sure you make a clear case for the professional achievements and contributions of your nominee. A nominee will be considered for an award when the form is completed and returned by the nominator. Criteria for the awards are as follows:

### Distinguished Alumnus Award

This award recognizes professional accomplishments or unique contributions to society of civil engineering graduates. Recipient will have distinguished themselves by outstanding leadership in the planning and direction of engineering work, by administration of major engineering work, by contributing to knowledge in the field of civil engineering, by fostering the development of young engineers, or by uniquely contributing to society. They should be dedicated to the ideals of the profession as evidenced by their contributions to the recognition and promotion of civil engineering activities and professional organizations. CEEAA board members are ineligible until at least two years after their terms have ended. UIUC faculty members are ineligible for at least two years after ending their faculty status.

### Young Alumnus Achievement Award

This award recognizes a graduate who has received his or her most recent degree from the University within the past 10 years, with special consideration for those candidates who are 35 or younger. Recipients shall have distinguished themselves in their fields of endeavor and achieved a level of accomplishment significantly greater than that of other recent graduates. Recipients shall have demonstrated one or more of the following: outstanding technical advancement or achievement; design innovation and excellence; enhancement of civil and environmental engineering education; outstanding leadership resulting in significant accomplishments; exemplary service to the profession. Consideration is given to volunteer activities in civic, religious or charitable groups and organizations.

*Continued from page 35*

Consultant **Anthony E. Fiorato**, PE, SE, (MS 68, PhD 71) of Glenview, Ill. has received the ASTM International Award of Merit and the accompanying title of Fellow. The Award of Merit is the highest organizational recognition for individual contributions to ASTM standards activities. Fiorato was recognized "for meritorious and dedicated leadership to ASTM International Committee C09 on Concrete and Concrete Aggregates and to the Society for service on the board of directors and as chairman of the board."

**Nancy Gavlin** (BS 76) is Director of Education for the American Institute of Steel Construction (AISC). She will manage AISC's university relations and continuing education activities, as well as oversee the institute's education program for professional engineers.

**Terry Greene** (BS 74, MS 75) was promoted to president of GDH, the construction management subsidiary of The Hagerman Group. Greene has been with The Hagerman Group more than 19 years.

**David Ludwin** (BS 77, MS 78) joined Parsons as Vice President, Business Development, for its Water & Infrastructure group. In this role, he is responsible for the pursuit, sale, and execution of water projects in the Southwestern United States.

**Charles D. Wurster** (MS 76) is president and chief executive officer of the San Diego Unified Port District. A retired three-star admiral with 37 years of experience in the U.S. Coast Guard, Wurster lives in San Diego with his wife, George Ann.

## 1960s

**Shamsheer Prakash** (MS 61, PhD 62), Emeritus Professor of Civil Engineering at Missouri University of Science & Technology, received the Distinguished Alumnus Award from the Indian Institute of Technology, Roorkee, in De-



ember 2008. He has been cited for his internationally and nationally recognized work in the area of soil dynamics, including pioneering work on liquefaction of fine-grained soils, seismic design of piles, and seismic analysis of rigid retaining walls. He revolutionized the use of geotechnical engineering case histories in professional practice and education, and has chaired six international conferences on case histories in geotechnical engineering 1984-2008. He also chaired four international conferences on advances in geotechnical earthquake engineering from 1981-2001. He authored the first comprehensive text on soil dynamics in 1981.



*Shamsher Prakash*

**Robert N. Bruce Jr.** (PhD 62), a retired faculty member at Tulane University, received the T.Y. Lin Award from the American Society of Civil Engineers in 2008. Bruce retired from teaching in 2006 but still engages in research for Tulane and the Louisiana Department of Transportation and Development.

