

Your Link to the Department of Civil Engineering



INSIDE

- ▼ **Sac State Students Shine in Competitions**
- ▼ **An Evening with Industry: Watt Avenue Project**
- ▼ **Remembering Dr. Lester Gabriel**





CHAIR'S MESSAGE



Dear Friends and Colleagues,

I am pleased to announce the Department of Civil Engineering is celebrating 50 years as a department at Sacramento State. Despite our five decades as a department, we have surprisingly few mementos or historical artifacts from those formative years. Here's how you can help:

(1) We are looking for alumni notes, stories, and photos from students, faculty, and staff during the formative years of the Department's existence. If you have a brief note, an entertaining story, or photos to share, please contact the Civil Engineering Office at (916) 278-6982 or e-mail me directly at shafizadeh@csus.edu.

(2) We need help locating many of our less-recent graduates who may not be receiving our alumni newsletter. If you know of an alumnus who is not receiving CE Connection, please let us know or point them to our newsletter web page so they can subscribe and receive regular department updates: <http://www.ecs.csus.edu/wcm/ce/newsletter.html>.

In addition, I want to encourage you to join Sacramento State alumni, faculty, staff, students, and community members as we celebrate the first 50 years of the Department of Civil Engineering at an Alumni Reunion and Open House on Saturday, February 22, 2014 from 1 to 3 p.m.

You are also encouraged to attend various signature department events and university events scheduled throughout this academic year. We hope you can join us in celebrating fifty years of excellence in the development of future civil engineers and service to the civil engineering community.

Thank you for your continued support,

*Kevan Shafizadeh, Ph.D., P.E.
Chair, Department of Civil Engineering*

UPCOMING EVENTS

Nov 7, 2013:

Tenth Annual An Evening with Industry

Dec 13, 2013:

Fall Senior Design (CE 190) Presentations

Feb 22, 2014:

50-Year Alumni Reunion and Open House

Apr 7-12, 2014:

Alumni Week

Apr 9, 2014:

Sixth Annual Ken Kerri Endowment Fund Luncheon

Apr 24, 2014:

Distinguished Alumni Awards

May 9, 2014:

Third Annual Civil Engineering Golf Tournament

May 9, 2014:

Spring Senior Design (CE 190) Presentations

On the cover...

Competing against 23 other teams, the Concrete Canoe Team from Sacramento State placed eighth in the country, the highest the university has ever placed. Please see Engineering Competition story on Page 3.



Evening with AN INDUSTRY

Watt Avenue Interchange Project Focus for Keynote Speakers

Two civil engineers who are charged with oversight of the multi-faceted Watt Avenue interchange reconstruction project will deliver the keynote address at this year's *An Evening with Industry* on Thursday, November 7. John Jaeger, PE, is the Sacramento County Department of Transportation senior engineer for the project, and Rob Himes, PE, manages large, complex transportation projects for engineering firm Mark Thomas & Co.

The \$23 million reconstruction will address congestion by adding lanes, provide dedicated transit facilities, and improve access and safety for bicyclists and pedestrians. The project began in November 2012 and is expected to be completed in 2014.

The remarks by Mr. Jaeger and Mr. Himes are part of the annual event organized by the Department of Civil Engineering to bring together students and professionals on campus to network, exchange information, and receive updates on local and regional civil engineering projects. The keynote address will be followed by an industry panel that will take student questions.

In addition, during the networking session that ends the evening, students can visit different displays set up by companies and public agencies to learn about career opportunities. Light hors d'oeuvres will be served.

An Evening with Industry, which begins at 5:30 p.m., will be held in the Alumni Center on campus. Sponsorships for the event, which cost \$300, can be arranged by contacting Neysa Bush by October 31 at nbush@csus.edu or 916-278-6982.

Engineering Competitions: A Banner Year in Multiple Ways

Civil Engineering students put Sacramento State in the spotlight repeatedly earlier this year, winning honors in competition after competition. At the same time, those who participated in the wide-ranging events say that they gained experience far beyond what usually takes place within classroom walls.

