PENNSTATE

Civil and Environmental ENGINEERING

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Civil and Environmental Engineering Newsletter

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On the front cover: Critical Zone water and soil research on the Island of Crete

Civil and Environmental Engineering, a newsletter for CEE alumni and friends, is published by the College of Engineering's Department of Civil and Environmental Engineering.

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Greetings from Department Head, Peggy Johnson

Dear Alumni and Friends:

I hope this newsletter finds you well and that you have had a good year so far! We have had a busy, but wonderfully productive year in the Department of Civil and Environmental Engineering. During the last academic year, 167 students graduated with a bachelor's in civil engineering. We also graduated 55 M.S., M.Eng., and Ph.D. students in civil and environmental engineering. Our students have gone on to work at a wide range of private firms, government agencies, and universities. In fact, many of you have hired our outstanding students! And we have maintained our high rankings in the top 20 for the undergraduate and graduate programs.

Our faculty continues to be very productive in their teaching and research. They are recognized internationally for their excellent work. This past year, one of our faculty members was elected to the very prestigious National Academy of Engineers (NAE). Dr. Bruce Logan is the second NAE member in the College of Engineering at Penn State. Dr. Logan is also an Evan Pugh Professor and holds the Kappe Professorship in Environmental Engineering. Two of our junior faculty members, Drs. Farshad Rajabipour and Gordon Warn, have been awarded National Science Foundation's CAREER awards. These are highly competitive grants that provide support for the faculty member and graduate students as they pursue cutting edge research.

Our students have also been quite busy with new endeavors. During this past summer, our CEE students founded a student chapter of *Bridges to Prosperity,* an international, non-profit organization that constructs pedestrian bridges in developing countries. They are so excited to use their skills and knowledge to help those who are less fortunate. The students will travel to Panama in May 2014, to construct their first bridge. The students have created a great website where you can learn more about this organization and the project and organization: www.pennstateasce.com/bridges-to-prosperity.html.

Our alumni have been busy, too! The Civil and Environmental Engineering Alumni Society has started two wonderful programs—the Alumni Panel Discussion and the CEE Distinguished Lecture—that will become annual events, and are working on a formal mentoring program with current students. If you are not already a member, I encourage you to register for free membership at engr.psu.edu/ce/alumni.

In the pages of this newsletter, we highlight some of the many accomplishments of our faculty, staff, students, and alumni. I hope you enjoy reading the newsletter and please send us your news! We would love to hear from you and share your personal and professional accomplishments with all of our alumni in the next newsletter. Please send me an e-mail (paj6@psu.edu), use the form in the back of the newsletter, or call 814-863-3088 to give us an update on your career, your personal achievements, and any other significant event.

Wishing you all the very best,

Peggy A Johnson

Peggy Johnson, Professor and Head

The team before the Traffic Bowl. *From left to right:* Krae Stieffenhofer, Paul Stager, Philip Kulis, and Andrew Butsick.

The team with an award received for winning the district championship.

Penn State transportation students finish third out of 62 teams in 'battle of the brains'

Penn State transportation engineering students earned high honors in a national competition at the fourth annual Institute of Transportation Engineers (ITE) Collegiate Traffic Bowl Grand Championship during the 2013 ITE Annual Meeting and Exhibit held on Aug. 6 in Boston.

The Penn State team placed third out of 62 teams from the United States and Canada.

The ITE Collegiate Traffic Bowl is a competition among ITE student chapters with transportation planning and engineering topics for the clues, questions and answers. Student teams from 62 of 148 universities with ITE student chapters in the United States and Canada competed in section and district-level events for a chance to compete in the Grand Championship. More than 190 ITE student members competed.

Andrew Butsick, Philip Kulis, Paul Stager and Krae Stieffenhofer, all master's degree students in civil engineering at Penn State and graduate assistants at the Thomas D. Larson Pennsylvania Transportation Institute, defeated teams from Delaware, Morgan State, and Villanova to claim the district title and advance to the national finals.

The Jeopardy-style competition derives its questions from half a dozen standard transportation reference manuals. Team members are nominated by the members of their school's ITE chapter.

"The entire ITE Traffic Bowl experience was extremely gratifying," said Butsick. "We were able to meet and interact with transportation engineering students from around North America, and the competition provided a medium through which we were able to share experiences and struggles in pursuing higher education, as well as establish an extended network of colleagues and friends in the field of transportation."

Nine teams entered the final contest, which was a featured event at the three-day conference. Penn State won its first round handily to become one of the final three.

"It was a lot of fun for us," said Kulis. "We had reviewed the MUTCD [Manual on Uniform Traffic Control Devices] and other manuals before the competition, so we felt well prepared. The first round we didn't have much trouble getting through, but the final round was much more challenging. I think we represented the civil engineering program at Penn State well."

Butsick added, "Even though we were only able to place third in the Grand Championship, the lively spirit of the competition made the experience fun and enjoyable."

"I commend their success," said ITE chapter adviser Martin Pietrucha, professor of civil engineering at Penn State and Larson Institute director. "The ITE Collegiate Traffic Bowl is a true test of mental calisthenics and long distance thinking."

The University of Florida finished in first place, receiving the $2,000 grand prize. The University of Tennessee-Knoxville finished second.

All teams participating in the Grand Championship received a $2,000 travel grant and complimentary student registrations for ITE's international annual meeting and exhibit.

The objectives of the ITE Collegiate Traffic Bowl are to encourage students to become more active members in ITE, to enhance their knowledge of the traffic/transportation engineering and planning profession and of ITE itself, and to strengthen ITE student chapter programs.

U.S. News survey ranks Penn State graduate engineering 25th

The latest *U.S. News & World Report* 2014 Best Graduate Schools survey rated Penn State's graduate engineering program 25th in the country.

The report, released on March 12, surveyed 143 engineering graduate programs.

Under the publication's specialties categories, Penn State aerospace engineering was ranked 16th, biological engineering 12th, bioengineering 39th, chemical engineering 21st, civil engineering 16th, computer science 28th, electrical engineering 26th, environmental engineering 13th, industrial engineering 11th, materials 14th, mechanical engineering 12th, and nuclear engineering 8th.

The University's computer engineering program did not participate in this year's rankings.

U.S. News does not survey the disciplines of architectural engineering and engineering science and mechanics.

Pragati Singh, graduate student, developed an algorithm to model time-dependent stiffness in cracked zones of reinforced concrete members; adviser, Dr. Andrew Scanlon.

Pittsburgh civil and environmental engineering firm honors founder with Penn State scholarship

A new scholarship in the College of Engineering honors the founder of a Pittsburgh, PA, engineering firm.

Civil & Environmental Consultants (CEC), Inc., established the endowment for Dr. James M. Roberts, a Penn State alumnus and the firm's chairman emeritus.

The scholarship, the Dr. James M. Roberts Scholarship in Civil and Environmental Engineering, is designed to offer recognition and financial assistance to outstanding juniors and seniors studying civil engineering at Penn State, with a preference for students who are on active duty for the military or are returning veterans.

Dr. Peggy Johnson, head of civil and environmental engineering, said, "Such scholarships are so important to students, as it is recognition for their hard work while providing needed support for their educational expenses."

Dr. Roberts received all three of his civil engineering degrees from Penn State, including his bachelor's in 1965, his master's in 1970, and his doctorate in 1974. He served as an instructor of civil engineering at the University from 1967 to 1974.

Roberts founded CEC in 1989, a company focused on environmental services, civil and site development engineering, ecological sciences and solid waste management.

Today the firm has more than 500 employees and maintains 17 offices throughout the United States.

Dr. Roberts currently resides in Pittsburgh.

Proceeds from annual race to benefit Sandy Hook shooting victims' families

Proceeds from the Jeremy Herbstritt Memorial 5K Run/Walk was donated to the families of victims of the Sandy Hook Elementary School shootings.

The run/walk is named for Jeremy Herbstritt, a 1998 Bellefonte Area High School graduate who died during the 2007 Virginia Tech shootings.