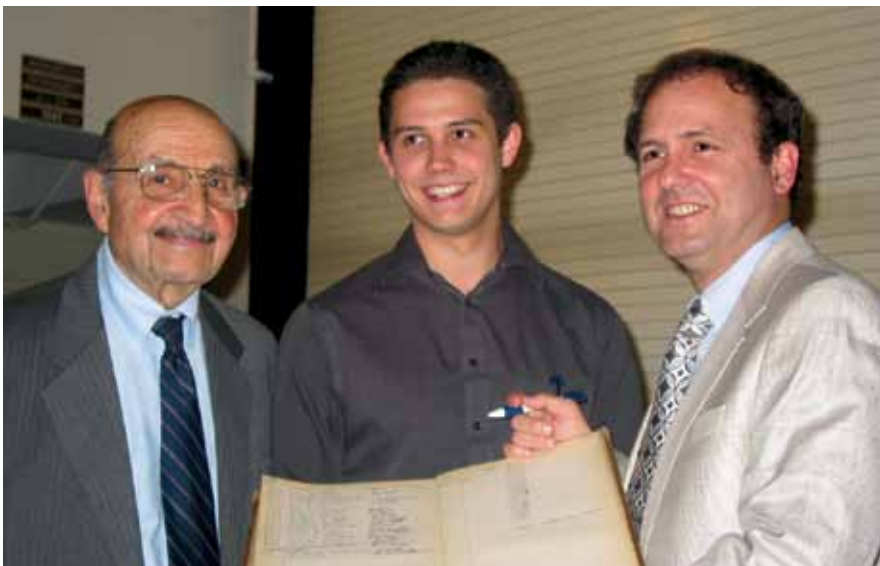
## 1950s

**C. Terry Dooley** (BS 54) was named an Honorary Member of the American Concrete Institute (ACI). Dooley is Secretary of the Board of Directors and full-time volunteer for the ACE (Architecture, Construction, and Engineering) Mentor Program of the Los Angeles Metropolitan Area. Dooley was cited "for his outstanding contributions to ACI and the concrete construction industry and for his advocacy, mentorship, education and development of young people for the design and construction industry."



*C. Terry Dooley*

## Chi Epsilon: Three generations




*Jon E. Khachaturian (BS 78), right, this year's Chi Epsilon Chapter Honor Member, with his son, Matthew T. Khachaturian (BS 07), center, and his father, CEE Professor Emeritus Narbey Khachaturian (BS 47, MS 48, PhD 52) in a photo taken May 2. The three are pictured with the book in which Chi Epsilon initiates inscribe their signatures; it bears the names of all three. Narbey Khachaturian passed away on May 14 (please see the obituary, page 39).*

**T**he students of Chi Epsilon Alpha Chapter chose Jon E. Khachaturian (BS 78), president of Versabar Inc., as this year's Chapter Honor Member.

Chi Epsilon is the National Civil Engineering Honor Society, founded at the University of Illinois in the spring of 1922. It seeks to promote the values of scholarship, character, practicality, and sociability in its members and the profession of civil engineering. Chapter Honor Members are individuals

who have exemplified the ideals of Chi Epsilon and played an important role in a Chi Epsilon chapter.

In the 1980s, Khachaturian's patented system to lift unwieldy loads safely and effectively, the reusable spreader bar, formed the basis for the company he founded and now leads, Versabar Inc., which specializes in engineering solutions to heavy lifting problems. Today he heads up a family of companies serving the engineering industry. 

## Write home

Have some news, photos or opinions to share? We can't wait to hear from you! Email your letters to the editor, alumni news, or suggestions for stories to [celeste@illinois.edu](mailto:celeste@illinois.edu) or mail them to:  
Editor, CEE Newsletter  
1100 Newmark, MC-250  
205 N. Mathews Ave.  
Urbana, IL 61801



# In Memoriam



## James F. Stallmeyer (BS 47, MS 49, PhD 53)


**J**ames E. Stallmeyer, Professor Emeritus of Civil Engineering, passed away on March 5, 2009. He was born on August 11, 1926, in Covington, Ky.

Stallmeyer received his B.S. degree in 1947, M.S. degree in 1949, and Ph.D. degree in 1953, all from the University of Illinois. In 1952 he accepted a position at U of I as an Assistant Professor, and rose through the ranks to become a Professor of Civil Engineering in 1960. He retired on August 20, 1991.