Among the competitive highlights were:

- ▶ Winning the Precast/Prestressed Concrete Institute (PCI) 2013 Big Beam Contest for our region by beating a three-time previous national champion college.
- ▶ Winning the James H. Kell Student Competition sponsored by the Western District Board of the Institute of Transportation Engineers (ITE).
- ▶ Earning a spot at the National Concrete Canoe Competition in Illinois by placing second at Mid-Pacific Regional Conference (Mid-Pac).
- ▶ Going to the National Student Steel Bridge Competition in Seattle based on a third place win at Mid-Pac.

CE Connection talked to students who took part in each of these events to learn about what they gained from these experiences. Here are their stories:

Alban Gjongecaj, Big Beam Contest

Alban was the project manager of the A-Beam Team, Sacramento State's entry into the PCI's Big Beam Contest. Sacramento State ranked first in Zone 1, and then went on to place fifth nationally, among the seven winning teams from each zone. The students who participated won \$1,000 for the regional win and an additional \$500 for submitting the best report in the region.

continued on page 4 ➡

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Unlike other events that bring students together to compete, the Big Beam Contest requires student teams to work independently and then submit results, videos, and reports that are judged against other teams. The judging criteria include design efficiency, lowest cost, lowest weight, maximum deflection, and accuracy of pre-test predictions.

The contest calls for designing, fabricating, and testing a 20-foot precast, prestressed concrete beam in collaboration with a local PCI Producer member. The student team worked with Clark Pacific, a company that has a long history of assisting Sacramento State students on a number of projects.

"Our participation started as a class project in the fall semester to design the beam," Alban says. "With leads from our faculty advisor, Dr. Eric Matsumoto, the team explored advanced theories of nonlinear behavior of concrete to iterate the best design. Then in the spring semester, we cast the beam, broke it and submitted the results. It was pretty exciting to win because we didn't have a history of participating in the past. However we are hoping to establish continuity for Sac State to participate in this competition yearly, and we have already recruited a team for next year."

Alban, who also participated in steel bridge and concrete canoe national events, enjoys getting involved in competitions. But he sees the experience as much more than having a good time.



"Our profession breaks down to problem solving, and these competitions are a great learning experience," he says. "You can learn a lot more from these contests than you can in class. Professors might help by answering questions, but at 1 in the morning when you are trying to figure something out, it's just students. It is problem solving at its best."

Reaa Ali, ITE Kell Competition

Every year, ITE invites student chapters to submit proposals for a student-designed and student-run competition for other students to be conducted during the Western District Annual Meeting. This year, Sacramento State won the \$1,500 proposal prize and staged what one veteran attendee told Reaa was "one of the best games ever played" at the conference.

The game, initially designed by CE student Danny Nguyen and then embellished upon by Reaa, Ariana Castillo and Russell Oyewole, required blindfolded students to make their way through obstacle courses set up by opposing student teams. The point was to reach a better understanding of the challenges faced by pedestrians with disabilities.

As the game proceeded through a number of rounds, the competition constraints and resulting team strategies changed.

"The first round was completely quiet as students tried to figure out how to play," Reaa says. "But then everyone realized they could shout mis-directions from the side to try to confuse the other team's players – and it got so crazy!



One blindfolded guy even decided to walk across the tables that had been used as obstacles, so we had to change the rules and say ‘no walking on tables.’”

The event was such a huge success that several attendees have been in touch with the Sacramento students to discuss setting up the game on their own campuses. In addition, with a ratio of about

100 students to 300 professionals, the conference had ample opportunities for networking with experienced transportation engineers. Reaa sees the ability to make those kinds of connections as a major reason to get involved in extracurricular activities like competitions.

“My personal philosophy is that I’m a student now and I’m not going to be a student again – so right now is my time to take advantage of these opportunities,” she says. “And I love traveling to conferences and meeting new people. There is a stereotypical view of what civil engineers are like, but I see them coming to conferences long after they get out of college, and they are really cool people. I met some incredible people at the ITE meeting!”

