

COMMUNIQUE

Summer 2016

A newsletter for alumni and friends of the
School of Civil Engineering and Environmental Science
at the University of Oklahoma



pg. 3



pg. 10



— The —
UNIVERSITY
— of —
OKLAHOMA

Gallogly College of Engineering

School of Civil Engineering
and Environmental Science



pg. 17

From the Director

Greetings, CEES Alumni and Friends,

At a meeting this spring to discuss OU's accomplishments, President Boren opened with a quote from Dickens: "It's the best of times and the worst of times." It seems appropriate to reflect on that line as we discuss the content of this 2016 edition of the *Communiqué*. Our students and faculty are thriving, despite some of the most dire fiscal conditions OU has faced in the last 30 years. This is a testament to the faculty and staff's commitment to excellence and their industriousness in maximizing the value of available resources.

As an example of CEES's outstanding contributions, consider the OU Community Impact Report. This annual publication documents ways in which faculty, staff and students provide meaningful contributions, both locally and globally. In the president's opening letter, he cites 14 examples of impactful projects; two are from CEES (14 percent). Later, in the research section of the report, OU lists 26 notable research projects; five are from CEES (29 percent). Similarly, in Dean Lander's report at the spring Board of Visitors' meeting, he highlighted five Community Impact projects; three were from CEES (60 percent). Yet CEES faculty represent only about 1 percent of OU and 19 percent of the college, while CEES students represent 1.7 percent of OU and 12 percent of the college—clearly, the disproportionate contributions from CEES are truly remarkable.

Enrollments continue to be strong, with final numbers for the academic year 2015/2016 showing an 8 percent gain over the prior year. In fact, we have reached capacity in some of the laboratory-intensive courses, so one of our summer projects is to enlarge the undergraduate environmental teaching lab, a project made possible by the Dolese Tomorrow's Engineers Fund and our Felgar Society members.

This issue of the *Communiqué* is packed with information about the prior year's activities, including the following:

- Professors Harvey and Muralee undertook an ODOT project to critically analyze the need for bridge inspections, given Oklahoma's increased seismic activity;
- The environmental capstone group designed a passive wetland system to treat mine drainage in northeastern Oklahoma;
- OU alum, Micah Hale (BSCE '96, MSCE '00, PhD '02) was named head of the Department of Civil Engineering at the University of Arkansas;
- Amy Sikora, Ian Hammond, Samantha Heinrich and Ben Toms were named outstanding seniors in Environmental



Engineering, Environmental Science, Architectural Engineering and Civil Engineering, respectively.

We hope you enjoy reading about these and other stories in this edition of the *Communiqué*. As always, we would love to hear from you, so please keep in touch through email or by joining our LinkedIn and Facebook groups.

Before closing, I would like to reiterate that one goal of our strategic plan is to refresh and expand alumni communications. Thus, we are planning a new event for this fall that we hope will become an annual tradition on a home football weekend. In particular, during the afternoon of Friday, Oct. 14, CEES faculty will offer a series of short courses on various topics that can serve as professional development hours that are necessary to maintaining licensure. A reception on the engineering quad will follow. All CEES alumni and friends are welcome, so save the date and look for more information as the time draws nearer.

Finally, getting back to the opening line about "the worst of times"—revenue shortfalls have put a severe strain on all of OU, including CEES. In fact, state funding of higher education was slashed almost 16 percent! Under such conditions, development and fund-raising become even more important, as we strive for excellence in all of our educational and research offerings. On behalf of CEES, I express a heartfelt thanks to all of those who have supported us in the past; if you would like to contribute to our "Live On" campaign, fliers are included at the end of this newsletter.

A handwritten signature in cursive script that reads "Randall L. Kolar".

Randall L. Kolar, Ph.D., P.E.
David Ross Boyd Professor
Austin Presidential Professor
Director, School of Civil Engineering
and Environmental Science

Inside Communiqué

- 2 School News
- 9 Faculty Update
- 10 Research
- 17 Alumni News
- 20 Awards and Honors
- 22 Giving Update

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Wallace Engineering

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Phillips & Bacon, Inc.

Michael Graves, P.E.
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Geri Hart, P.E.
Tinker Air Force Base

Martin Hepp, P.E.
CEC Infrastructure Solutions

Stacy Loeffler, P.E.
BKL, Inc.

Nasir Marakah, P.E.
Midwest Engineering and
Testing Corp.

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Tim Tegeler, P.E.
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Design of a Passive Treatment System for Mine Drainage



For the spring 2016 environmental engineering and science capstone course, the student teams—Ogaxpa Engineering and Lasting Environmental Action Firm (Leaf LLC)-developed engineering plans and specifications for the construction of a passive treatment system for mine drainage associated with specific discharges at the Tar Creek Superfund Site near Commerce, Oklahoma. The projects actually started in fall 2015 with the student teams developing real-world required project documents (Health and Safety Plan, Sampling and Analysis Plan, Quality Assurance Project Plan and Project Work Plan). The teams then traveled to the proposed treatment system site to collect and analyze water and soil samples and measure flow rates. They used their measurements along with historical water quality data to develop designs for their passive treatment systems.

The resulting final reports were submitted to the Environmental Engineering and Science Advisory Board. This year the EESAB included Rich Zamora, Ph.D. (Grand River Dam Authority research director), Darrell Townsend, Ph.D. (GRDA Lake and Ecosystems director), Jim Long, Ph.D. (Commerce City Council and retired Kansas State University agronomy professor), Craig Kreman, P.E. (Quapaw Tribe assistant environmental director), David Cates, P.E. (ODEQ environmental engineer) and Brian Stanila (ODEQ environmental scientist and project manager for a currently funded research project).

Teams also were required to develop oral presentations for their designs and present them at the April meeting of the Commerce City Council in Commerce, Oklahoma. The EESAB members in attendance were provided with

quantitative scoring sheets that included multiple review questions and space for written comments. The mean overall EESAB scores (five-point scale) for the two teams were 4.47 (Leaf LLC) and 4.27 (Ogaxpa Engineering). Rich Zamora noted: “I wanted to add here that I am really impressed with the quality of these reports, their presentations and the work these groups did in general. You guys really deserve some kudos/congratulations for a job well done. I had to look pretty hard to find anything to pick at.” Brian Stanila commented: “The quality of the student work is comparable to what I receive from private consultants to ODEQ.” One of the audience members, Rebecca Jim, a local non-profit contact, wrote an editorial published in the *Miami News-Record* that praised the students’ projects.

“Our senior capstone was a challenging project that was incredibly rewarding in the end, especially after seeing how important and necessary our project was to the local community,” commented Amy Sikora (BSEE 2016).

It is interesting to note that CEES is currently working with an engineering firm, BioMost Inc., which is developing design documents for the actual construction of the new passive treatment system. Ground on the new system is expected to be broken in the summer of 2016. The student design teams were not made aware of the real-world design efforts until after completion of their final presentations in Commerce. The student design teams developed cost estimates for their projects that closely bracketed the final budget awarded to Biomost after a competitive bidding process. This is another indication of the “real-world” nature of these capstone projects.

ASCE Mid-Continent Student Conference Competition Results

The ASCE Mid-Continent Student Conference was held in Rolla, Missouri, at the Missouri of Science and Technology campus April 21-23. This year, in addition to the canoe and steel bridge teams, OU fielded a concrete bowling ball team and, for the first time, came home with the Spirit of the Competition Award.

The canoe was named “Boldly Go” in keeping with the Star Trek theme for this year. The team received the following awards:

3rd Technical Paper
1st Presentation
1st Final Product
1st Women’s Endurance
5th Men’s Endurance
1st Women’s Sprints
4th Men’s Sprints
4th Coed Race
2nd Overall *by 1.6 points, the closest in regional history*

Led by co-captains Kristen Hayden and Bryce Lawson, the OU-ASCE Concrete Canoe team members included:

Lexis Allen, *stand lead*
C.J. Alsenay
Michelle Basham
Caitlin Bob
Zac Burkett
Amy Crone, *mix design and technical paper lead*
Andrew Easley
Casey Eoff
Becky Franz

Megan Geldermann, *fundraising lead*
Samantha Heinrich
Amelia Joly, *display table lead*
Heather Legan
Durant Leung
Memo (Luis) Marin
Emily May
Charlie McDaniel, *paddle lead*
Rex McLauchlin
Emily Shelton
Nick Shepherd
Amy Sikora
Shauna Snyder
Kylie Tommaney
Rachel Wesson, *display lead*
Luke Whitney
Austin Woodson

Nick Shepherd won 2nd place for the school for his ethics paper



Steel Bridge and Concrete Bowling Ball Teams

The steel bridge team built their bridge in 19 minutes. This is the most competitive time they have placed in years. Unfortunately, they were disqualified when their road support was 6 inches too wide. Led by captain Marcus Dixon and vice captain Chase Angier, the OU-ASCE Steel Bridge team members included Pavle Milicevic, Erika Dorrell, Tyler Dewar and Alex Sotomayor.