Jennifer Herbstritt, Jeremy's sister, said, "When we learned of the elementary school shootings in Newtown, CT, at the end of last year, so many of the memories and emotions we felt on April 16, 2007, and in the days and weeks thereafter, returned to our hearts. With Jeremy's race approaching, we couldn't imagine not donating the money raised to the families affected by this unspeakable act of violence. It was the least we could do; a reciprocal gesture of compassion and empathy to a community facing a type of profound grief we are all too familiar with."

Herbstritt earned his undergraduate degrees in civil engineering, biochemistry and molecular biology from Penn State. He was a civil engineering graduate student at Virginia Tech.

To honor Herbstritt, who was an avid runner, the Department of Civil and Environmental Engineering and the Nittany Valley Running Club established the walk/run event. Proceeds from the annual event went to the goal of building a community track facility in his memory at Bellefonte Area High School.

"When friends or family members were in need, Jeremy was the first to offer up his help, whether it was physical labor or good company or an open ear," Herbstritt said. "His character displayed selflessness and understanding. So donating the funds raised in this year's running of his memorial race only seems fitting."

Donations are also being accepted at www.active.com/donate/JeremysRun2013.

Student Awards & Accomplishments

UNDERGRADUATE SCHOLARSHIPS 2012–2013

Gert and Jean Aron
Mitchell Collins
Scott Rippole

Richard Austin
Zachary Makarewicz

Beavers Scholarship in Heavy Construction
Craig Schriner

John J. Blazosky
Matthew Lando
Benjamin Roman

Carnahan Trustee Scholarship
Markie Caine

College of Engineering General Scholarship
Mitchell Collins

Janet B. Cunningham
Katie Koontz

Engineering Underrepresented Scholarship
Dewey Amos
Ayodeji Battles-Williams
Samantha Burt
Aron Fonseca
Dennis James
Jennifer Kearney
Amy Reimer
Stefen Rice
Karalyn Slocum

Evans Trustee Scholarship
Yulissa Guerrero

Robert E. Felsburg
Jared Bigham

Leonard S. Fiore
Andrew Stoops

Helen Fiedler Heckert
Travis Frey

Frank Holzer
Colin Barbish
Ayodeji Battles-Williams
Sean Brennan
Markie Caine
David Cantoran
Bradley Catalone
Mitchell Collins
Matthew Dinuzzo
Gary Gabor
Megan Kawamoto
Devin Kelly
Christopher Lazration
Briana Lebovitz
Michael Lockerman
Stefen Rice
Steven Rusnak
Maria Sabatino
Josh Swain
Zachary Szoke
Vincent Theys

Robert and Judith Hontz
Jordan Powell

Russell E. and Eleanor B. Horn Scholarship
Ashley Myers

Darin P. and Laura Taylor Johnson Trustee Scholarship
Jared Bigham
Aaron Fonseca
Ryan McDevitt

George W. Johnstone
William Grkman

James R. and Nancy L. Miltenberger Trustee Scholarship
Ayodeji Battles-Williams
Dylan Crolly
Gary Gabor
Jacob McTavish

Stan and Flora Kappe
Joel Becker
Emily Mahoney

Walter J. Kinsey Honors Scholarship
Emily Mahoney
Eric Simmons

R. Rupert Kountz
Joel Becker
Thomas Kaley

Leonhard Center Enhancement Scholarship
Matthew Tofani

Harold J. Light Scholarship
Dane Dewire

Anthony Lisanti
Christopher Bomba

Michael D. Loy
Matthew Gombeda

William Marciniak Scholarship
Thomas Ross

William H. Megonnell Trustee Scholarship
Russell Keller
Andrew Stoops

Thomas A. Mekis
Christopher Connelly
Dane DeWire
Russell Keller
Dipen Patel

Dean Meyers Memorial Scholarship
Robert Huston
Chase Lyle

Arthur and Mary Miller Scholarship
Carrie Weinhold

Albert and Betty Moore Scholarship
Dewey Amos

Helen Wood Morris Scholarship
James Dell

Walter K. Morris Scholarship
Colvin Adey

Paul Morrow Endowed Scholarship
Ayodeji Battles-Williams

John R. and Brenda T. Myers Trustee Scholarship
Bradley Catalone

C. R. and Annette Pennoni Scholarship
Matthew Gombeda

John A. Pursley Trustee Scholarship
Emma Pugh

Joseph R. and Mary Reed Scholarship
Sarah Saxman

Leland Rhodes
Craig Schriner

James M. Roberts
Colvin Adey
Matthew Dinuzzo
Maria Sabatino

Elizabeth A. Shattuck
Robert Huston

Harold B. Shattuck
Elliott Woolridge

Charles and Linda Sorber Scholarship
Emily Mahoney

Walter E. and Dr. Regina B. Thompson Scholarship
Bradley Catalone

Kenneth and Marilyn Stevens Tracy
Ashley Head
Olivia Hopkins

Triangle Fraternity Scholarship
Cameron Mueskes

Vought Scholarship in Engineering
Jennifer Kearney

Undergraduate Teaching Intern Program
Priscilla de la Guardia
Thomas Ross
Fanny Wu Almanzar
Kevin Wu Almanzar

Roy I. Webber
Matthew Dinuzzo

Harmer A. Weeden
Eric Bogumil

Paul M. Wentworth
James Dell
Yulissa Guerrero
Andrew Lohr
Rodney Salazar

Paul and Rachel White Scholarship
Katherine Derrick

George M. Wildasin Memorial Trustee Scholarship
Samantha Burt
Cory Jackson
Shawn Mooney
Matthew Paroda
Dipen Patel
Maria Sabatino
Derek Schmidt

Albert Wilson Trustee Scholarship
Colin Barbish
Robert Huston

Michael and Virgina Youchak
Samantha Burt

GRADUATE SCHOLARSHIPS AND FELLOWSHIPS 2012–2013

CMT Laboratories Graduate Scholarship in Civil Engineering
Pezhouhan Tavassoti Kheiry

George W. Johnstone Graduate Fellowship in Civil and Environmental Engineering
Andrew Kreider
Travis Tasker

Cecil Pepperman Memorial Graduate Fellowship
Rebecca Edwards
Thomas Geeza

Leo P. Russell Graduate Fellowship in Civil Engineering
Omid Ghasemi Fare
Baradhwaj Hariharan
Andrew Nagle
Jared Wright

Cusick won the Alumni Association Dissertation Award

Roland Cusick has won the Alumni Association Dissertation Award for 2012-13 based on his work on Waste Heat and Nutrient Recovery with Microbial Electrochemical Technologies. Wastewater treatment currently accounts for 3 percent of U.S. energy consumption, but domestic, industrial and animal wastewater contains ~1.5 × 1011 kWh of potential energy (~17 GW of power). Microbial Electrochemical Technologies (METs) offer a unique platform to efficiently recover useful end products from wastewater such as energy, biofuels, bio-chemicals and fertilizers. For his doctoral research, Roland and his adviser, Dr. Bruce Logan, focused on the development of two new METs that transform wastewater pollutants, including organic matter, phosphate, ammonia and carbon dioxide, into useful materials such as electricity, hydrogen gas, and struvite.

His dissertation research also focused on designing a microbial electrolysis cell (MEC) to sustainably recover phosphate from wastewater. Precipitation of phosphate salts requires an increase in solution pH, which is typically accomplished with chemicals such as sodium hydroxide, but this makes the process cost-prohibitive in most cases. As an alternative, he designed a reactor that generates hydrogen from wastewater and utilizes proton consumption at the cathode of a MEC to raise solution pH, inducing precipitation of phosphate salts.

Roland graduated with his doctorate in summer 2013, and has accepted a position as an assistant professor at the University of Illinois at Urbana-Champaign beginning August 2013.