Lauren Oliver, Concrete Canoe

After placing second at the Mid-Pac regional competition in April, the Concrete Canoe team headed to Illinois for the nationals in late June. Competing against 23 other teams, they took two awards, fourth in the men’s canoe race and fifth for presentation. In the overall ranking, Sacramento State placed eighth in the country, the highest the university has ever placed.

Lauren, one of the designated paddlers for the women’s race, reports there was plenty of drama during the competition, with a big storm the day of the race. In fact, three of the five



canoe races were cancelled because of the threat of lightning. Nonetheless, she feels it was a worthwhile trip.

“Seeing all of the presentations from the different teams was amazing,” she says. “We had a lot of first-year team members, and many of the others were surprised we did so well since we had so many first-years. But we learned so much about how to step up our game for the coming year, that I predict we’re going to be in the top five next time!”

Although Lauren skipped the 30-hour drive to take the canoe to Illinois, flying instead, she joined the caravan on the way back. They spent a night at Mt. Rushmore and three days in Yellowstone. The camaraderie of the competition and the trip will remain a lasting memory, she says – one more reason to get involved in student competitions.



continued on page 6 ➔



Guarav Bali, Steel Bridge

Practice makes perfect – but even plenty of practice beforehand doesn't always preclude mistakes when students are performing in the heat of competition. Bali, who co-captained the Steel Bridge team along with Cole Bianchini, is confident that the Sacramento State entry would have ranked near the top except for a few mistakes during the timed construction contest. As it was, the team placed 30th out of 49 teams – a respectable showing for a national competition.

The competition was in Seattle, so several students drove the bridge pieces up by car and others flew in to participate. They arrived in time to put in several hours of practice.

"The key thing is that we were out there in a parking lot practicing from early in the morning until the esthetics competition started in the afternoon," Bali says. "Out of all of the teams, not many other people were practicing so we felt good about that."

Nonetheless, when the 49 teams were broken up into groups of four or five to beat the clock in constructing their bridges, the intensity led to mistakes like dropped bolts and other penalties.

"However, we had a very competitive design," Bali explains. "The idea is to reduce the weight of the

bridge but increase stiffness so there is very low deflection. If we hadn't made mistakes during construction, I think we would have been in the top 15."

Although Bali is a graduate student now, he intends to help the incoming team with this year's Steel Bridge competition. He sees value in students putting to use in competitions what they have learned in the classroom.

"You get a comprehensive understanding of the material you are taught and it helps you develop your way of thinking about the concepts," he says. "Especially in terms of structural engineering, it really helps you

learn how detailing works and helps you see the load path. If you can independently apply these concepts you've learned in class – that's what being an engineer is all about!"

Ken Wright, the Future

Ken was on the design team for the Steel Bridge competition, helping Sacramento State place third at Mid-Pac. Ken's biggest role, however, is going forward. As president of the student chapter of ASCE, he is leading an effort to make sure students are aware of the competitions and the advantages of getting involved.

"One of the major benefits is the teamwork that takes place," he says. "You learn how to work on teams and organize projects. These competitions put all of the technical things we are learning to use, rather than just memorizing facts and passing a test."

Ken sees a bright future for the competitions this year. Since so many team members were part of successful efforts last year, many are returning.

"We get to keep a certain degree of continuity," he says. "But at the same time, we're bringing in fresh faces. The team leads have already been chosen, so we're off to a strong start."

Note: Private and industry donations were critical in the success and support of these student efforts. (See donation box for ways to help in the future).



Graduate Student Research Projects...

Our Civil Engineering Department has a vibrant master's degree program, with graduate students performing a wide range of research projects. The summary below lists reports produced by graduate students who earned master's degrees in Spring and Summer 2013.