The Concrete Bowling Ball Team fielded the best, most accurate bowling ball. Team members included Michelle Basham and Rex McLauchlin.

ASCE student organization faculty adviser, Chris Ramseyer said, “While the teams did not bring back the crown, they did represent the University of Oklahoma exceedingly well. They worked as a team, learned a lot along the way, acted professionally, helped other teams with problems and had fun doing it. I am very proud of them and the effort they put into this competition. It has been an honor to be their adviser.”



WaSH Experts Gather at the 2015 OU International WaTER Conference

WaSH representatives from more than 21 countries gathered in Norman Sept. 21-23 for the fourth biennial University of Oklahoma International WaTER Conference hosted by the OU WaTER Center. Nearly 170 people from multiple disciplines were attracted to the conference with the common goal of addressing the global water crisis.

The conference theme, “Off the Grid: Sustainable Water and Sanitation in a Non-Networked World,” included water and sanitation experts from industry, NGOs, governments, foundations and academia. Two full days of oral and poster sessions addressed an array of water-related topics, such as behavior and behavioral

change, gender and social equity, social entrepreneurship, climate change effects, capacity-building, conservation and reuse technologies, assessment and health interventions, fluoride and arsenic mitigation and technical innovation and design.

Twenty-six international travel scholarships were sponsored for attendees from 12 developing countries. In addition to a host of social and networking opportunities, the conference offered five significant keynote speeches from leading WaSH professionals, an interactive poster session, an authentic Ethiopian coffee ceremony, an educational student youth outreach art contest, and a panel

discussion titled “Climate-Water-Energy-Food Nexus: Challenges and Opportunities Across Sectors.”



Field Methods workshop attendees try a hands-on water-well drilling method.

In addition to the varied side activities, two post-conference workshops were hosted. The Field Methods workshop featured hands-on displays of appropriate technologies, such as sustainable pump technology, water-well drilling methods (manual and hydraulic), ecolatrane design, household water treatment systems and biosand filters. Social Entrepreneurship was the theme of the second workshop, which was conducted by OU’s Center for the Creation of Economic Wealth, and featured a valuable hands-on opportunity for participants to work in teams to develop a model business plan for a social innovation and entrepreneurship venture.

Highlighting the conference was a formal banquet on Monday evening. Attendees heard a plenary lecture given by Peter Lochery, CARE director of water and recipient of the 2015 University of Oklahoma International Water Prize.

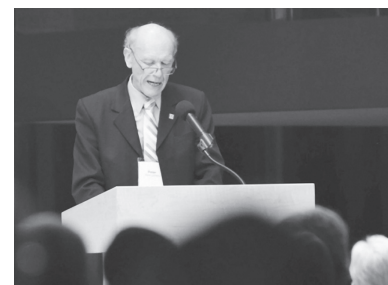
The fifth biennial OU International WaTER Conference is scheduled for Sept. 18-20, 2017.



Attendees enjoyed two full days of oral and poster presentations at the conference.



Panelists, from left: Afreen Siddiqi, Ph.D. (MIT/Harvard); Pawan Labhasetwar, Ph.D. (NEERI); Emmanouil Anagnostou, Ph.D. (University of Connecticut); Kenneth Ochoa (Universidad El Bosque); and not pictured, Yang Hong, Ph.D. (University of Oklahoma).



Peter Lochery delivers the plenary lecture at the conference banquet.

WaTER Center Travels to Ghana

WaTER Center doctoral student Philip Deal and center director and CEES professor David Sabatini travelled to Ghana in July. The purpose of the trip included evaluation of a private company's abilities to manufacture drilling equipment, the training of professional drilling teams and to provide a full water delivery service to rural communities in that country. Deal and Sabatini also attended the 39th Water Engineering and Development Centre International Conference in Kumasi, Ghana, to share details of their collaboration model with the academic community. The WaTER Center, the Water4 Foundation and the International Development and Environmental Assistance programs are collaborating with Access Development Ltd., a privately held Ghanaian company located in the western region of the country. In addition to providing a full water delivery service to rural communities in Ghana, ADL will

manufacture drilling equipment and train professional drilling teams who will dig and maintain boreholes so that contracted villages will have clean water year round. Finally, Access Development Ltd. will charge a small tariff for these services upfront in order to recover the costs for service and prevent the breakdown of the ADL infrastructure. All of these actions combine to form a service delivery model, a concept under research at the University of Oxford and IRC.

The rural water delivery service began last fall, and its initial implementation is expected to last four years. Phase 1, which included preliminary planning, mobilization and baseline studies, was finished in April. Phases 2 and 3, which include training and the start of drilling, will proceed this year.

The WaTER Center will evaluate the company from technological, financial and behavioral perspectives. Baseline studies are well along to



completion. Deal and Sabatini will address the efficacy of the project to date as well as hopes for the future at the Water Engineering and Development Centre conference. Over the next few years, metrics such as well performance, maintenance periods, operational costs, water purchasing rates and how the socioeconomic framework affects the company's success will be tracked to evaluate the sustainability of the project. The WaTER Center staff is excited to play a role in helping to determine if this is the next step in public-private partnerships in emerging regions. Stay tuned!

SAVE THE DATE!

CEES PDH Sessions

CEES faculty will offer a series of short courses on topics in the water/environmental, geotechnical and structural areas.

Afternoon of Friday, Oct. 14

Following the sessions, a reception will be held in the engineering quad for alumni and friends.

More information to follow.



WaTER

Water Technologies
for Emerging Regions

Water & Sanitation for all

The University of Oklahoma WaTER Center
Invites you to attend the

Biennial WaTER Symposium

6:45-9 p.m. Thursday, Sept. 22

Oklahoma Memorial Union,
Molly Shi Boren Ballroom

Enjoy a panel discussion from experts in current water issues and the announcement of the 2017 University of Oklahoma International Water Prize winner.

The event is free and open to the public.

To register or learn more, visit

www.WaTER.ou.edu

Architectural and Civil Engineering Capstone Design Project



Overall Description

The architectural and civil engineering capstone design project for the 2015-2016 academic year required the development of a master plan for relocating the main campus of the Illinois Institute of Technology from the south side of Chicago to north suburban Great Lakes, Illinois. The proposed 180-acre site is located between the shores of Lake Michigan and Naval Station Great Lakes, the only boot camp for the United States Navy. This site was specifically selected to foster both an educational and research relationship between these two entities.

Background

IIT is a private, technology-focused, research university offering undergraduate and graduate degrees in engineering, science, architecture, business, design, human sciences, applied technology, and law. It currently is spread across five separate sites.

The Main Campus has become landlocked, preventing growth in terms of both existing programs and potential new programs. Using a

clean slate, design teams developed the master plan for the new campus, which included buildings, green spaces, streets, utilities, public transportation, and support structures. The project teams also designed several of the buildings, structures, infrastructure improvements (e.g.,

roadways, storm sewers, retaining ponds), and facilities for the new campus. The existing Main Campus, most of which is on the list of historic buildings, will be converted to the new Richard M. Daley Chicago City College.

Design Program Requirements

The new Main Campus must



support 3,000 undergraduate students, 2,000 graduate students, 335 faculty, and 720 professional, administrative, and staff employees. Design teams were required to incorporate a variety of buildings and structures into the new campus plan. However, there were no specific requirements for the number of buildings and support structures.

The master plan also required that designs include provisions for 25 percent future growth.

Design Teams and Final Presentations

Each of the five design teams consisted of eight students representing a mix of engineering disciplines, including building lighting and electrical design; structural engineering, building heating, ventilation, and air conditioning (HVAC) design; geotechnical engineering; transportation engineering; and water resources engineering. Together, each team developed their master plan and then selected one or two buildings to complete detailed engineering designs, drawings,

and specifications. Some of the teams also included the design of several infrastructure elements of the campus, such as roadways, stormwater systems, and water supply.

Each team presented their designs to the CEES faculty, students, guests, and several invited practicing engineers. One of the practicing engineers said that “this is a great way to help

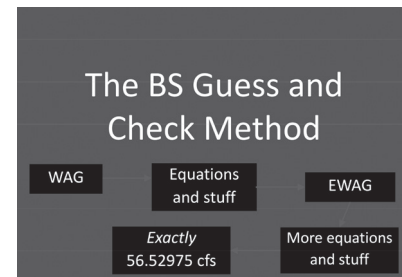
students transition from individual classes and homework assignments to a real-world, open-ended design problem.” They went on to comment about the quality and professionalism of each team’s final presentation, which “is a necessary skill to have as an engineer.”