Dwight D. Eisenhower Graduate Fellowships

Congratulations to transportation graduate students, **Andrew Butsick** and **Andrew Nagle** who have won the prestigious Dwight D. Eisenhower Graduate Fellowships from the Federal Highway Administration!

Andrew Butsick
(Advisor Paul Jovanis)

Andrew Nagle
(Advisor Vikash Gayah)

The graduating class of Fall 2013 .

Omid Ghasemi Fare, Christopher Cartwright, Victoria Whyte, and Dane Kelsey

Winners of 2013 College of Engineering Research Symposium announced

Twenty-eight undergraduate and graduate students received honors for their research papers and posters at the 10th annual College of Engineering Research Symposium (CERS).

The CERS is a student-run event that provides a venue for undergraduate and graduate students to showcase the research being conducted at Penn State.

The department had several graduate student winners.

Dane Kelsey, master's student in environmental engineering, won best presentation for his poster titled "Organic Fungicides Improve Bindered Anthracite Briquette." His faculty adviser is Rachel Brennan.

Omid Ghasemi Fare, doctorial student in civil engineering, won best paper titled "A Practical Heat Transfer Model for Geothermal Piles." His faculty adviser is Prasenjit Basu.

Victoria Whyte, master's student in civil engineering, won an award for poster presentation, titled "Tailoring Ecological Wastewater Treatment to Developing Communities." Her faculty adviser is Rachel Brennan.

Christopher Cartwright, master's student in civil engineering, also received an award for poster presentation titled "Shrinkage Characteristics of Alkali-activated Slag Cements." Cartwright's faculty adviser is Farshad Rajabipour.

http://news.psu.edu/story/273141/2013/04/15/academics/winners-2013-college-engineering-research-symposium-announced

Civil engineering students found chapter of *Bridges to Prosperity*

Last spring, Penn State civil engineering students founded a student chapter of *Bridges to Prosperity*. *Bridges to Prosperity* is an international non-profit organization that constructs pedestrian bridges in third world communities that suffer from rural isolation due to impassable rivers and flood plains. For members of such communities, the walk to school, a doctor, or work can be extremely dangerous, if not impossible. To date, *Bridges to Prosperity* has partnered with these communities to construct over 130 bridges in 16 countries, providing an estimated 650,000 people with improved access to education, healthcare, and economic opportunities.

As an official chapter of the organization, Penn State students will take the lead in managing their own pedestrian bridge construction project each year in a rurally isolated community of a developing nation. The chapter currently has a dedicated team of approximately 10 student officers and 40 members who will guide all phases of these projects, including site surveying, bridge design, bridge construction, community relations, and fundraising for the costs of each bridge. Throughout the process, students will receive technical mentoring and support both from the *Bridges to Prosperity* international organization and the Penn State Department of Civil Engineering.

The Penn State student chapter will be traveling in May 2014 to construct its first bridge in the community of Membrillo, located in the province of Coclé in Panama. Last August, three of the chapter's officers traveled to Membrillo to perform a technical survey of the site and meet with members of the community. Currently, the people of Membrillo rely upon a single pedestrian bridge to cross a ravine to reach the nearest school, healthcare facilities, and certain places of work. During the region's rainy reason, the existing pedestrian bridge floods frequently, hindering the ability of 1,500 people to access basic necessities.

To help overcome the challenges that the ravine poses to Membrillo during the rainy season, the chapter will be working throughout the 2013-2014 school year to design a sustainable, cable-stayed pedestrian bridge that will be constructed about 15 meters from the existing bridge in a location where it will not flood. The people of Membrillo have given Penn State students a warm reception and are very excited about the prospect of building a new bridge. For them, it is not just a bridge; it is an opportunity for a better quality of life.

Penn State students with community members of Membrillo during the survey visit in August, 2013.

To learn more about the Penn State student chapter of *Bridges to Prosperity* and how you can become involved with the chapter, please visit the chapter's website: www.pennstateasce.com/bridges-to-prosperity.html

First Graduate Student Cup

The Environmental Engineering Department team, The Envengers, competed with other grad departments University-wide on April 13. They were division champs and fourth overall in tug-of-war and third place in dodgeball!

Fall 2013 Student Marshal

Christian James Noveral received a bachelor of science degree in civil engineering with a minor in engineering mechanics. He chose Daniel Linzell, Shaw professor of civil engineering, as his faculty escort. Noveral is the son of James and Jocelyne Noveral of Media, PA. He graduated in 2008 from Marple Newtown High School in Newton Square, PA. During his undergraduate career Noveral received numerous awards including the President's Freshman Award, the Academic Excellence Scholarship through Schreyer Honors College, the George H. Dieke Scholarship, the Robert E. Felsburg Scholarship in Civil and Environmental Engineering, the Walter J. Kinsey Honors Scholarship, the Michael D. Loy Engineering Scholarship, the Anna Belle & Arthur R. Beire Trustee Scholarship, and the A. Whitney Frankenberry Scholarship. His extracurricular activities include being a member of the Penn State Theme Park Engineering team, Blue Band, Concert Band, ASCE student chapter, and various positions in organizations benefitting THON. Following graduation, Noveral plans to complete a master of science in civil engineering through the honors college integrated plan, continuing research on steel connection behavior in anti-ram vehicle impact barriers, and beginning full-time employment with ATA Engineering.

New York City Suspension Bridge Field Trip

On April 6, 2013, Dr. Harry West took his CE 201 Structures and Society class on a field trip to New York to visit the George Washington Bridge and the Brooklyn Bridge. Ms. Andrea Bocker, engineer of construction at the George Washington Bridge, hosted the group by giving a preliminary orientation session regarding Othmar Ammann's record-breaking span. She then guided the group to the depths of the New Jersey anchorage and heights of the New Jersey tower. At John Roebling's iconic Brooklyn Bridge, the group was met by Mr. George Klein, deputy chief engineer, Division of Bridges for the New York City Department of Transportation, who guided the group on a walking lecture-tour of the bridge. In departing the city, the bus passed over the Verrazano Narrows Bridge from which the Bayonne Bay Arch Bridge could be seen; both were designed by Othmar Ammann.

Mr. Skibinski's CE 497A class, Construction Engineering, took a tour of the new Pegula Ice Rink project prior to the end of the spring semester. During the course of the semester, a different student team attended the construction management meetings each week. Subsequently, the student teams prepared project meeting minutes and then presented each week's project update to the class. Students appreciated the real-world experience this exercise provided.

Leeds Program

Did you know that Penn State has an exchange program with the University of Leeds in England? The exchange program has been in place for decades, and the relationship between Leeds and Penn State CEE is longstanding. But the relationship has just recently been more actively promoted by the Department and the new coordinator, Dr. Jeffrey Laman, professor of civil engineering. As the world shrinks and engineering becomes much more global and connected, the civil and environmental engineering department is joining with the College of Engineering Global Engineering Education (www.engr.psu.edu/Global) and Global Penn State (global.psu.edu) to support the goals of the College to develop students into world-class engineers. Check out the newly added and growing CEE webpage for Study Abroad Programs (www.engr.psu.edu/ce/study_abroad.html).

Chi Ep officers and new recruits for spring 2013—*Front row:* Trevor Rabare, Jennifer Kearney, Sean Brennan, Benjamin Kutz and Jeffrey Gooch; *Middle row:* Danine McCarthy, James Dell and Tom Ross; *Back row:* Chris Connelley and Stephen Dillon

Chi Epsilon

Chi Epsilon stands for scholarship, character, practically, and sociability. These are all very important characteristics to us and chief features we look for in the initiation and induction of our members. Our chapter is made up of talented students who have excelled academically. In addition, we believe in holding all members to the highest ethical standards. As engineers, we are very practical individuals; however, we also believe in networking with others in our field and spending time outside of class getting to know fellow students.