Spring 2013

- Rebecca Bautista, PE, Applications of Seismic Pipe-Pin Connections in California Bridges (Advisor: Salvesson).
- Christian Carleton, Derivation and Evaluation of Alternate Methods for Calculating Short Time-Interval Rainfall Intensities from Tipping Bucket Rain Gage Data (Advisor: Mahmood).
- Tariq Chechi, Levee Instrumentation Pilot Study (Advisor: Aryani).
- Lucas Fuson, PE, A Comparative Analysis of Vehicle Trip Generation Methods at the 56th Street and Folsom Boulevard Smart Growth Development (Advisor: Shafizadeh).
- Jeremy Hill, Floodplain Analysis for the Middle Creek Watershed (Advisor: Merayyan).
- Amy Hopkins, Large-Scale Tests of Seismically Enhanced Planar Walls for Residential Construction (Advisor: Fell).
- Steve Kline, PE, Anaerobic Digestion of Municipal Solid Waste (Advisor: Dammel).

- Corey Lasso, PE, Composting: Reducing Organic Material in the Municipal Solid Waste Stream (Advisor: Dammel).
- Sergio Tostado, Slurry Walls Summary and Case Study, Spring 2013. (Advisor: Aryani).
- Chong Vang, PE, An Investigation on Meeting Challenges of Real Time Dynamic Flood Modeling for Highly Urban Areas (Advisor: Merayyan).

Summer 2013

- Rosemarie Dimacali, A Modeling Study of Changes in The Sacramento River Winter-Run Chinook Salmon Population Due to Climate Change (Advisor: Johnston).
- Divya Elizabeth Jacob, Smart Growth Trip Generation of Coffee Shops (Advisor: Shafizadeh).
- David Van Zanen, Development of Preliminary Strut-Tie Models for Precast Bent Cap Connections (Cast-in-place and Grouted Duct) (Advisor: Matsumoto).
- Nasha Pailin Wu, Exploratory Analysis of High School Student Travel Survey in Sacramento (Advisor: Shafizadeh).

Support the Department

Looking for a way to support the Civil Engineering Department? We have four different funds that enhance our ability to educate students:

- The Ken Kerri Endowment Fund – Gifts to this fund support faculty and student enrichment activities.
- The CE Freshman Scholarship Fund – Scholarships are given to outstanding freshmen.
- The Graduate Environmental/Water Resources Scholarship Fund – Scholarships go to deserving graduate students in the environmental or water resources engineering areas.
- The Department Trust Fund – These resources support student attendance and participation at conferences and competitions, senior design project team expenses, and equipment for labs when other funds are not available.

To add your support to any of these funds, go to www.ecs.csus.edu/wcm/ce/support.html and follow the directions for online donations. Or mail a check made out to the appropriate fund to the Department of Civil Engineering, Attn: Neysa Bush, California State University, 6000 J Street, Sacramento CA 95819-6029.

Memorial Bench Dedicated to Former Department Chair



More than 50 people gathered in August to share fond memories of Dr. Lester Gabriel, long-time Sacramento State professor and former chair of the Civil Engineering Department. The site for the ceremony was the northeast corner of Riverside Hall, where a concrete bench has been installed in his honor.



Dr. Gabriel was one of the founding faculty members of the College of Engineering and Computer Science and was chair of the Civil Engineering Department from 1963 through 1968. He joined Sacramento State in 1957, remaining on the faculty until he retired in 1991. He continued to conduct research on campus until just a few weeks before his death in late 2008.

During the ceremony, former academic colleagues, students, family members and friends spoke about Dr. Gabriel's impact on their lives. Their comments reflected a man who was not only an excellent teacher and renowned researcher but also a mentor who believed deeply in the importance of relationships and connecting with people.

Professor Emeritus John Hester, who led off the celebration of Dr. Gabriel's life, said the professor was "one of the acknowledged campus leaders, with his unique gifts of wisdom, compassion and commitment. For many of us, Lester was a guiding star."

Lillian Gabriel, the professor's widow, joined her son, daughter and two grandsons in thanking those present for their heartfelt tributes. She noted that the bench, with a plaque describing Dr. Gabriel's record of achievement, has been placed "exactly where it should be" – on the campus he loved.



“ For many of us, Lester was a guiding star. ”

— John Hester



ALUMNI SPOTLIGHT

Andre Boutros: The Road to the Top of the CTC



Growing up in Lebanon, Andre Boutros, PE, could not have known that one day he would become executive director of the California Transportation Commission (CTC). It was a world away, and the road that led to the CTC leadership position was hardly straightforward, with twists in terms of both geography and career. But there is no doubt that graduating from Sacramento

State with his civil engineering degree in 1983 put him on the path to this key role.