Stallmeyer was an expert in steel structures. He carried out research on

many aspects of structural steel design including bridge structures, welded connections, and fatigue fracture of steel structures. He made extensive studies of load distribution in girder highway bridges for the American Iron and Steel Institute. He was an active member of Committee 15, Steel Bridge Structures, of the American Railway Engineering Association and was an occasional lecturer for the American Institute of Steel Construction. He consulted with numerous firms in all aspects of design and construction of steel structures.

Stallmeyer authored or co-authored many journal articles, monographs, textbooks, and reports. He is the co-author of the authoritative textbook, *Design of Steel Structures* (McGraw-Hill Book Co., 1991) with the late E. H. Gaylord, and his late brother C. N. Gaylord. At the time of his death he was working with a new co-author, Gary Fry of Texas A & M University, to update this seminal text. He is the recipient of the Adams Memorial Award of the American Welding Society, and the Everitt Award of the College of Engineering for excellence in teaching.

He is survived by his wife, Mary. They have six children, Cynthia, James, Michael, Catherine, John and Gregory, and six grandchildren. 

## 2000s

**Jonathan A. Lorig** (BS 02) died Nov. 16, 2008. He was 34. Lorig also received an M.S. from the Graduate School of Library and Information Sciences in 2004.

## 1970s

**William D. McDonald** (BS 70, MS 75) died Oct. 18, 2008, in Orlando, Fla. He was 61.

**Stephen W. Sullivan** (BS 79) died March 21. He worked as a civil engineer, surveyor, and construction project manager.

## 1960s

**Byron A. Marks** (BS 59, MS 60) of Des Moines, Iowa, died Sept. 9, 2008.

**Richard W. Miller** (BS 60, MS 62) of Naples, Fla., died Oct. 27, 2008.

**Manuel J. Moskaluk** (BS 67) died Oct. 15, 2008. He was the Director of Engineering and Public Works for the City of Alpharetta, Ga., and a former professor at Georgia Tech.

## Nancy B. Brooks (MS 53)

**N**ancy B. Brooks (MS 53) of Atlanta, Ga., died in July 2008. The first woman on the department's research staff, she was one of the pioneers in bringing computers into use in the department. After receiving her bachelor's degree at Auburn University in the late 1940s, Brooks came to Illinois for graduate studies, receiving a research assistantship programming the Illiac I.


While at Illinois, she met and married John A. Brooks (MS 48, PhD 55),

her officemate in Newmark Civil Engineering Laboratory. After earning their degrees, the couple moved to the Los Angeles area, where Nancy began working for RAND Corporation and John for another defense contractor. In 1963, she left RAND to co-found a small research and development firm. She later joined General Research Corporation in Santa Barbara as a senior systems consultant.



Nancy retired to Atlanta in 1980 to care for her mother, a victim of Alzheimer's Disease. She and John spent their final years there. He died in 1995. During her retirement, Nancy was active in charitable work.

In 1998, Brooks was honored as the department's first Distinguished Alumna in recognition of her successful career in the use of computers for engineering applications.

Nancy and John Brooks left a bequest to the department to provide a fellowship in graduate studies in CEE with preference to be given to a woman. 

## 1950s

**John L. Curtis** (BS 55) died May 15, 2008, in Kalamazoo, Mich.

**William G. Devens** (MS 53) died April 12, 2008. A retired Lieutenant Colonel in the U.S. Army, Devens served as Director of Engineering Fundamentals at Virginia Tech.

**Jacob O. Whitlock** (BS 50) died Nov. 9, 2008, in Springfield, Ill. He was a Montgomery County highway engineer, pioneering innovative bridge building materials and methods, including prestressed concrete.

## 1940s

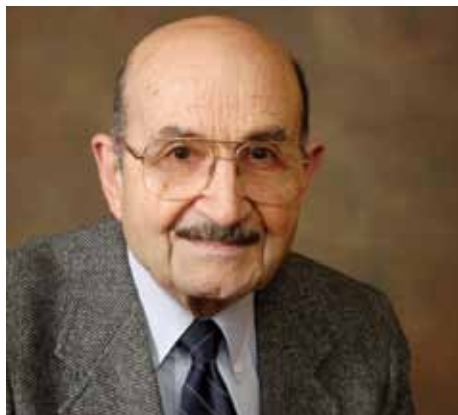
**John J. Fyalka** (BS 45) of Springfield, Ill., died Oct. 26, 2008. He worked for the Illinois Department of Transportation for 36 years, retiring in 1986 as attorney for the Division of Highways, Bureau of Land Acquisition.