During the 2013-2014 academic year, the Penn State chapter of Chi Epsilon initiated 20 new members for lifetime memberships. New members were recruited in both the fall and spring semesters. The fall initiation was held on Dec., 2013, at the Atherton Hotel in State College, inducting 20 new members. The initiation ceremony was followed by dinner and a speech by Dr. Rachel Brennan, a professor specializing in environmental engineering. Dr. Brennan spoke about her research and focuses on clean, sustainable water sources.

The spring semester initiation was held on April 9, 2014, at the Atherton Hotel in State College, inducting new members. The initiation ceremony was followed by dinner and a speech on current research conducted by one of the civil and environmental engineering department's professors.

Chi Epsilon members continued to host high school visitors touring the department with their families throughout the school year. This past year there were approximately seventy student and family combinations that benefitted from the visits. Chi Epsilon members presented our activities within the civil and environmental engineering department to the Industrial and Professional Advisory Committee on March 26, 2014. Chi Epsilon also arranged the review sessions for the Fundamentals of Engineering Exam (F.E.), successfully scheduling faculty support for review problem sessions prior to both the fall and spring F.E. exams. In addition, our chapter facilitated making review manuals for the F.E. exam available at a discount to students leading up to both exams.

New officers for the upcoming academic year will also be inducted this spring after a final decision on who will take up what position. The entire Penn State chapter would like to wish the outgoing officers all the best as they pursue their futures beyond graduation, and thank them for a wonderful year.

Penn State Steel Bridge Team

At the 2013 regional competition held at the University of Pittsburgh-Johnstown, the team successfully presented and assembled its bridge quickly and efficiently. The team was watchful of the other competing schools and took creative ideas back home for the 2014 regional.

The Penn State Steel Bridge Team is a student-run organization sponsored by ASCE that offers civil engineering students to participate in a practical design and build competition. A 1/10th scale steel bridge is designed to comply with the AISC rules and must be assembled quickly on site at the competition. The bridge must also have minimal deflection when a 2,500-pound load is applied. It is the responsibility of the returning team members to recruit new members, train them on safety procedures and the rules of the competition. During the fall semester the team does several non-technical activities such as fundraising, training, design, both 2-D and 3-D modeling, and ordering the necessary steel. In the spring semester the focus is shifted to fabricating the bridge using the 2-D drawings that were made in the fall. Later in the spring semester the construction team will practice three to five nights a week assembling the bridge until they have become super-efficient at the timed process.

The bridge team consistently seeks new ways to be innovative and successful with their finished product. Each year, designs are modified from previous years to develop a bridge that is more efficient

and easily constructed. Since the bridge is weighed at the competition, the team tries to optimize the most available strength with the least amount of material. Modeling programs such as AutoCAD and structural analysis software such as SAP2000 have become essential tools for making the bridge come together. The modeling allows the bridge designers to get a more firm grasp on what the finished bridge will look like and more importantly how it will fit together.

Every year the steel bridge team raises its expectations and seeks to improve at the competition. This year the team is confident it will fare well at the regional competition to be held on April 5-6, 2014, at Villanova University and hopes to advance to compete on the national level. In 2014, the steel bridge team has its eyes on the trophy and will do whatever it takes to bring a championship back home to Penn State!

Penn State Student Chapter of the American Society of Civil Engineers

Throughout the year, the Penn State Student chapter of ASCE has conducted several events trying to spark student interest within the organization as well as to allow its members to network and bond with their fellow classmates, faculty, and potential employers. The Penn State chapter of ASCE kicked off the fall 2013 semester with a general body meeting that featured guest speaker, Cheryl Knobloch. At the meeting, Cheryl gave advice to students in regards to the career events that were going to be taking place throughout the semester. The ASCE fall career fair was held on Sep. 30, 2013. The fall career fair was a huge success for the organization and was marked the largest in ASCE history with over sixty companies in attendance. ASCE is anticipating a spring ASCE career fair that is equally as successful.

This year, ASCE joint ventured with the newly formed Penn State CEE Alumni Association to host a panel discussion. The panel consisted of eight successful Penn State alumni that had graduated from the Civil and Environmental Engineering department. These professionals spoke about their personal experiences and offered advice to the students that were in attendance. This turned out to be another great opportunity for networking and ASCE hopes that this will become an annual event.

Penn State Civil Engineering Alumni Association and ASCE also held the Distinguished Alumni Lecture in December. The guest speaker, Dr. Harry West, professor emeritus of civil engineering, gave his presentation on the history of Beaver Stadium; describing all phases of Beaver Stadium construction and renovations, with an emphasis on structural design.

For the future, the ASCE student chapter wants to join with the CEE alumni association to create a mentoring program for students majoring in Civil and Environmental Engineering. The ultimate goal of this program is to provide guidance and advice for students throughout their college years to ensure successful careers.

We're on Facebook!

Civil and Environmental Engineering has launched a Facebook page. Department employees, alumni, students, and supporters can "like" the page at **www.facebook.com/PennStateCEE**.

This social networking site provides followers information on upcoming events, teaching and research, and the latest department news.

Concrete Canoe Team

The first step in dreaming up the 2013 canoe came about at the 2012 competition. This was the first time most of our team members had seen many other canoes at once and being a part of that event inspired everyone to reach higher and come together to do whatever it would take to achieve success. As the year progressed, initial designs were considered and testing began. The first mix design was batched in July 2012 with little success. At the time it seemed detrimental to see failure but as the team leaders have always said, one cannot succeed unless one has tasted some form of failure previously. This is a key statement that the design team lives by. With that being said, testing continued and after approximately thirty different trials a successful structural concrete mix was finalized.

The canoe built for the year 2013 made leaps and bounds with regards to the hull and structural design. This was the first time a newly crafted design was unveiled and the team was a bit skeptical at first. One of the main issues that arose as a result of this was that constructability was slightly overlooked in favor of being superior in engineering innovation. The canoe had a complex hull shape that required very precise mold making capabilities and patience from the construction team. The structural system consisted of a never-before-seen state-of-the-art design unfamiliar to Penn State. It was comprised of a dual-axis pretensioning system with the addition of plastic mesh for extra shear capacity.

At the 2013 Mid-Atlantic Regional Competition in April 2013 at the University of Pittsburgh-Johnstown, the Penn State squad fared well in all aspects of the event. The canoe, named "Kovetus" which translates to "cure" in Finnish in honor of THON, was displayed on large computer cut "THON" letters. The team felt that honoring all of those children who have been helped by the Four Diamonds Fund over the years was a very appropriate tribute in the second year of the canoe after its rebirth. The team placed third in the oral presentation, which requires a few members to discuss their progress and design techniques in front of competition judges and a large audience. At the races, the team placed fifth and saw much improvement in paddling efforts. In all, the competition was successful and a definite buzz of optimism surrounded the entire team.

The team started preparations for the 2014 competition with a new vision. Largely ambitious and creative, past teams have fashioned incredible designs, yet lacked the construction experience to fully compliment the work required. Learning from years past, the Penn State Concrete Canoe Team motto this year is "innovative, yet practical", and the 2014 canoe will be a testament to this year's experienced approach. This year, the Penn State design team explored new and innovative concrete technologies such as ultra-lightweight, fiber-reinforced concrete with welded steel cage reinforcement. By using advanced 3D design and hydrostatic analysis programs such as AutoCAD, SolidWorks, and DelftShip, the hull design of the 2014 canoe is more streamlined, stable, and efficient than ever before. The use of computer-controlled cutting (CNC) technology was fundamental in the design and construction of this year's canoe formwork. By taking advantage of Penn State resources such as the CNC machine, this year's team has designed, drawn, and cut hundreds of canoe cross-sections and fitted mold frame and formwork sections to be constructed and used for steel cage fabrication and the concrete canoe pour. This simplifies the construction process greatly, allowing for teammates of any experience level to help during construction. The team aims for two canoe pours with the first one already completed in the fall semester and was successfully demolded a few days thereafter.

The 2014 competition will be held April 5-6 at the U.S. Naval Academy in Annapolis, MD. The team has very high expectations and hopes to bring the championship trophy back to Happy Valley!