Student Faculty Roast Tradition Continues



No, that is not a picture of a popular CEES class with very engaged students. Rather, it's a picture of the overflow crowd that attended the annual CEES Student-Faculty Roast, held on May 6. CEES prides itself on its friendly and welcoming environment; the roast is one of the more unique manifestations of that culture. In fact, we are not aware of a similar event held on an annual basis anywhere in the country. And it has become somewhat of a badge of honor for both students and faculty to get

"roasted." While there have been many memorable moments over the years, this year's version of the roast featured a presentation by senior environmental engineering senior Shauna Snyder, who gave a 15-minute monologue that rivaled Jimmy Fallon (or Jay Leno or Johnny Carson, for the older generation). If Shauna's engineering career doesn't work out, she has a great fallback plan. But not to be outdone, assistant professor Royce Floyd countered with a parody about the "Top 10 Reasons to Be Leery of Student Design Projects", the highlight being "The Irrational Method" for determining design flows, where one capstone group proposed an iterative procedure that



is illustrated in the figure above. Heaven help our cities' infrastructure in the future! The eventful evening ended with the student-elected awards for CEES faculty. Professor Robert Nairn received the Larry Canter Environmental Award; professor Keith Strevett, the George Tauxe Teaching Award; and professor Mark Nanny, the infamous "Golden Cheeks" Award.

CEES Staff Members Announce Retirement



Many of you will fondly remember CEES staff members Brenda Finch Clouse and Ron Conlon as long-standing members of the CEES family.

Brenda retired July 1 with 19 years of service to the university: two years in the Office of Admissions and 17 years in CEES. As Brenda is fond of saying, she "blew in to CEES with the May 3, 1999, tornado." During her years in CEES, Brenda was tasked with purchasing supplies, paying the bills, reconciling grant and state accounts and, last but not least, making certain all hourly paid employees were paid correctly and on time. Brenda says that "while I will miss my CEES family, I am looking forward to spending time with my family and entering this new phase of my life."

Ron started at OU in the Department of Geology in 1998 and came to CEES in 2000. He is responsible for



upkeep, repairing, purchasing and decommissioning assets of the school and plays a major role in the re-allocation and fitment of offices and laboratories as well as all safety-related issues in the school. Of his time here, Ron observes that "I have been very fortunate and proud to be able to be a part of

the education of hundreds of university students. It takes special skills to have a career as a support staff member in the multi-faceted and challenging environment of academia, where few tasks are repeated and no week is quite like the last." Ron is looking forward to new adventures in his homeland of Canada when he retires in December.

Said director Randy Kolar, "We are fortunate to have staff members of the caliber of Brenda and Ron as members of the CEES family. Their depth of experience and expertise will be sorely missed going forward. We wish them all the best in their future endeavors."

2015-2016 Graduates

Summer 2015

B.S. Architectural Engineering
Zach M. Brinlee

B.S. Civil Engineering
Shawn Allred
Diane M. Kim
Sean C. Price

Ph.D. Civil Engineering
Humberto Jose Vergara Arrieta

Fall 2015

B.S. Architectural Engineering
Alixandra R. Bradford
Almedin Candic

Fall 2015

B.S. Civil Engineering
Jaime G. Cervantes
Chase R. Cole

B.S. Environmental Engineering
Ethan K. Rice
Nicole Saenz

B.S. Environmental Science
Jayme N. Crabaugh

M.S. Civil Engineering
Juan Arango Calderon
Kevin Geoghegan

Ph.D. Civil Engineering
Wassim Tabet
Amirata Taghavi
Hessan Yazdani

Spring 2016

B.S. Architectural Engineering
Bassel S. Abuljebain
Amy S. Crone
Erika L. Dorrell
Nathan J. Ferraro
Amanda A. Gowa
Samantha K. Heinrich
Saleh Mullayousef
Sarah J. Zeinalpour

B.S. Civil Engineering
Lexis D. Allen
Chase N. Angier
Marcus S. Dixon
Emily A. Dudley
Nicholas F. Duncan
Cameron J. Dye
Onyekachi C. Ezirike
Rebekah E. Franz

Spring 2016 (cont.)

Taylor R. Freeman
Bryce K. Lawson
Jeanie C. Lee
Matthew M. Long
Ivan Lopez
Christopher Luckert
Austin M. McDaniel
Afsana I. Mili
Mason J. Moore
Kevin M. Murphy
Alexander K. Newell
Uriah S. Nichols
Nicholas A. O'Shaughnessy
Ofelia M. Olvera
Stephen D. Tanksley
Benjamin A. Toms
Jessica R. Stanciu
Alexandria M. Stumps

Environmental Engineering
Jon B. Armstrong
Kenia De Leon
Brandon L. Dunagan
Tayler E. Jensen
Paige M. McIlroy
Derrick X. Nguyen
Nicholas L. Shepherd
Amy L. Sikora
Anne M. Smith
Shauna L. Snyder

B.S. Environmental Science
Ian A. Hammond

M.S. Civil Engineering
Nathan Ferraro
Jason Laubacher
Austin Messerli

Theresa Ngo
Samuel Sherry
Corey Wirkman

M.S. Environmental Engineering
Sheng Lei

M.S. Environmental Science
Anna Milligan

Ph.D. Civil Engineering
Hoda Soltani

Ph.D. Environmental Engineering
Junyi Du

Ph.D. Environmental Science
Julie LaBar
Ying Lan

CEES Faculty Members Selected for OU Inaugural Faculty Leadership Academy

In June of 2015, OU selected 45 faculty members from across campus to participate in the inaugural class of the Faculty Leadership Academy. Three faculty members from CEES were selected, based on a detailed application process: Professors Robert Nairn, Jeffery Volz and Naiyu Wang. The leadership academy sessions were held one Saturday each month from August through May. The goal of the FLA was to invest in faculty by helping them identify, enhance, create and continually utilize leadership capabilities that can be applied in a variety of contexts. The leadership academy is unlike many traditional executive leadership programs as it is not geared to prepare faculty to move into specific leadership positions but rather instill the much deeper notion of true leadership.

Each session was highly interactive, with the 45 fellows working in groups as a means of developing mutual support during, and following, the program of study. Fellows prepared in advance of each session, reading and watching videos, and, during each session, the facilitators used a variety of techniques to foster learning and leadership, including personal examples from participants, role playing, current events and individual/team-oriented problem-solving.

The Academy is guided by the following principles: (1) increase the ability of faculty to take bolder, more creative steps in scholarly programs, moving into endeavors that challenge them and their students in new and exciting ways that lead to important and transformative impacts on their discipline; (2) increase the ability of faculty to pursue and be successful when executing multi- or inter-disciplinary, large group, center-scale and multi-institutional scholarly activities; (3) prepare faculty for meeting unknown challenges and coping with unpredictable change; and (4) infuse leadership into instruction, advising and student experiences to help create the next generation of faculty and student leaders.

The FLA became much more than just learning about leadership. As Nairn noted, "I learned a great deal about leadership, yes, but mainly about myself. Trust me in saying that I know my leadership journey is far from ending. I hope I can take what I have learned and do it justice."



Emeritus Professor James "Jim" Robertson Passes Away

CEES learned last fall that beloved faculty member emeritus James "Jim" Robertson passed away Oct. 9. Born in Weatherford, Texas, on June 29, 1933, he attended Peaster and Weatherford High

schools and subsequently earned an associates of arts degree at Weatherford Junior College. After serving two years in the U.S. Air Force, he completed his undergraduate studies in science at the University of North Texas and master's and doctoral degrees in environmental science and microbiology from Oregon State University.

Known to his friends as "Jim", "Jimmy" or "Robo," he was a Haliburton Professor Emeritus in CEES, where he taught environmental science courses for 29 years while also collaborating with the World Health Organization to improve the standard of living in developing countries.

Throughout his career, Robertson was recognized with numerous awards. Most notably, in 1988, he received the prestigious Tim G. Green Award for exemplary service in the field of environmental health. He served as an adviser for more than 260 graduate students during his career and attracted more than \$2.5 million in research funding. In 1995, Robertson and his wife, Elaine, established the James M. Robertson Civil Engineering scholarship fund to support CEES students.

"I fondly recall him as being very kind and thoughtful, extremely generous, always interested in creative new ideas, a master of organization (he could find anything in the piles in his office) and very efficient in his exercise ('who needs to go to the gym, I get my exercise by running from meeting to meeting')," recalled longtime colleague David Sabatini.