**Richard R. Gifford** (BS 49) of Champaign, Ill., died Oct. 30, 2008.

**James V. Musick** (BS 49) died March 28. He served in WWII in the U.S. Army Air Corps, flying B-17s. A professional transportation engineer for 51 years, Musick spent 40 years as Chief Engineer for the City of Cincinnati.

**George E. Neher II** (BS 49), of Lisle, Ill., died April 24. Neher worked for Alvord, Burdick and Howson Civil Engineers for 40 years. Notable projects on which Neher worked included the 150-mile pipeline that brought Lake Michigan water from the City of Chicago to DuPage County and the Port Huron-Detroit Water Treatment Plant.

**Alfred D. Webster** (BS 43) of Naperville, Ill., died Jan. 23. He retired after 27 years as a structural engineer with Western Electric and formed his own structural engineering consulting company. He served as a U.S. Navy Seabee in the South Pacific during WWII.



## Narbey Khachaturian

(BS 47, MS 48, PhD 52)

as forensic engineering. He was one of the founders of the American Society of Civil Engineers (ASCE) Technical Council on Forensic Engineering in 1982. Bridge structures were one of his passions. He was co-author of a textbook on prestressed concrete, and was the author or co-author of more than 24 journal papers and College of Engineering bulletins.


Khachaturian held many major national society and professional organization memberships and posts in ASCE, the American Concrete Institute, the American Society of Engineering Education, and the National Society of Professional Engineers. He was Director (1985-89) and President (1989-90) of the Structural Engineers Association of Illinois. He was a licensed Structural Engineer in the State of Illinois.

His many honors included being named a Distinguished Member of ASCE, and receiving the John Parmer Award of the Structural Engineers Association of Illinois, the Halliburton Award for engineering education leadership, and the Harold T. Larsen award of Chi Epsilon.

As an educator, Khachaturian demonstrated extraordinary commitment to student affairs. For extended periods of time, he served as faculty adviser of Chi Epsilon Alpha Chapter. He was a mentor to scores of students. He twice received the ASCE outstanding teacher award. He advised 18 doctoral students, the first of whom was the late Fazlur Kahn, who went on to design the Sears Tower.

Khachaturian demonstrated the highest standards of professionalism and set standards of excellence that serve as a lasting model for students, faculty and professionals alike. His contributions to the civil engineering profession will long be remembered.

He married Margaret Miles on January 26, 1952. She survives, as well as four children—Greg, Jon, Mary and Steven—11 grandchildren and a brother and sister.

—Professor Emeritus William J. Hall 

**P**rofessor Emeritus Narbey Khachaturian died on May 14, 2009. He was born on January 12, 1924, in Tehran, Iran.

Khachaturian attended Tehran University, but upon acceptance to the University of Illinois he embarked on Dec. 7, 1944, for the United States. Traveling for 129 days during wartime, he took a series of planes, trains, and ships. The last leg of his journey was on the American troop transport ship the U.S.S. General Mann. He arrived in San Pedro, Calif., on April 15, 1945, traveled to Urbana-Champaign, and began his studies in the Department of Civil Engineering.

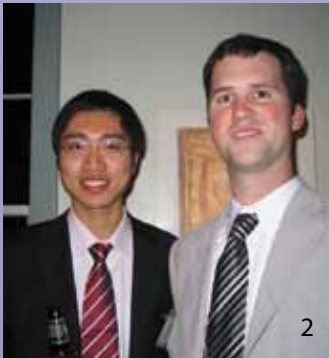
Khachaturian received his B.S. in 1947, M.S. in 1948, and Ph.D. in 1952. His adviser was Professor T. C. Shedd, a famous bridge engineer. Khachaturian joined the faculty in 1952, and achieved the rank of Professor in 1960. In 1979-80 he held a part-time post as Assistant Dean of the College of Engineering. In 1983 he became Associate Head of the department, responsible for undergraduate students and instructional programs, a post he held until his retirement in 1989.