Left to right: Jeremy's mother, Peggy Johnson, and Jeremy's father.

Jeremy Herbstritt Student Lounge Renovation Completed

ASCE took on a major project over the fall semester as they renovated the ASCE student lounge. With the help of Penn State Office of Physical Plant (OPP), the lounge was improved with a new tile floor and ceiling, fresh paint, and window coverings. ASCE also invested in new computer desks, desk chairs, furniture, a projector screen and a TV. All of these renovations were made to improve the atmosphere of the lounge, and to provide a comfortable place for students to work. After the renovations were completed, an open house was held to invite the faculty to see the improvements and to thank OPP for all of their hard work. In addition, the lounge was rededicated to Jeremy Herbstritt, a former Penn State civil engineering student who sadly lost his life in the 2007 shooting at Virginia Tech, where he attended graduate school. Photos have been hung in the lounge in his honor.

Blansett named PHRC associate director

Dr. Katie Blansett, P.E., has accepted the position as the next PHRC associate director.

In additional to managing the daily activities of PHRC and its outreach activities, Dr. Blansett continues to teach CE 410W Sustainable Residential Subdivision Design. She will work to develop long-term relationships with manufacturers, builders, contractors, code officials, and design professionals, and develop proposals and manage contracts and grants from state and federal agencies, as well as private industry. Blansett will serve as liaison and point of contact between the PRHC, trade and professional associates and state and federal agencies, including Pennsylvania Department of Labor and Industry and Pennsylvania Department of Community and Economic Development.

The PHRC group is excited and looks forward to working with Dr. Blansett to help the PHRC grow, flourish and thrive as one of the nation's leading housing research centers.

Hine and Wolfgang join the Pennsylvania Housing Research Center

Chris Hine joined the PHRC in May 2013 as the Housing and Land Development Specialists. Some of Chris' responsibilities include serving as primary liaison with the housing industry and state government in regards to residential construction and residential building codes; developing and teaching training programs for builders, remodelers, code officials and design professionals; and specializing in projects related to residential building codes, HVAC design and installation, residential construction practices and the PA land development process. Prior to joining the PHRC team, Chris was with a central Pennsylvania-based home builder for more than 10 years where he was the tech service manager and oversaw the design/ estimating process and responded to the field related construction concerns and building code related questions.

Brian Wolfgang joined the PHRC in May 2013 as the Housing Systems Specialist. Brian spent the previous three years working as a structural designer and construction manager for a local engineering consulting firm. Prior to his work as a consultant, Brian worked with the PHRC throughout his graduate studies in Architectural Engineering as both the Glunt Fellow and PHRC Fellow (2008-10). Brian's current responsibilities within the PHRC include building science research and program development, execution of industry related research, development of technical and policy reports/ briefs, and coordination of graduate level research and PHRC activities.

Johnson joins CEE staff as department head administrative support staff

Devon Johnson joined the department of civil and environmental engineering as the administrative support assistant for the department head in January 2013. Johnson moved to State College in January from West Chester, PA, where she worked for the Devereux Foundation supporting adults with Autism in their search for employment. Although she has her bachelor's in criminology, Johnson has many years of employment counseling and administrative support. As a former college lacrosse player, she loves to stay involved in the sport by coaching girls for the Centre lacrosse league. Johnson is excited to be working for Penn State and raising her three daughters in Happy Valley where they enjoy downtown State College and the beautiful outdoors.

SCAN THIS CODE with your smart phone to visit the PHRC web site, or enter www.engr.psu.edu/phrc/ in your browser.

Recent Events

NAHB Residential Construction Management Competition

Penn State students placed 7th in the NAHB Residential Construction Management Competition at the NAHB International Builders' Show held in Las Vegas, Nevada, held in Feb. 2014.

2014 PA Housing and Land Development Conference

More than 140 people attended the recent 2014 PA Housing and Land Development Conference. Presentation information from the conference is now available for download from the PHRC web site.

Dr. Ahmad Rahimian, WSP Cantor Seinuk, speaker for the 21st annual, 2014 Kavanagh Lecture

Dr. Ahmad Rahimian, chief executive and director of building structures for WSP Cantor Seinuk will present *One World Trade Center* as the 21st annual 2014 Thomas C. Kavanagh Memorial Structural Engineering Lecture. WSP Cantor Seinuk is a leading structural engineering firm based in New York and a division of WSP Group, a global engineering firm. Dr. Rahimian's distinguished career has allowed him to proudly display his stamp on projects worldwide. He has received the 2007 AISC Special Achievement Award, the 2005 ASCE-CERF Charles Pankow Award for Innovation, and the ENR Excellence Award as one of the Top 25 Newsmakers of 2003. He was named to Structural Engineer's Power List in 2011.

With a height of 1,776 feet (significant in its reference to the year of America's independence), One World Trade Center, with a total gross area of 3.5 million square feet, will be comprised of 2.6 million square feet of office space, along with tenant amenity spaces, an observation deck, world-class restaurants and a 400-foot high illuminating spire. One World Trade Center is the main building of the new World Trade Center complex in Lower Manhattan. The 105-story super-tall skyscraper is being erected in the northwest corner of the 16-acre World Trade Center site, occupying the location where the original 8-story, 6 World Trade Center once stood.

The structural and safety design of 1WTC set a new standard for the design of tall buildings in the aftermath of the Sep. 11 collapse. The existing conditions of the infrastructure at this unique site also added many additional challenges for the design and construction teams. As principal-in-charge of analysis and design, Dr. Rahimian said that One World Trade Center will be unprecedented in terms of life safety and security. The structure consists of a robust, high-strength concrete core paired with a highly redundant perimeter steel moment frame, which together provide column-free interior spans for maximum flexibility of tenant use. Dr. Rahimian's lecture will discuss the many challenges facing the design and construction teams on this landmark, significant addition to the New York skyline.

20th anniversary Kavanagh Lecture presented "Ups and Downs of Suspension Bridges"

The 20th anniversary Thomas C. Kavanagh Memorial Structural Engineering Lecture featured "The Ups and Downs of Suspension Bridges: and the Highs and Lows of Their Builders" by Dr. Harry H. West, professor emeritus of civil engineering.

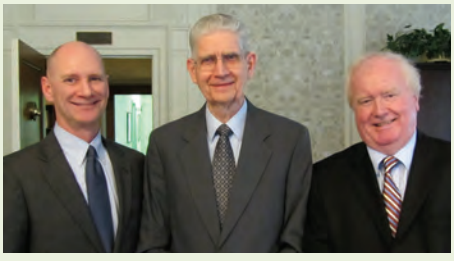
Dr. West traced the developmental history of suspension bridges, identifying the major players and their struggles to gain approval for their plans. He also examined theories used in suspension bridge structural analysis.

Dr. West provided observations of the resulting trends in design. He presented a full accounting of the chronology of the longest suspension bridges in the world. They range from the early nineteenth century to current times along with plans for new and longer spans.

Dr. West's suspension bridge research earned him the prestigious Moissieff Award in 1970 from the American Society of Civil Engineers, a member of the Penn State faculty for 35 years. West was honored on five separate occasions for teaching excellence. His most recent award was the 1996 Alumni Teaching Fellow Award of the Penn State Alumni Association.

A reception was held by the CEE Department in West's honor to celebrate the 20th anniversary lecture that Dr. West initiated and organized for many years.

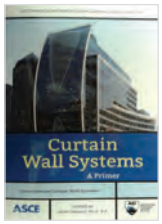
Dr. and Mrs. West with their daughter, Anita



Drs. Laman, West and Scanlon

Faculty Awards & Accomplishments

Dr. Jeffrey Laman, professor of civil engineering, and Robert Guyer, have published an article titled "Short-line railroad management system for bridge prioritization" published in *Built Environment Project and Asset Management* which has been selected for the 2013 Outstanding Paper Award by Emerald Literati Network.