Former student and colleague Robert C. Knox recalled, "I had the unique pleasure of studying under, and subsequently working alongside, Robbie for more than 25 years. While traveling, I would periodically run into alumni of our graduate environmental science program. Inevitably, our conversations would turn to OU, and it seems that every one of them would have a "Robbie Story." Whether it was jogging to church in some small Oklahoma town or castrating bulls on Robbie's farm or fishing lost car keys out of Lake Thunderbird, these stories were always told with belly laughs and a great deal of fondness."

Robertson is survived by his wife; sister, Judith Anne; daughter, Cynthia Ann Forrest, and her husband, Gordon Forrest; two sons, Stephen Matthew and John Anthony and his wife, Claudia; six grandchildren, Robin Anne Rougier, Olivia, Isaac, Meridian, Adley and Rio Robertson; and his great grandchildren, Isabella and Jonah Rosecrantz.

RAPID: Large-Scale Shake Table Test to Quantify Seismic Response of Helical Piles in Dry Sands



Amy Cerato

CEES professor Amy Cerato travelled to the University of San Diego California Englekirk Structural Laboratory in February to test

the seismic behavior of helical piles in sand and assess how well they fare under seismic loads. Helical piles are deep foundation elements that look like, and are installed like, a large steel soil screw – they have a slender steel shaft with any number of round plates at the tip to provide support to the structure they hold. Helical piles

are spun into the ground with a large torque motor and provide support through soil bearing on the plates and along the shaft. They come in many lengths and are often the foundation of choice for retrofitting existing buildings or new, urban construction, due to their small footprint and ability to create minimal disturbance to surrounding structures. Although helical piles are installed as foundation elements in seismically active areas such as New Zealand and Japan, they have not been used widely in seismically active areas of the United States. This lack of use is, admittedly, due to having no quantifiable data to illustrate the seismic behavior of helical piles. In addition, there are

no side-by-side seismic comparisons to other deep foundation systems available, other than qualitative “survival” stories like those from the 2011 Christchurch earthquake.

After the series of earthquakes in 2011, the city of Christchurch was surveyed and it was found that all buildings/infrastructure constructed on helical piles sustained minimal structural damage, whereas a large majority of the condemned buildings were constructed on other foundation types. The international community has qualitative proof that helical piles perform well in earthquake-prone areas, but engineers have not quantified “why” those piles are superior foundation elements, and



Shake Day 4 and 5 - The skids are loaded with sand to simulate fixed and pinned conditions.

unfortunately, helical pile use in seismically active areas within the United States remains minimal. Therefore, this research project seeks to find out “why” helical piles seem to behave so well in seismic regions by subjecting them to earthquake loads in the University of California - San Diego’s large shake table.

These data are especially important and timely to generate because certain areas of the United States are now requiring seismic retrofits of existing buildings, yet engineers have a dearth of data regarding foundation systems to help make these structures safer. For example, in October 2015, the City of Los Angeles voted on a seismic ordinance that will require more than 13,000 structures, both pre-stressed concrete and soft-story wood structures,



Helical piles

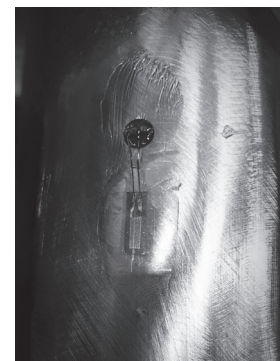
to be seismically retrofitted. Even though it is known from qualitative studies (e.g., New Zealand and Japan) that piles with comparatively small cross-section and high anchoring capacity, such as helical piles, are beneficial for seismic resistance seemingly due to their slenderness, higher damping ratios, ductility and resistance to tip uplift, building codes and current state of practice have not been adequately developed for this pile type because no quantitative data exist. Research of seismic behavior of helical pile supported structures is therefore imperative to generate necessary data that will help ensure that helical piles are being correctly applied in seismic areas

and establish quantifiable benefits and/or limitations of helical pile use in seismic areas. This research will

benefit people living in seismic zones by educating engineers with full-scale helical pile experimental data so that they better understand how to design a building system that is safer, more resilient and sustainable for individuals and the community.

This critical, and first of its kind, study provided data

on the kinematic and inertial behavior of full-scale single helical piles and evaluated the contribution of the helix to overall capacity. Same-size slender shafts were tested with varying helix geometry (e.g., double versus single), as well as installation method (spun versus driven). The piles were heavily instrumented to measure bending moments, shear and load, all of which are being used to quantify helical pile behavior and validate future numerical modeling endeavors, as well as focus additional future full-scale experimental testing efforts. This study also quantified behavior of helical piles in a group in both a pinned and fixed condition. The rocking behavior of these group piles are being analyzed to determine how much load is transferred down to the helix level and how it differs between piles in the same group, which affects stability. The study also is comparing and contrasting the behavior of a driven pile to a helical pile. The results of this study provided data on the effectiveness of steel shaft slenderness on pile dynamics, the contribution of the helix to overall capacity and rocking behavior, as well as pile group fixity. These results are of interest to the deep foundation industry, design engineers, government and private entities that utilize deep foundations for infrastructure projects in seismically active areas. To view a video of the shake, go to <https://vimeo.com/167773622>.



152 strain gages were glued along bending axes to gather data on pile behavior.

CEES Professor Robert Dreibelbis Named a Co-recipient of Civil Society Innovation Award



The handwashing station of a nudge school from the 2016 cluster-randomized trial in rural Bangladesh.

The international Water, Sanitation and Hygiene Futures Conference-held in Brisbane, Australia, in May of this year-brought together global leaders in WASH programming and research and showcased innovations in the field in an attempt to pave the path to universal and sustainable water, sanitation and hygiene. At this year's conference, a joint project designed and implemented by CEES assistant professor Robert Dreibelbis, Save the Children and the University of Buffalo was awarded first place with the Civil Society Innovation Award. The award aims to acknowledge the work of civil society organizations and non-governmental organizations that have developed successful and innovative strategies for improving the sustainability and delivery of WASH services.

In an effort to reduce the risk of enteric and respiratory child

morbidity and mortality in rural Bangladesh, the first-place project focused on improving handwashing behaviors after toilet use among primary school-aged children. The traditional focus of handwashing

The aim of the nudge path intervention is to alter the physical environment surrounding handwashing in order to subconsciously promote the behavior in the focus schools.

interventions has been behavior change communication and hygiene promotion, though these methods are often time- and labor-intensive and don't consistently result in measurable improvements. In an attempt to overcome the challenges of handwashing behavior change, principal investigator Dreibelbis and his partners designed the low-cost and easy-to-implement nudge path intervention. Nudges, or environmental cues that spark quick, unconscious decision-making, have gained attention in recent years as a means to trigger behavioral outcomes in high-income countries. Rather than attempting to tap into the reflective and often complex decision-making process of school-age children, the aim of the nudge path intervention is to alter the physical environment surrounding handwashing in order to subconsciously promote the behavior in the focus schools. The

nudge paths created in this project connect latrines to handwashing stations via paved pathways. Pathways are painted with bright colors, footprints and handprints, intended to trigger handwashing through visual cues, while the pathways themselves subtly guide students to the handwashing location. The feasibility for the nudge path intervention was assessed in a pilot in 2014 of nudges in two schools in rural Bangladesh, showing an overall increase of 64 percent in handwashing among primary school students after a toileting event. The nudge path concept currently is under further study in a cluster-randomized trial to assess the longer-term sustainability of the intervention as well as the behavioral impact of nudges against a traditional education-focused handwashing and hygiene promotion program. The results will be available in the fall of 2016.

In an effort to improve WASH in primary schools, recent policy changes in Bangladesh are requiring primary schools to adopt new sanitation infrastructure, referred to as WASH Blocks. The WASH Block design incorporates handwashing facilities within the toileting facility structure, with separate toileting and handwashing facilities for boys and girls. In order to further investigate the potential effect of nudges on handwashing in primary schools while addressing relevant policy issues, the first-place prize of \$10,000 from the Civil Society Innovation Award will be used to investigate the applicability of the nudge design in the WASH Block setting.

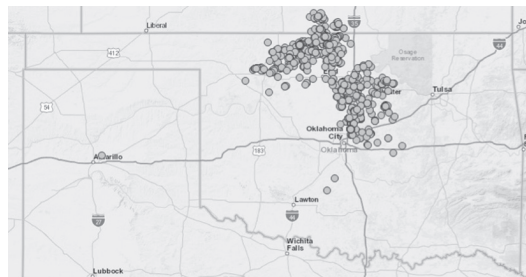
Faculty Members Help ODOT Save Time and Money on Post-Earthquake Bridge Inspection

Over the last decade, Oklahoma has experienced an alarming increase in earthquake activity. We are now the earthquake capital of the United States, having registered 907 magnitude 3 or larger earthquakes in 2015—more than California and Alaska. The increased activity has heightened the public's awareness, as well as researchers' interest.