Khachaturian's University service included serving as a member of the Chancellor's Architectural Design Advisory Committee during the '80s. He undertook several special assignments, one as a National Science Foundation Senior Postdoctoral Fellow at UCLA (1963-64), and a one-year post as a Visiting Professor at the Indian Institute of Technology, Kanpur, India in 1969.

Khachaturian was an exceptional instructor, frequently sought out by students for help and advice. His research and publications were primarily in the area of reinforced and prestressed concrete and structural optimization, and reflected great interest in failure analysis, commonly referred to

# CEE Alumni Events

## Transportation Research Board Washington, D.C.



1. At a reception aboard a train car (l to r): CEE Associate Professor Chris Barkan, Bryan Schlake, Dan Peltier, Brennan Caughron, Mark Dingler, Mike Wnek, Liz Carrington, John Zeman, CEE program coordinator Kim Hagemann, and Steven Sawadisavi  
2. CEE Assistant Professor J. Riley Edwards, right, with CEE student Xiang Liu 3. William R. Vavrik (BS 96, MS 97, PhD 00), left, with CEE Professor Imad Al-Qadi 4. Candace and Dennis Warner (BS 63, MS 66) 5. L to r: CEE student Carlos Gonzalez, Sarah Jersey (BS 01); CEE student Carrie Peterson; and Geoffrey Roberts (BS 05).

Alumni, faculty and friends of the department attended the 16<sup>th</sup> annual CEE alumni reception at the 88<sup>th</sup> annual Transportation Research Board meeting January 13 in Washington, D.C.

At a reception for CEE alumni (bottom four photos), guests enjoyed hors d'oeuvres and cocktails at the New Heights restaurant.

The department gratefully acknowledges the following sponsors of the alumni reception at the 2009 Transportation Research Board meeting:

### Silver Level

Applied Pavement Technology Inc.  
Applied Research Associates Inc.  
Charlie Greer (BS 71, MS 73)

### Bronze Level

Diyar Bozkurt (MS 97, PhD 02)  
Illinois Chapter, American Concrete Pavement Association  
Stan Herrin (BS 74, MS 78)  
Marquette University  
Katie Zimmerman (BS 83, MS 85)

### U of I Sponsors

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# Chicago Regional Dinner Meeting

Chicago-area alumni, CEE faculty, students and friends of the department gathered in February at the Union League Club in Chicago for the annual Chicago Regional Dinner Meeting. The event included a cocktail reception, dinner, the presentation of the CEE Alumni Association awards, and a department update by Professor and Head Robert H. Dodds Jr.

For the CEE students who signed up to attend the dinner, the day also included a tour of a notable construction project. This year, the students toured the Stickney Water Reclamation Plant in Cicero, Ill. The department extends its thanks to Mary Carroll for setting up the tour.

With gratitude, CEE acknowledges the following sponsors of the Chicago Regional Dinner Meeting 2008:

## Gold Level

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HDR Engineering  
HNTB Corporation  
Kudma and Associates  
Ricondo and Associates Inc.  
SOM  
W.E. O'Neil



1. From left: James W. Carter III (BS 91, MS 93) of HNTB, Harold Sandberg (BS 42, MS 47) of Alfred Benesch and Co. and Mark Goudschaal (BS 92, MS 93) of Schnabel Foundation Co. 2. Tony Shkurti (PhD 98) of HNTB Corporation, left, with Professor and Head Robert H. Dodds Jr. 3. Paul Koch (BS 66, MS 68), left, of MACTEC Engineering and Consulting with Professor Emeritus Vernon Snoeyink and his wife, Jeannie Snoeyink. 4. Corrine and Louis Bowman (BS 51), chairman of Bowman, Barrett and Associates 5. Wilbur C. Milhouse III (BS 94, MS 95), left, of Milhouse Engineering and Construction with Don Pries (BS 58) of HOH Group. 6. From left, CEE students: Matt Sugihara, Jennifer Henry and Brian Schertz.