Dr. Ali Memari, professor and Hankin Chair, had the opportunity to edit the newly-released *Curtin Wall Systems – A Primer* book. The book, published by ASCE, contains 12 chapters and is written by experts in the field of building envelope and glazing systems. Today, curtain wall systems are expected to not only provide natural light and protect the building interior from the external environment, but also function to conserve energy, ensure occupant comfort by controlling heat flow and solar radiation, and to perform satisfactorily under natural disaster and man-made hazards. *Curtin Wall Systems – A Primer* provides a detailed review of materials, conventional glazing system types, innovative systems, test procedures, inspection, and waterproofing, as well as design for wind, earthquake, and blast load effects. The book will be useful for students, architects, architectural and structural engineers, HVAC engineers, general contractors, building owners, and building operators.

Memari was also elected to ASCE Fellow.

Ali Memari and his co-inventors, Paul Kremer and Richard Behr, have been issued a patent on Earthquake Damage Resistant Glass Panel, US 8,539,725 B2. The Rounded Corner Glass concept has been developed to improve the architectural glass panel's resistance to damage from earthquakes and other loads that could cause horizontal racking movement of glass panels within their glazing frames. By finishing the glass panel edges using processes such as cutting or scoring for annealed glass and belt seaming for heat-strengthened and fully-tempered glass, or preferably grinding or polishing, stress concentration at glass-to-frame contact points at corners are attenuated, thus leading to increased cracking drift capacity. The concept is applicable not only to monolithic glass but also to other glass configurations such as laminated and insulating glass units that can be used for stick-frame and unitized glazing systems.

Dr. Aleksandra Radlińska, assistant professor in civil engineering, was elected as chair of the American Concrete Institute Committee 123: Research and Current Developments beginning April 2013.

Aleksandra Radlińska has been awarded a research grant from National Science Foundation. The award support research related to Mechanisms and Mitigation of Shrinkage and Carbonation in Alkali-Activated Concretes.

Radlinska, Warn and Rajabipour received research award from PennDOT to investigate Bridge Deck Cracking and its Effects on In-Service Performance, Prevention, and Remediation.

Radlińska and Rajabipour together with graduate student, Christopher Cartwright, have published an article titled 'Shrinkage Characteristics of Alkali-Activated Slag Cements'. The paper presented at 3rd International Conference on Sustainable Construction Materials and Technologies, in Kyoto, Japan, won Best Paper Award.

Dr. Farshad Rajabipour, assistant professor of civil engineering, has been honored with the National Science Foundation's CAREER award, which is the foundation's most prestigious award in support of junior faculty who exemplify the role of teacher-scholar. Rajabipour and his research team are working to advance the durability and service life of concrete infrastructure through early damage detection and optimum and timely remediation. Specifically as part of this CAREER award, they will develop novel methods for performance assessment and mitigation of alkali-silica reaction, which is a major durability problem in concrete structures.

Dr. John (Jay) Regan has been promoted to professor. His research group works in the area of environmental biotechnology, focusing on converting waste organics into energy carriers such as hydrogen, methane, and electricity and on microbial conversions of nitrogen and phosphorus.

Dr. Venkataraman (Venky) Shankar, professor of civil engineering, received the 2013 Outstanding Advising award through the Penn State Engineering Alumni Society (PSEAS). The PSEAS awards recognize the outstanding efforts in teaching, research, advising, and staff and service.

Dr. Chaopeng Shen, assistant professor of civil engineering, has been awarded a research grant from the Department of Energy. Shen's work will develop a novel multi-scale, high performance computational modeling framework, based on the PAWS+CLM model Shen created, for integrating hydrology with ecosystems and biogeochemistry.

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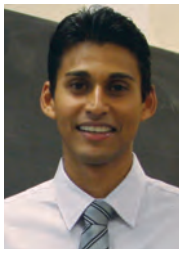
continued on next page

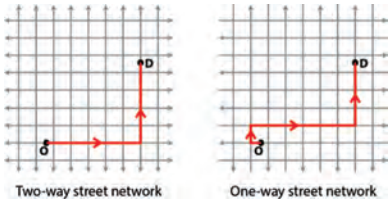
Dr. Gordon Warn, assistant professor of civil engineering, received the National Science Foundation's Faculty Early Career Development award. Warn's current project is titled "A Performance-Based Multi-Objective Optimization Framework to Define Innovation Structural Concepts and Support the Seismic Design of Critical Buildings."

CEE Assistant Professor Reexamines Debate on Street Network Design



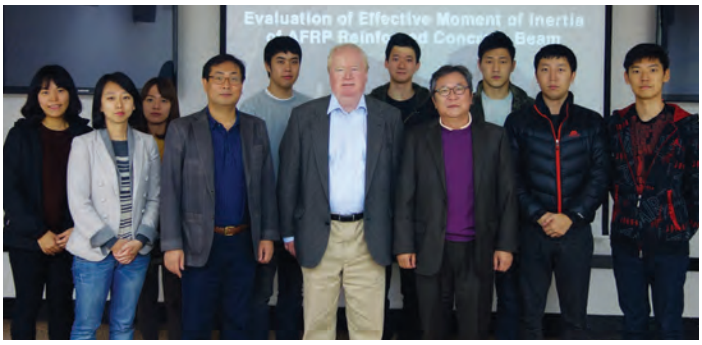
Many cities are rethinking the use of existing one-way streets in downtown areas. Travelers and residents prefer streets that provide two-way operation for a wide variety of livability reasons: they are less confusing, more favorable for bicyclists and pedestrians, and are more conducive to economic development. However, engineers and planners are hesitant to this change as traditional thinking suggests that one-way streets serve vehicles more efficiently. They argue that converting streets from one-way to two-way operation would increase congestion in already overcrowded areas.

Recent work by **Dr. Vikash V. Gayah**, assistant professor in civil engineering, has shown that this traditional thinking might not be correct. By accurately accounting for the circuity (or additional travel distance) forced onto vehicles when using one-way streets, his work shows that networks of two-way streets might actually be able to serve more vehicle trips than networks of one-way streets in larger cities! Furthermore, his work suggests that two-way street networks can always serve more vehicle trips than their one-way counterparts by simply banning left-turn maneuvers at signalized intersections. In this way, livability and efficiency objectives can be achieved simultaneously for cities of all sizes.



Two-way street network | One-way street network

More information can be found in the Fall 2012 issue of *ACCESS* Magazine.



Above: Dr. **Andrew Scanlon** with Prof. Young Hak Lee, Prof. Hee Chul Kim, and graduate students at Kyung Hee University, Korea.

Researchers link visibility and safety from roadway lighting

Driving at night is no picnic and can be fraught with danger, given the sometimes severe visibility limits and scarce reaction time. While roadway lighting can improve visibility at night and give drivers more response time to potential hazards, relating visibility from roadway lighting to nighttime driving safety has been limited by a shortage of data and lack of consideration of vehicle headlights.

To address this issue, **Dr. Eric Donnell**, associate professor at Penn State and faculty researcher at the University's Thomas D. Larson Pennsylvania Transportation Institute, in collaboration with researchers at the Rensselaer Polytechnic Institute's Lighting Research Center, developed a unique parallel approach to lighting safety analysis.

The team used lighting and crash data for state highway intersections in Minnesota to develop quantitative models relating nighttime driving safety to the presence of lighting at these intersections. The models also accounted for the effects of features like signals, medians and other intersection design and operational features in order to segregate the effects of lighting from these other aspects. Various statistical approaches were applied to confirm the results. Data for the statistical analyses were provided by the Minnesota Department of Transportation through the Federal Highway Administration's Highway Safety Information System.

The researchers also modeled prototypical roadway intersections with and without lighting, including the effects of vehicle headlights. In doing so, they were able to estimate drivers' ability to detect potential hazards quickly and accurately under each lighting scenario compared to when no roadway lighting was present.

"A lot of research has been done on driver safety and roadway lighting," said Donnell. "What's noteworthy here is the connection between the visibility and traffic safety research methods, which made it possible to link them with empirical data."