In light of this increasing threat, the Oklahoma Department of Transportation hired a team to revise its post-earthquake response plan. The team is composed of industry partners and university researchers. Led by Gregg Hostetler of Infrastructure Engineers Inc., the team includes CEES assistant professor Scott Harvey and professor K.K. "Muralee" Muraleetharan. Harvey and Muraleetharan played a key role in updating the ODOT's post-earthquake inspection protocol and analyzing three critical bridges to understand the structural vulnerabilities of these bridges during earthquakes. They were supported by two CEES students: graduate student Ivanna Kaid Bay Cortez and architectural engineering accelerated master's student Samantha Heinrich.

ODOT's previous protocol dictated that all bridges within a five-mile radius from the epicenter were to be inspected for all magnitude 4 and larger earthquakes. In 2015, inspection crews had to be

mobilized a total of 31 times, placing a burden on the department's resources and inspectors' morale as no damage due to earthquakes was ever identified. To revise ODOT's inspection radii, the OU researchers examined both the capacity of and



Earthquakes affecting Oklahoma in 2016. (Source: U.S. Geological Survey).

seismic demand on ODOT bridges. Bridge capacity was measured using standard fragility curves, which give the probability of a bridge being in a certain state of damage based on the intensity of shaking, while the seismic demand on the bridges was characterized by the expected intensity of shaking. In order to predict intensity of shaking, Heinrich calibrated an existing ground-motion prediction equation for Oklahoma based on collected Oklahoma ground motions.

The results of the research indicated that ODOT's previous protocol was overly conservative and led to a recommendation for ODOT to update their protocol. For example, the research showed that

earthquakes of magnitude 4.6 or smaller are unlikely to cause damage to ODOT's bridges. The research also led to reduction in inspection radii. The department officially enacted the proposed protocol when the results were publicly released on March 31, 2016. ODOT chief engineer Casey Shell said, "We were conservative in our approach to bridge inspections, but now we have the science to know with more certainty that 4.0- to 4.6-magnitude earthquakes present no danger to transportation infrastructure in the state. This change in protocol allows the department to better focus its resources."

In addition to revising ODOT's inspection protocol, the team was responsible for conducting detailed structural analyses of three ODOT bridges to assess their seismic vulnerability. Heinrich analyzed the I-35 bridge over the Cimarron River, and Kaid Bay Cortez analyzed the SH-11 bridge over I-35 as well as the I-35 bridge over the Canadian River. The results of the research also will be used to validate fragility values essential in the development of ShakeCast-OK, a real-time situational awareness program for post-earthquake response.

"This has been an incredible opportunity for the University of Oklahoma to play a central role in addressing a problem of state significance and national interest," said Harvey. "My colleagues and I are very excited that we have been able to save ODOT time and money, as well as easing some of the concern surrounding Oklahoma's earthquake activity."



Scott Harvey



K.K.
Muraleetharan



Ivanna Kaid
Bay Cortez



Samantha
Heinrich

CEES Faculty Team Up to Help Moore After Tornado

On May 20, 2013, an extreme tornado event (level EF-5) swept through Newcastle, Oklahoma City and Moore, Okla. This tornado killed 25 people, including seven children, impacted over 1,400 homes and did over \$2 billion in damage.

Within an hour of the event, CEES associate professor Chris Ramseyer was called on to provide structural inspections of the devastation. Within two days, a CEES alumnus and Mississippi State assistant professor, Seamus Freyne (PhD, 2003), was on the phone with Ramseyer asking him to perform research for the National Science Foundation Rapid Response Research program, a program designed to rapidly collect data that is time sensitive and at risk of destruction. This was only the third tornado event NSF has studied. And within six days after the tornado, more than 35 researchers with the NSF RAPID program from five universities were documenting the damage prior to its removal.

By examining the debris path and damaged structures, Ramseyer, Holliday and Floyd were able to identify several progressive collapse mechanisms.

Ramseyer's team included CEES assistant professor Royce Floyd and College of Architecture assistant professor and CEES alumna Lisa Holliday (Ph.D. 2009). By examining the debris path and damaged structures, Ramseyer, Holliday and Floyd were able to identify several progressive collapse mechanisms as they relate

to residential structures. These mechanisms point to a progression of failure that is time- and/or load-dependent and help the research team come to rational decisions on how to improve the behavior of structures in the future.



Damage in eastern Moore after the May 20, 2013, EF 5 tornado. Before the tornado, this was a row of more than 20 homes.

Within several months of the tornado, the City of Moore reached out to the team with a request to help them identify a rational approach to dealing with future tornadoes. The city had experienced three major tornadoes in 14 years; May 3, 1999 - EF5, May 8, 2003 - EF4, and May 20, 2013 - EF5. Holliday and Ramseyer met with a committee assembled by the City of Moore to discuss the situation.

As a result of this discussion, the city requested that the

professors develop a set of high-wind provision changes to the building code that designed for a wind speed of 135 mph. Some 90 to 95 percent of tornadoes rate below this wind speed, and the NSF RAPID team had determined that in the May 20, 2013, tornado, 80 to 85 percent of the damage area also rated below this wind speed. A design wind speed of 135 mph corresponded with the largest improvement with an incremental change to the structure. Ramseyer and Holliday presented the new City of Moore Building Code high-wind provisions to the Moore city council in early 2014, and the council adopted them on March 17; enforcement began on April 17, 2014.

An EF2 tornado that hit the City of Moore on March 25, 2015, provided a rare opportunity for engineers to observe the performance of structures built to the new Moore Building Code high-wind provisions when subjected to a design level event. Observations of damage to several residential structures and one commercial building were made by Ramseyer in the immediate aftermath of the

tornado. These observations were used to compare the performance of the engineered commercial building and residential structures in the same area. The conclusions made from the observations are anecdotal and based on a limited amount of data, but indicate that residential structures constructed using the building code improvements made in Moore, in 2014 perform as expected when subjected to the winds associated with an EF2 tornado. The robust structural system led to only minor damage, which could be quickly repaired.

Ramseyer, as chair of the International Residential Code - Building Technical Review Committee for the State of Oklahoma Uniform Building Code Commission, authored Appendix Y, Residential Tornado Provisions that was part of the IRC-2015 adoption process and was signed by the governor earlier this year. These provisions are now available for municipalities to adopt within Oklahoma. To date, Ramseyer also has co-authored a book *Moore, Oklahoma*,



This structure was rated for EF2 or 135 mph max wind speed. It was removed completely from its foundation during the May 20, 2013 tornado in Moore.

Tornado of 2013, Performance of Schools and Critical Facilities for ASCE, two articles and 29 presentations concerning tornado-structure interaction.

Research Notes

■ **Royce Floyd** and **Jingsong Pei** received a third year of funding from the Oklahoma Department of Transportation to continue their investigation into the behavior of prestressed girders in the State of Oklahoma after years of service.

■ **Kianoosh Hatami** received Canadian Patent No. 2, 766,486, in April 2016, titled Sensor-Enabled Geosynthetics, which he shares with Brian Grady of OU's Chemical, Biological and Materials Engineering. Hatami also received a grant from the Oklahoma Department of Transportation to conduct a feasibility study of GRS systems for bridge abutments in Oklahoma and a grant from the Southern Plains Transportation Center to investigate ODOT guidelines for

the use of fiber-reinforced soils in repair and construction of highway embankments.

■ **K.K. Muraleetharan, Jerry Miller and Royce Floyd** received a grant from the Oklahoma Department of Transportation to study overturning forces at bridge abutments and the interaction of horizontal forces from adjacent roadways. This is the third phase of a project monitoring post-repair of instrumented bridges in the state.

■ **Robert Nairn** strengthened CEES's collaborative relationship with the Grand River Dam Authority by securing a \$2.5 million grant that focuses on ecosystem management and restoration for the watershed in northeast Oklahoma.

Southern Plains Transportation Center Update



The past year has been an especially important one for the Southern Plains Transportation Center. It marked the end of the first three-year funding period under the original grant award, and hopefully a new beginning with the submission of a major proposal to fund the center for another five years. Once again, the proposal team included OU as the lead institution as well as original consortium partners: Oklahoma State University, Langston University, the University of Arkansas, the University of New Mexico, Louisiana Tech University, the University of Texas-El Paso, and Texas Tech University. In addition, consortium members were excited to include three new consortium partners on the proposal team: Texas A&M, the University of Texas Austin and Texas Southern University. The proposal team is hopeful for a successful grant

competition given the strength and regional inclusiveness of the new consortium as well as the impressive record of accomplishments over its first three years. This past year has seen many accomplishments, including:

- Provided competitive funding for more than 40 projects across Region 6.
- Sponsored more than 100 students through the Transportation Regional Internship Program.
- Established competitive regional student awards, namely Student of the Year, Thesis and Dissertation and Paper and Poster Awards.
- Fostered development of the Transportation Leadership Council at each consortium institution. This is a region-wide initiative to transition college students to transportation careers and leadership.
- Engaged and promoted multi-institutional collaborations among

junior faculty members through the Early Career Development Program.