# Old Masters

Engineering giants of the department's history

## William H. Rayner

1884-1969

Educator, author, surveyor

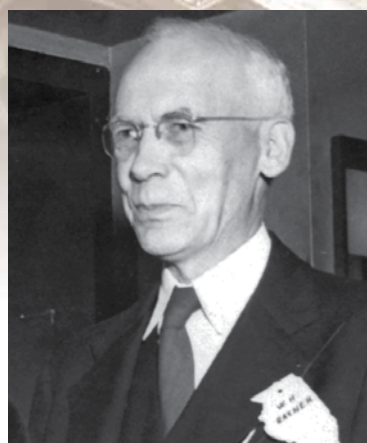
BY PROFESSORS EMERITUS WILLIAM H. HALL AND JOHN D. HALTIWANGER

William Horace Rayner was born on February 16, 1884, in Ewing, Neb. He received his B.S. degree from the University of Illinois at Urbana-Champaign in 1909. A year later, he entered employment with the University and served with distinction as a member of the faculty for 42 years until his retirement in 1952. In 1913 and 1920 respectively, the University conferred upon him the professional degree of Civil Engineer and a master's degree in education.

Rayner was a vigorous proponent of quality education in surveying for civil engineering students. His great enthusiasm for teaching was matched by his energetic efforts to improve the technical literature of his field. The authority accorded his textbooks is evidenced by their wide and continued acceptance over more than 40 years of use. He was the co-author, with R.E. Davis and F.S. Foote, of "Surveying," published by McGraw-Hill in 1928. He was the sole author of "Elementary Surveying" and "Advanced Surveying," which appeared in 1937 and 1942, respectively, as publications of the D. Van Nostrand Company. In 1957 the text "Surveying—Elementary and Advanced" was prepared by Rayner, in collaboration with Milton O. Schmidt, and in 1969 "Elementary Surveying" appeared in its fifth edition as "Fundamentals of Surveying" by Rayner and Schmidt,

published by Van Nostrand Reinhold.

In educational and technical circles Rayner left a significant and lasting imprint. He was a prime mover of the Quintennial National Surveying Teachers Conferences spon-



**His persevering efforts led to the establishment in 1946 of the Summer Surveying Camp near Blackduck, Minn., for civil engineering students at the University of Illinois.**

sored by the Civil Engineering Division of the American Society for Engineering Education. He served as a member of the executive committee of the Surveying and Mapping Division of the American Society of Civil Engineers from 1948-1952 and as its chairman in the latter years.

His persevering efforts led to the establishment in 1946 of the Summer Surveying Camp near Blackduck, Minn., for civil engineering students at the University of Illinois. He directed the educational program of this facility from 1946-1952. For his long service with the Illinois Society of Professional Engineers, the American Society of Civil Engineers, and the American Congress on Surveying and

Mapping, he was honored with Life Memberships. To recognize his contributions to education in land surveying, the Illinois Registered Land Surveyors Association funded the Rayner Award, which for many years was given to outstanding senior civil engineering students majoring in surveying at the University of Illinois.

Although Rayner was a notable author and accomplished teacher, he was remembered much

more distinctively for his continual cultivation of the amenities of ordinary living. Shy and retiring by nature, self-effacing, genteel and urbane, he symbolized for his many friends John Cardinal Newman's definition of more than 100 years ago of a gentleman: "It is almost a definition of a gentleman to say that he is one who never inflicts pain." It is in this context of quiet respect and abiding esteem for one who practiced altruism throughout his life that his former colleagues best regarded and most fittingly recalled him; truly a gentleman, author, educator and scholar.

Rayner died in 1969, preceded in death by his wife, Francis Leonard Rayner. They had one daughter and one son.



Kevin Bailey, CEE senior

# One day...

the future  
of civil and  
environmental  
engineering  
will be in  
their hands.



Claire Joseph, CEE Junior



Kevin Foster, CEE senior

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