Donnell collaborated with Mark Rea, Lighting Research Center director and professor, and John Bullough, the center's senior research scientist.

"While the finding that safety benefits from roadway lighting are highly related to the visibility improvements lighting provides is not novel nor unexpected, evidence for this direct link has been scarce in the literature," said Rea. "Our models provide a tool that transportation agencies can begin using now to not only allocate lighting more efficiently, but to design lighting more effectively."

As new practices such as solid-state lighting, adaptive roadway and vehicle lighting, and benefit-cost analysis continue to emerge, tools like those described by Donnell, Rea and Bullough will help agencies specify and shape lighting that minimizes energy use and environmental impact while maximizing the use of limited public resources.

The full text of the paper, titled "To illuminate or not to illuminate: Roadway lighting as it affects traffic safety at intersections," is available at http://dx.doi.org/10.1016/j.aap.2012.12.029

Xiao joins CE geotechnical and materials engineering faculty

Dr. Ming Xiao joined the civil engineering's geotechnical and materials engineering faculty as an associate professor in August 2013. He received doctorate degree in geotechnical engineering from Kansas State University. Prior to joining Penn State, Xiao was an assistant and then associate professor at California State University Fresno from 2005 to 2013. His research involves seepage and erosion, performances of earthen structures (such as levees, geosynthetically-reinforced bridge abutments) under in-service conditions and extreme events, and innovative alternative materials, biogeochemically treated soils, recycled materials, and their engineering applications. Xiao has conducted research funded by NSF, NASA, state agencies, and companies such as PI or co-PI. His current research involves fundamental mechanisms of flow-induced particle mobilization and fate in porous media under various fluids, imaging investigation of fatty material accumulation on arterial walls, shake table testing and analyses of seismic performances of earthen structures, characterization of recycled materials and investigation of the performances of infrastructures that use recycled materials. Xiao has taught four undergraduate and four graduate courses in geotechnical and geoenvironmental engineering. He has written two books as single author. He is the chair of the Geotechnics of Soil Erosion technical committee of ASCE Geo Institute.

Logan named deputy editor of new environmental journal

Dr. Bruce Logan, Evan Pugh Professor and the Stan and Flora Kappe Professor of Environmental Engineering, has been named the inaugural deputy editor of the newly launched *Environmental Science and Technology (ES&T) Letters* journal.

The journal, from American Chemical Society (ACS) Publications, is designed to accelerate the pace of research across the environmental field by providing the global multidisciplinary research community with an outlet to highlight urgent critical findings in a letters format.

ES&T Letters will be available exclusively online with its first issue premiering in January 2014. ACS's primary research journal, *ES&T,* is among the most highly cited environmental journals.

A member of the Penn State faculty since 1997, Logan is director of the Penn State Hydrogen Energy Center and the Engineering Energy and Environmental Institute.

Logan elected to National Academy of Engineering

Penn State environmental engineer **Dr. Bruce Logan** has been elected to the National Academy of Engineering (NAE), the organization announced today (Feb. 7).

Logan is one of 69 new members and 11 foreign associates elected for 2013, bringing the total membership to 2,250 and foreign associates to 211.

Election to the NAE is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to engineering research, practice or education, as well as pioneering new and developing fields of technology, making major advancements in traditional fields of engineering or developing/implementing innovative approaches to engineering education.

Logan, who is an Evan Pugh Professor and the Stan and Flora Kappe Professor of Environmental Engineering at Penn State, was elected by the NAE for his work in microbial electrochemical technologies for wastewater treatment and sustainable energy generation.

A member of the university faculty since 1997, Logan serves as director of the Penn State Hydrogen Energy Center and the Engineering Energy and Environmental Institute.

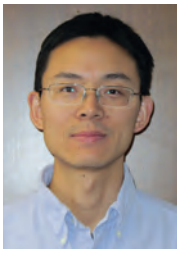
His work focuses on the sustainability of the water infrastructure and the production of electricity and energy carriers, such as hydrogen, from waste biomass to help provide energy for the needs of water infrastructure. He specializes in microbial fuel cells, biological hydrogen production and new methods of renewable energy.

Logan is a fellow of the Water Environmental Federation and the International Water Association and a former Fulbright Scholar and Leverhulme Fellow.

In 2009 he received the Athalie Richardson Irvine Clarke Prize, one of the most prestigious water prizes in the United States, for his research in water science and technologies. Logan was one of eight inaugural recipients of the Popular Mechanics Breakthrough Award in 2005. His other awards include the inaugural Association of Environmental Engineering Professors' Malcolm Prinie Frontiers of Research Awards and the 2004 Paul L. Busch Award from the Water Environment Research Foundation Endowment for Innovation in Applied Water Quality Research.

Logan is a visiting professor at Tsinghua University and Harbin Institute of Technology in China and Newcastle University in the United Kingdom. He is the International Francqui Chair at Ghent University in Belgium.

Liu joins CE's water resources engineering faculty



Dr. Xiaofeng Liu joined the civil and environmental engineering faculty as an assistant professor in January 2014. He received his doctorate degree in civil engineering, with specialization in hydraulics and water resources engineering, from the University of Illinois at Urbana-Champaign (UIUC) in 2008. After that, he worked for two years as a postdoctoral researcher and visiting research assistant professor at UIUC. Prior to joining Penn State, he has been an assistant professor at the University of Texas at San Antonio from 2010 to 2013. His teaching interest includes courses related to computational methods, environmental hydraulics, sediment transport, and river mechanics. Liu's expertise and research interests are computational fluid dynamics, environmental fluid mechanics, sediment transport and erosion control, land surface process and morphodynamics, multiphase flow, and water quality modeling. Based on the new mathematical models and numerical algorithms developed from Dr. Liu's work, several computer models have been developed which are suitable for both academic research and real world applications in hydraulic/coastal engineering. Among these models is an innovative computational methodology and framework to tackle the multi-scale and multi-dimensional problems when turbulent flow interacts with porous boundaries. Such process plays a vital role in the riverine and coastal environments. Liu also works on analytical solutions for environmental flow problems.

El-Chabib joins CE faculty as an instructor in structures group

Dr. Hassan El-Chabib joined the civil and environmental engineering faculty as an instructor in August 2013. He received his doctorate and master of engineering science degrees in civil engineering from The University of Western Ontario, Canada, and his master of science degree in civil engineering from Northeastern University, Boston, MA. Prior to joining Penn State, Hassan worked as an assistant professor in the department of civil engineering and construction at Bradley University in Peoria, Illinois from 2007 to 2013. He also worked as a structural engineer for YAS P.C. in Woodbridge, NJ, from 2005 to 2007. El-Chabib is a registered professional engineer in the province of Ontario, Canada, since 2006 and an active member of the Lebanese Association of Engineers and Architects since 1986. He is also a member of several civil engineering organizations and a reviewer for many international engineering journals. His research interests include the rheological and structural behavior of special concretes, concrete technology, sustainability of reinforced concrete structures, durability, and rehabilitation of concrete infrastructures, and application of artificial intelligence in modeling the behavior of cement-based materials.

Report from the Civil and Environmental Engineering Alumni Society

The new Civil and Environmental Engineering Alumni Society (CEEAS) is celebrating its second year anniversary and is pleased to be collaborating with the Department, faculty, and student organizations in reconnecting CEE alumni with the University. Recent activities have included:

— **Working with the ASCE Student Chapter to establish an Annual CEE Alumni Panel Discussion.**
Eight alumni participated in the first CEE Alumni Panel Discussion held on campus in October 2013. Each member of the panel discussed their individual career paths and highlighted how their Penn State civil engineering degrees have afforded them many and diverse opportunities throughout their careers. The panelists (Harry H. West, Willy Heisey,Tom Lawson, Steve Devine, Jim Policaro, Donna Newell, Cari Beenenga, Dan Leandri) took questions from the 50 attendees and networked with students after the event.