- Co-sponsored, with the Oklahoma Department of Transportation, Oklahoma Transportation Day, where more than 100 Region 6 students demonstrated their research results and received awards for presentation and novelty.
- Played a key role in organizing the Tribal Transportation Safety Champion Workshop.

In addition, the center is preparing for the second Transportation Climate Summit on Nov. 14. This daylong conference will include invited presentations from noted researchers and practitioners working at the interface of climate and transportation. The organizers are excited to showcase results from funded center projects through selected presentations by SPTC researchers. We encourage the readers of our CEES *Communiqué* to register and attend this complimentary day-long event! For more information about the SPTC and to register for the Transportation Climate Summit, please go to www.sptc.org/summit/.

The mission of the Southern Plains Transportation Center is twofold: 1) to develop comprehensive, cost-effective, and imminently implementable solutions to critical infrastructure-related issues facing the transportation systems of the region and the nation, and 2) to prepare transportation professionals for leadership roles in professional and research careers in support of the nation's transportation systems. Learn more at www.sptc.org.

Alumni Spotlights



Gourley Advances Flood Forecasting

Jonathan J. "JJ" Gourley (Ph.D., 2003, Civil Engineering) earned his doctoral degree under the supervision of CEES professor emeritus Baxter Vieux and works as a federal scientist at the National Severe Storms Laboratory in the National Weather Center in Norman. He was

employed at the severe storms lab through the Cooperative Institute for Mesoscale Meteorological Studies during his undergraduate and graduate student years. Upon graduation, he followed in his adviser's footsteps and made the journey to France for a post-doctoral position, where he spent a year and a half in Paris working on dual polarization weather radar technology with MétéoFrance, that country's national weather service. The French upgraded several radars with this technology, largely based on results stemming from the radar groups' research. Gourley returned to the United States in 2007 and began his career as a research hydrologist at the severe storms lab.

Nowadays, he supervises a team of undergraduates, graduate students and postdocs who primarily work on the Flooded Locations and Simulated Hydrographs project (see <https://blog.nssl.noaa.gov/flash/>). FLASH is a real-time modeling system that integrates precipitation estimates from weather radars comprising the entire NEXRAD network to create value-added products on heavy rainfall and impending flash floods. FLASH operates across the conterminous United States and generates outputs on a 1-km² grid with updates as frequent as two minutes. FLASH has been tested in the Hydrometeorological Testbed experiment, where National Weather Service forecasters travel to Norman and issue experimental flash flood watches and warnings based on the FLASH products. The FLASH system will be highlighted in a future edition of *The Bulletin of the American Meteorological Society* as well as the September issue of *Discover Magazine*.

Another project that Gourley leads is the development of a stream radar/lidar system. Traditional stream gauges use in-situ measurements of river stage and relate these to discharge using rating curves. Rating curves must be updated for a variety of conditions due to changes in the

channel bathymetry and vegetation growth in and along the channel banks. There can also be looped ratings from backwater effects, bank storage, and overbank flows. These manual measurements add significantly to the annual operations and maintenance costs of the instruments, which are approximately the same as the cost of the instrument itself. The prototype radar/lidar system uses off-the-shelf K-band radars for retrieving the stage height of the stream and the surface velocity. Gourley has been working with CIMMS engineers to develop a scanning lidar that is capable of retrieving the channel bathymetry by penetrating the water column. The system has been tested in Waldo Canyon, Colorado with promising initial results. The prototype radar/lidar system offers the potential to retrieve all variables needed to compute river discharge using remote sensing with no requirement of a rating curve. And, it gives Gourley an excuse to go to the mountains in Colorado once in awhile.

In his free time, you can generally find Gourley around water. He is an avid fisherman and loves to spend weekends boating and having fun at Lake Eufaula with his two children (ages 2 and 5) and wife, Steph.



Faith in OU Well-placed for CEES Alumnus from India

In 2001, Vinay Thottunkal (MSCE 2004) walked off a plane from India with only a few dollars in his pocket. Raised in Maharashtra, India he received his BSCE degree in 1999. Desiring a future in the United States, he applied to seven graduate programs and received five acceptance letters. Thottunkal felt drawn to the University of Oklahoma, and came to the United States to pursue a master's degree in structural engineering at OU. "At the time I came to OU, the civil engineering program was going through a re-organization and, from my acceptance letter, it was unclear whether I would receive any funding. However, I still decided to put my faith in OU," Thottunkal recalls.

During the second week of his first semester, Thottunkal was notified that he had been assigned as a teaching

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assistant to associate professor Chris Ramseyer's structural engineering class. In Thottunkal's second semester at OU, in addition to his job as a teaching assistant, he was offered a graduate assistant position as a member of Ramseyer's cold-formed steel research project, which was being completed in partnership with Star Building Systems. Thottunkal's master thesis, "Axial Load Capacity of Cold-Formed Z Sections," was a result of his graduate assistant research.

During his time at OU, Thottunkal was vice president of Chi Epsilon from 2001-2002 and heavily active in concrete canoe and steel bridge competitions. During his second year, the OU concrete canoe team won regionals and placed fifth nationally, a record that hasn't been broken to date. Since that time he has been invited to return three different years as a judge for the steel bridge competition.

In 2002, while completing his master's thesis, Thottunkal applied for a position at Star Building Systems as a Level 1 engineer. "I was actually turned down by Star the first and second time I applied for the Level I engineer position," he said. "But I was determined, so I kept on applying." Thottunkal's determination paid off, and he was hired as a Level 1 engineer in June 2003.

Thottunkal graduated from OU with a master's degree in structural engineering in May 2004. The next year, he presented his master's thesis, with updated research after additional cold-formed testing, at a 2005 Structural Stability research council in Montreal, Canada.

"I was Chris's first graduate student at OU. I credit much of my achievement in the United States and at OU to the mentorship of Dr. Ramseyer," Thottunkal says. "I am also grateful to all the staff at CEES who have always been helpful. Everyone has always gone out of their way to make things easy."

Thottunkal earned his Oklahoma Professional Engineering License in 2009, was promoted to regional engineer and has since received licensure in 16 additional states. In May 2013, Thottunkal was again promoted, this time to manager of engineering, which remains his current position at Star Building Systems.

In addition to being asked to be a concrete canoe judge, Thottunkal has returned to OU multiple times over the past decade. He returned to graduate school from 2007-2010, and completed a second master's degree in construction administration from the College of Architecture. From 2011-2014, Thottunkal taught Steel Design II, Codes and Loads, Repair and Rehabilitation of Structures, and co-taught the senior capstone design classes as an adjunct instructor. "I have always enjoyed being a part of CEES. I enjoy helping students achieve their career goals," said Thottunkal. "Several students from my classes have been hired at Star Building Systems,

and every year Star Building Systems has a booth at the Gallogly College of Engineering Career Fair. I love recruiting students from OU."

From 2012-2014, Thottunkal served as the Oklahoma Structural Engineers Association vice president, president and past president. He became the executive director in August 2015.

During his time at OU, Thottunkal regularly attended St. Thomas More Catholic church, where he found the love of his life, Amanda Marcott-Thottunkal. They have been married for six years. As a family, they enjoy camping, watching OU football games and ballroom dancing. In December 2013, Thottunkal became a citizen of the United States. "I feel like all of this has been a dream come true, and I am so grateful. I never imagined all the amazing people I would meet in the U.S. who helped me achieve my dreams. I was a stranger when I came to the U.S., and now Oklahoma is my home," Thottunkal said.



Hale Selected as Civil Engineering Department Head

Micah Hale (BSCE 1996, MSCE, 2000, Ph.D. 2002) recently was named head of the Department of Civil Engineering at the University of Arkansas. Hale grew up in Poteau, Oklahoma, and after attending Carl Albert State College, came to

the University of Oklahoma in 1993, where he stayed to complete his bachelor and master of science degrees in civil engineering, and finally his Ph.D. All told he spent more than five years at Fears Structural Engineering Laboratory batching and testing concrete with research focused on concrete materials and prestressed concrete. In spring 2002, he accepted a tenure-track position at the University of Arkansas in Fayetteville. In August 2002, he officially began as an assistant professor at the UA. The chance to return so close to his home in southeastern Oklahoma was a tremendous opportunity.