— **Collaborating with the ASCE Student Chapter to conduct an Annual Distinguished CEE Alumni Lecture**
The students selected Dr. Harry West as the first Distinguished Lecturer. And, Dr. West presented "Beaver Stadium Through the Years" to over 40 students and alumni who attended the November event. As expected, it was an informative and engaging lecture.

— **Mentoring CEE Students**
Willy Heisey is leading a committee of alumni, students, and faculty in the development of a formal mentoring program for CEE students. While work has just begun, it is anticipated that alumni will be sought to mentor both junior and senior CEE students. Freshmen and sophomore students will be mentored by CEE seniors. Watch for more information on the new mentoring program in 2014 as we reach out to CEE alumni who might be interested in becoming mentors.

Get reconnected! You can join the CEEAS, at no cost, by accessing the group's website at **www.engr.psu.edu/ce/alumni**

Follow PSUCEEAS on Facebook:
www.facebook.com/PennStateCEEAlumniSociety

Jack Diviney, CE '68

Dewberry announces promotion of Jeremy Beck, a CEE alumni

Jeremy Beck, PE, based in Dewberry's Fairfax office, has been promoted to senior associate. Beck has more than ten years of experience working with a wide range of infrastructure-related developments in Northern Virginia. He has managed and designed multi-disciplined transportation projects on large and small scales—funded both publicly and privately—as well as numerous design-build projects. He has supervised all aspects of transportation engineering plan design, including geometric alignments, drainage elements, lighting and traffic signals, signing and marking, maintenance of traffic, public utility re-locations, as well as erosion and sediment control. His experience includes coordinating local, state, and federal reports; developing alternatives and concepts; directing traffic studies and analysis; conducting constructability reviews; developing cost estimates; coordinating land acquisition activities; performing quality assurance reviews; and direct involvement with public information processes. He received a bachelor's degree in civil engineering from Penn State.

CEE Alumni News

Philip Bobitz ('10 CE) has been selected as a Transportation Engineer in the Federal Highway Administration (FHWA) Pennsylvania Division Office. His responsibilities will include providing oversight of environment, design, and construction activities as well as providing technical assistance on highway projects and guidance on federal regulations and policies. Bobitz previously served as a transportation engineer in the FHWA DelMar Division.

The FHWA Division Offices are local field offices that provide leadership, guidance, and direction to State Departments of Transportation in the planning, construction and maintenance of transportation projects. www.fhwa.dot.gov/padiv/

Jacqueline Hinman awarded 2013 Outstanding Engineering Alumnus

Jacqueline Hinman has 29 years of experience in the engineering and construction industry and has held key executive leadership, and management, operations, and technical roles, in the fields of transportation, infrastructure, water, buildings, military facilities, environmental cleanup, sports, and industrial facilities.

Ms. Hinman currently serves as the president of CH2M HILL's International Division, comprised of CH2M HILL's operations outside of the United States (including the operations of UK-headquartered Halcrow Group, acquired by CH2M HILL in November 2011, for which she serves as chairwoman and CEO). The International Division has approximately $2.5 billion in annual revenue and 10,000 employees worldwide. Ms. Hinman's main personal focus geographies in 2012-2013 include the UK, UAE, Qatar, India, Singapore, Australia, Brazil and Argentina. Prior to this role, Ms. Hinman served as President of CH2M HILL's Facilities and Infrastructure Division, which included 7,000 employees and $2 billion in annual revenue in the global business lines of Transportation, Industrial & Advanced Technology, Operations & Maintenance, and Urban Programs.

Previously Ms. Hinman oversaw the Major Programs group, overseeing the delivery of large engineering, construction, and operations programs worldwide, including the London 2012 Olympic and Paralympic Games, the Panama Canal Expansion, the Qatar 2022 World Cup, the Rio 2016 Olympics, and the MASDAR sustainable city in Abu Dhabi. Ms. Hinman also concurrently served as director of mergers and acquisitions, responsible for overseeing the firm's acquisitive growth strategies worldwide. She was responsible for the acquisition of the $900 million revenue Halcrow Group, and its subsequent integration into CH2M HILL.

Prior to these positions, Ms. Hinman oversaw the firm's Center for Project Excellence, which ensures the development of the company's innovative processes, tools, data, and standards for application to worldwide consulting, design, engineering, construction, operations, and management projects. She also served as CH2M HILL's senior vice president for international development. In that capacity she was responsible for development, capture, and mobilization of strategic opportunities internationally, such as the London 2012 Olympic Games, the Panama Canal Expansion, and the Mumbai International Airport Expansion.

From 1997 to 2001, Ms. Hinman was the CEO of a management consulting firm that she founded, providing financial risk analysis services to government and industrial facility and infratructure owners. After selling that firm to engineering firm Earth Tech (a Tyco Company), she served on Earth Tech's leadership team in operations and strategic development roles. Ms. Hinman also previously worked for CH2M HILL for 10 years at the beginning of her career, where she held management, business development, operations and project engineering roles.

Ms. Hinman serves on CH2M HILL's board of directors and also serves on the board of directors of Catalyst Europe. At CH2M HILL she currently serves on the board's governance committee, and previously served on the audit and finance committee, and chaired the diversity committee. She is also a member of the World Economic Forum Global Advisory Council on Infrastructure.

CEE Department Directory

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Degree(s) | Graduation Year(s)

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Position Title

Firm Address

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Alumni Updates:

Also, please send the address of any Civil and Environmental Engineering alumni you know who are not receiving the newsletter.

Please send to:

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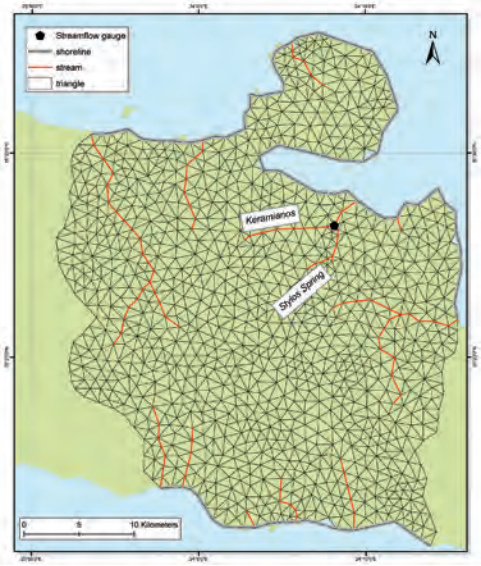

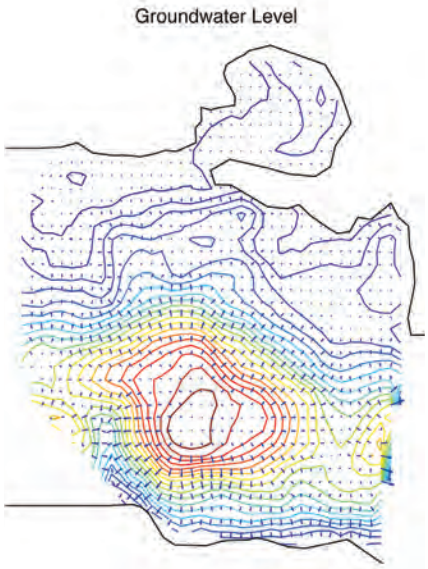

In collaboration with the NSF funded Shale Hills Critical Zone Observatory led by Penn State, civil and environmental engineers and scientists from Penn State and Technical University of Crete (Greece) are building integrated hydrologic models of the surface and groundwater resources of the White Mountains in western Crete. The research is attempting to evaluate the role of mountain precipitation and climate change on surface water and groundwater resources, and to assess the impact of soil degradation by over grazing in the watershed. The research is funded by the European Commission and the U.S. National Science Foundation. The investigators are Christopher Duffy (PSU), Nikos Nikolaidis (TUC), Xuan Yu (PSU), Daniel Moraitis (TUC), and Tim White (PSU).