At the UA, Hale teaches undergraduate reinforced concrete design as well as graduate courses in concrete materials and prestressed concrete design. In 2007, Hale was one of six faculty members inducted in the university's Teaching Academy, and in 2010 he received the Charles and Nadine Baum Outstanding Teaching Award, the highest teaching award given at the institution. Also

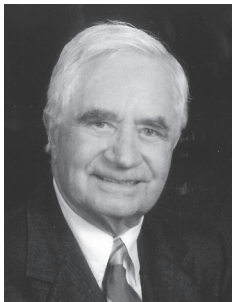
in 2010, Hale was an invited participant in the National Academy of Engineering Frontiers in Engineering Education. "I give much credit to my time at OU, where I was allowed to serve as both a teaching assistant and an instructor. It was in these two roles that I identified and developed my passion for teaching," Hale said.

In addition to teaching, Hale has established and sustained a research program in concrete materials and prestressed concrete that has averaged over \$200,000 per year in research expenditures. The outcomes of his research have led to changes in design codes and more than 100 publications. "One of the many great things about the UA is the undergraduate and graduate students that I have had the opportunity to work with. Since 2002, I have advised over 25 M.S. students and eight Ph.D. students, and it is these students who I credit with my research successes," Hale said.

Hale was tenured and promoted to associate professor in 2007 and then to professor in 2013. Since his arrival to the UA, he has had the opportunity to serve in various capacities at the department, college, and university levels. In 2014, he began serving as the Honors director for the College of Engineering. Also in 2014, he was selected to participate in the Southeastern Conference Academic Leadership Development Program. The next chapter in Hale's professional career begins in August when he begins his role as Department Head of Civil Engineering.

Hale and his wife, Elizabeth, met in 2005 and were wed the following year. They have been blessed with four children, Hannah, Stephen, Rebekah, and Sarah Beth (ages 4, 5, 7 and 8, respectively). In his free time, Hale enjoys spending time with his family: at church, dance recitals, soccer games, tee ball games, and just sitting around the pool. He also enjoys cheering for the Razorbacks (and Sooners). Most days he likes to run and has hopes of one day qualifying for the Boston Marathon, although he says, "my hopes are diminishing."

In Memorium



Long-serving CEES Visiting Council member **Charles E. Lampkin** (BSCE, '56) passed away Dec. 14, 2015 in Oklahoma City. Lampkin recently stepped down as an active member of the council and was recognized as an emeritus member after more than 15 years of service (see CEES Communique Summer 2015). A veteran of the

Korean War, he served as a platoon leader in a combat engineering company. After the war, he and two partners

formed an architectural engineering partnership. During his lengthy engineering career, Lampkin designed numerous buildings and turnpikes in Oklahoma, was the first director of the Oklahoma Housing Authority and was active in many civic organizations.

In addition to the hours he contributed, Lampkin has generously supported CEES through the years. During his tenure on the council, the CEES scholarship funding increased from \$7,000 in 1992 to \$90,000 in 2014.



Glenn Hal Sullivan (BSCE 1960, MSCE 1961) passed away March 4, 2016, on the Sullivan Farm in the Friendship Community of Altus, Oklahoma, where he was born in 1935. Purchased by his great-grandfather and grandfather when they moved from Missouri, the farm has been in the Sullivan family for more than 100 years.

Sullivan graduated from Friendship High School, in 1954, and then attended Cameron University, where he received an associate degree in 1956. He later attended OU, but dropped out due to a lack of funds and moved to Southern California. There, he obtained a job with the Orange County California Road Department. Sullivan later returned to OU and majored in civil engineering. After receiving a fellowship, he obtained his master's degree in sanitary engineering in 1961.

Upon graduation, Sullivan returned to the Orange County Road Department as a resident engineer. The family moved back to Norman in 1962 so he could teach and begin work toward a doctorate. In 1968, Sullivan became assistant director of the Oklahoma Water Resources Board. During this time, the Oklahoma Pollution Control Board was established and Sullivan was appointed interim director, though he remained with the OWRB. He later worked for the Benham Group for many years and was a water adviser for U.S. Sen. Henry Bellmon. When Bellmon became governor in 1987, he appointed Sullivan secretary of Natural Resources and also director of Tourism. Sullivan joined the CEES Visiting Council in 1989, where, for many years, he provided valuable input to the group. In 1991, Sullivan and his eldest son, Glenn II, started the engineering firm of Glenn Sullivan and Associates, Inc. His younger son, Kenny, joined the firm in 1994.

Of their service, director Randy Kolar said, "The CEES family is very grateful to Charlie and Glenn for their years of dedicated service to their alma mater. It is through sustained generous efforts such as theirs that CEES continues to thrive."

Student Awards and Honors

Students in the School of Civil Engineering and Environmental Science demonstrate their commitment and dedication to excellence in their educational pursuits through various recognitions throughout the academic year. Each fall, senior students representing each of OU's 171 majors at the baccalaureate level, are honored with an Outstanding Senior designation during a ceremony attended by President Boren and each of the deans of OU's colleges and programs. CEES students also earn recognition during poster and oral presentations at professional society conferences and competitions.

Sam Bush received the second place Student Oral Presenter award for his talk at the 14th Symposium on the Coastal Environment, part of the 96th Annual American Meteorological Society meeting in New Orleans on Jan. 11-14, 2015.

Skylar Calhoun was one of only two OU students to be invited to participate at the Research Day at the Capitol, where he presented his work on Oklahoma earthquakes and seismic mitigation.

Brittany Cranor (MSCE, 2015) received the SPTC 2015 Student Thesis Award.

Ian Hammond was named the 2016 Outstanding Senior in Environmental Science. Hammond is pursuing his master's degree at the University of Utah.

Samantha Heinrich was named the 2016 Outstanding Senior in Architectural Engineering, received the Phi Kappa Phi Award for Distinguished Undergraduate Research and won second place at the 2015 Oklahoma Transportation Research Day. Samantha is staying on to complete her accelerated

master's degree in civil engineering under the direction of assistant professor, Scott Harvey.

Brandon Holzbauer-Schweitzer won second place for graduate students at the 2016 Oklahoma Clean Lakes and Watersheds annual meeting.

Ying Lan, Ph.D. student, received a Certificate of Merit for her presentation to the ACS Division of Environmental Chemistry at the 249th ACS National Meeting in Denver.

Darion Mayhorn received honorable mention in the student poster contest at the 2015 Oklahoma Transportation Research Day.

Cameron Murray, Ph.D. student, received a 2016 Dwight David Eisenhower Transportation Fellowship from the Federal Highway Administration. This award provides a total of \$35,500 for the 2016-2017 academic year to support tuition, stipend and travel to the 2017 Transportation Research Board Annual Meeting.

Theresa Ngo and Luis Pena jointly received first place at the Oklahoma Transportation Research Day Student Poster Competition.

Nick Shepherd won second place for undergraduate students at the 2016 Oklahoma Clean Lakes and Watersheds annual meeting. He also received the second place Graduate Student Poster Presentation Award at the 2016 American Society of Mining and Reclamation annual conference.

Manabendra Saharia received the Best Oral Presentation award at OU's Student Research Creativity Day and the best poster award at the Annual Meeting of the Society of Environmental Journalists.

Amy Sikora was named the 2016 Outstanding Senior in Environmental Engineering. Amy is staying on in the environmental engineering accelerated master's degree program under the guidance of professor Robert Nairn.

Ben Toms was named the 2016 Outstanding Senior in Civil Engineering. Toms is attending graduate school at Colorado State University.



Ian Hammond



Samantha Heinrich



Amy Sikora



Ben Toms

Faculty and Staff Awards and Honors



Cerato



Dresback



Floyd



Hong



Kibbey



Nairn



Nanny

The 2016 University of Oklahoma Tribute to the Faculty ceremony was held on April 7 in the Sandy Bell Gallery of the Fred Jones Jr. Museum of Art. Three CEES faculty members were recognized for their achievements in the areas of professional and university service, technology development, support for the university's international mission, and good teaching. In addition, one faculty member and one staff member were honored for their years of service. Other significant awards are also noted below.

Amy Cerato was promoted to the rank of professor and received the Shamsheer Prakash Foundation 2015 Prize for Excellence in Teaching.

Kendra Dresback received her P.E. license.

Royce Floyd received his P.E. license.

Yang Hong received the Vice President for Research Award for Scholarly Dissemination from the University of Oklahoma.

Tohren Kibbey received the Lloyd G. and Joyce Austin Presidential Professorship from the University of Oklahoma.

Robert Nairn received the Larry Canter Environmental Award from CEES students.

Mark Nanny received an award for his U.S. "Patent Methods for Obtaining Clean Energy from Coal" #9,139,780, along with Joseph Suflita and Jan Sunner. In addition, Nanny was also selected to join the Center for Applied Research and Development Distinguished Faculty Fellow program for his work in the renewable

energy domain. Nanny also received the CEES Golden

Cheeks Award from the CEES students and was recognized for his 20 years of service to the university at the 2016 Faculty Recognition Award ceremony.

David Sabatini was the inaugural winner of the Pursuit of Excellence Faculty Award from the Gallogly College of Engineering.

Mike Schmitz, manager, Fears Structural Engineering Lab, was honored for his 30 years of service at the 2016 Staff Awards Ceremony.

Keith Strevett received the George Tauxe Teaching Award from CEES students.



Sabatini



Schmitz



Strevett

CONNECT WITH US!

THE UNIVERSITY OF OKLAHOMA

School of Civil Engineering
and Environmental Science



2015-2016 Scholarship Recipients

The Fall 2015 CEES Scholarship Awards Luncheon was held Nov. 6 in the ExxonMobil Rawl Engineering Practice Facility on the Norman campus. On-hand were scholarship recipients, donors, members of the CEES visiting council, and CEES faculty and staff members.

For the academic year 2015-2016, the CEES scholarship committee was able to award a total of more than \$80,000 to 56 students. CEES students, faculty and staff are extremely thankful to all of our donors for their generous support through the years.

ASCE Scholarship

Skylar Calhoun, John Poe

CA Bud Stoldt Memorial Scholarship

Shauna Snyder

CEC Infrastructure Solutions Scholarship

Lydia Dawson, Rebekah Franz

CEES Endowed Scholarship

Jon Armstrong, Amanda Gowa

Class of 1994-95 Endowed Scholarship

Chandler Funderburg

Dillard S. Hammett Civil Engineering Scholarship

Stephen Roswurm

Ebeling Family LTD Partnership Scholarship

Preston Heimstra

Eckart-Pontius Scholarship

Jenna Jacoby

Fred and Katie Cobb and Robert H. Cobb Scholarship

Emily Averyt

George W. Tauxe Endowed Memorial Scholarship

Taylor Dewar, Dayton Dorman, Marilyn Johnson, Jacob Roswurm

Georges Yannieh Endowed Scholarship

Kyler Norman

Guy Bradford Treat Memorial Scholarship

Rex McLaughlin, Benjamin Toms

J.F. Brookes Memorial Scholarship

Caleb Singer

James M. Robertston Scholarship

Amanda Leggs

Jimmy F. Harp Civil Engineering Scholarship

Dayton Dorman

Joakim G. Laguros Endowed Scholarship

Uriah Nichols

Joe Keeley Endowed Memorial Scholarship

Audry Yu

John and Dolores Owensby Family Scholarship

Crystal Baird, Mark Bustillo, Preston Caldwell, Rebekah Franz, Ellison Jackson, Christopher Luckert, Kevin Murphy, Ofelia Olvera, Dovie Rayburn, Jacob Roswurm, Stephen Roswurm, Jessica Stanciu

John H. Marsh Family Scholarship

Mark Bustillo

The Khoury Brothers Scholarship

Rebekah Franz

Larry A. Lowrance Civil Engineering Scholarship

Matthew Long

ODOT Director/Poe & Associates Scholarship

Skylar Calhoun, Christopher Luckert

OK Structural Engineers Robert Conforth Scholarship

Samantha Heinrich

Ronald L. Sack Scholarship

Dovie Rayburn

Rory Victor Scholarship

Michelle Basham, Jenna Jacoby

Society of American Military Engineers Scholarship

Samantha Heinrich, Laura Mason

Ted A. Kritikos Endowed Scholarship

Benjamin Colbert, Robert Davis, Daniel Koehler, Cody Lawson, Derrick Nguyen, Ofelia Olvera, Emily Rowland, Donald Ryan, Shauna Snyder

Terracon Foundation Scholarship

Shawn Allred, Theresa Ngo

Wylie Hamilton Barbour Family Scholarship

Alieu Jobe

Donors

The J.H. Felgar Society

The Felgar Society is a donor program committed to providing support to our faculty and students through the creation of discretionary funding. Felgar Society members make a five-year pledge towards the campaign and have a substantial impact throughout the Gallogly College of Engineering. Members meet annually to celebrate the successes of the society and its impact on students. To learn more about becoming a Felgar Society member, please contact Susy Calonkey at (405) 325-6971 or scalonkey@ou.edu.

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We'd Love to Hear From You!

If you have news to share in the next issue of *Communiqué*, please contact us:

334 Carson Engineering Center
202 W. Boyd St.
Norman, OK 73019-1024
or cees@ou.edu

LIVE ON CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCE

The School of Civil Engineering and Environmental Science is one of the oldest programs in the Gallogly College of Engineering, offering degrees in four distinct areas: Civil Engineering, Architectural Engineering, Environmental Engineering and Environmental Science. CEES's disciplines are inextricably tied to our world's infrastructure and ecosystems, which are deteriorating and becoming increasingly stressed; well-educated students and cutting-edge research are needed to accommodate growth while preserving our natural heritage. Help CEES provide this high-quality education and accommodate future growth by contributing to this special capital campaign. Resources from the campaign will help us recruit, retain and provide CEES students with the best educational experience possible, thus producing graduates who can truly "Live On" in the tradition of excellence set by their predecessors.

Your gift makes a difference.

Student Scholarships and Fellowships:

- Fellowships for M.S. (3 at \$20k/yr) and Ph.D. students (3 at \$30k/yr) - \$150,000 annually
- Student teaching scholars awards to support undergraduate and graduate students who assist with required undergraduate courses - \$75,000 annually

Facilities:

- Expansion and renovation of the Fears Structural Engineering and Materials Lab, including space for the Southern Plains Transportation Center - \$5,000,000
- Upgrades, including replacing obsolete equipment in the Carson Engineering Center's civil and environmental labs - \$350,000
- Remodel student team/meeting space in the Carson Engineering Center - \$100,000

Faculty Support:

- Endowed Chairs and Professorships to support the director and exceptional faculty in each of CEES's three areas of research emphasis: environmental, structural and geotechnical - \$1,000,000 for an endowed chair, \$500,000 for an endowed professorship
- Faculty professional development funds - \$50,000 annually
- Faculty teaching, research and service awards - \$50,000 annually
- Faculty incentives for outstanding K-12 outreach - \$25,000 annually

Program Support:

- Endow the OU International Water Prize - \$1,000,000
- Establish a Distinguished Speaker Series - \$25,000 annually
- Director's Discretionary Funds - \$100,000 annually
- Field vehicles - \$60,000
- Field prep and equipment storage area - \$70,000
- Marketing and development efforts - \$25,000 annually



<http://www.ou.edu/liveon>

Need more information?

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Development Associate
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Randall Kolar
Director of CEES
(405) 325-5911 | kolar@ou.edu



The UNIVERSITY of OKLAHOMA
School of Civil Engineering and Environmental Science

THE 125th ANNIVERSARY



LIVE ON, UNIVERSITY

CAMPAIGN FOR THE UNIVERSITY OF OKLAHOMA

FELGAR SOCIETY

The total of your five-year pledge will count toward the campaign. The Felgar Society supports the Gallogly College of Engineering with discretionary funds.

GALLOGLY COLLEGE OF ENGINEERING STRATEGIC PRIORITIES AND FUNDING OPPORTUNITIES

Establish the Stephenson School of Biomedical Engineering

- Faculty Support – Professorships

- Student Support – Scholarships and Fellowships

- Seed Funding – Resources for new faculty and facilities

Data Science and Analytics Program Startup

- Faculty Support – Resources and Course Development

- Student Support – Fellowships

- Staff and Marketing

Student Programs

- Multicultural Engineering – Enhance capacity through program endowments and scholarships

- Women in Engineering – K-12 outreach and professional development

- Engineering Leadership – Course enhancement and leadership activities

Engineering Fellowships

- Faculty and Student Support

- Research Funding and Partnerships

CEES STRATEGIC PRIORITIES

Each school has outlined funding priorities that align with their strategic plans. A copy of the School of Civil Engineering and Environmental Science plan has been included for you.

PRESIDENT'S ASSOCIATES

This annual giving opportunity places you in the group of donors who support the president with discretionary funds. You can elect for half of your gift to support the college, program or scholarship of your choice.

IT ALL COUNTS!



The UNIVERSITY of OKLAHOMA
Gallogly College of Engineering
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**The Mission Marcus S. Dixson of the School of
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“Through a community of scholars committed to excellence in research and teaching, the mission of CEES is to provide the next generation of students with the technical education and critical-thinking skills needed to lead the country in addressing the complex infrastructure and environmental problems facing today’s society.”

For more information contact:

The University of Oklahoma
School of Civil Engineering and Environmental Science
334 Carson Engineering Center
202 W. Boyd St.
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(405) 325-5911 | cees@ou.edu

www.cees.ou.edu

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