Mr. Boutros began the journey when he arrived in the United States in July 1978 to attend community college in Florida. He became close friends with someone whose parents had just moved to Sacramento, so in 1980 the two drove across the United States to continue their education at Sacramento State.

When he received his degree in 1983, Mr. Boutros quit the retail job at Macy's that had supported him throughout college and began to look for work as a civil engineer.

"My focus during college was really more oriented towards structural engineering, and that was my preference for a career," he says. "But the job market was in one of those slow periods when it was really difficult to get a job in engineering."

So he first landed at the Department of Water Resources for a six-month internship, followed by a stint as a contract employee with a private engineering firm. Then in July 1984,

he found his career home at Caltrans, beginning as a junior civil engineer in the division in charge of bridges.

For the next 23 years, he cycled through a number of divisions at Caltrans, gaining experience in both field work and policy, traveling throughout the state on different assignments, working with both the private sector and public entities – and always moving up. At one point, he was the senior engineer overseeing the design/build contract for the Orange County toll road authority. At another point, he was the manager of the statewide structures' oversight program.

When California's Proposition 1B, a massive transportation bond, was passed by voters in 2006, he was posted to Caltrans headquarters to help develop the requirements and processes for using the bond money. But soon he was hired to administer the bond funding for CTC, where he had spent several months during an executive rotational assignment earlier. He became Chief Deputy Director for CTC in 2008 and was named Executive Director in March 2013.

Today, he leads an agency that is responsible for the allocation of funds for the construction of highway, passenger rail and transit improvements throughout California. And when the hectic pace of work permitted, he returned to Sacramento State to speak in a civil engineering class for Alumni Week.

"I personally gained a lot from it, and I hope the students did as well," Mr. Boutros says. "Looking back at my career, I wish someone had been available to talk to me. I think the connection with professionals is critical for students. It's a contribution I can make – a way of paying back for what Sacramento State gave me."

NEWS & NOTES

Faculty

Office of Water Programs Contracts...

A \$6 million contract with Caltrans for stormwater research is just one of several agreements signed this year by the Office of Water Programs. Dr. Ramzi Mahmood, PE, Director of the Office of Water Programs reports the following contracts:

Stormwater Technical Assistance – \$6 million from Caltrans, Division of Environmental Analysis (DEA), executed May 2013, to assist with stormwater research, especially discharge characterization, source identification and control, and treatment control studies.

Low Impact Development (LID) Design Tool – \$278,948 from the State Water Resources Control Board (SWRCB), executed March 2013, to develop and implement a tool to assist with low impact development design.

Development of Engineered Soils to Promote Low Impact Development Implementation – \$339,084 from the State Water Resources Control Board (SWRCB), executed July 2013, to test the treatment performance and conductivity of different engineered soils.

Division of Safety of Dams Mapping Project – \$500,000 from the California Department of Water Resources (DWR), five-year contract executed January 2013, to assist with dam break flood analysis and emergency action plans.

Two Granted Tenure...



well as the College Dean and University Provost. Promotions are based on teaching, research, and service work. Both Dr. Fell and Dr. Salveson joined the faculty in 2008.

Dr. Ben Fell and Dr. Matthew Salveson have been granted tenure and promoted from assistant to associate professors. (Tenure is analogous to an attorney becoming a partner in a law firm.) Both faculty members were reviewed by department-level and college-level committees, as



New Faculty Member...



The Department of Civil Engineering welcomes Dr. Ghazan Khan who comes to Sacramento State from the University of Wisconsin, Madison, where he worked as a post-doctoral researcher in the Traffic Operations and Safety (TOPS) Laboratory. His concentration area is transportation engineering, and his primary area of expertise focuses on road safety issues and the application of GIS and spatial statistical methods and tools to analyze network-based transportation data. Dr. Khan has a bachelor's degree in Civil Engineering from the University of Engineering and Technology in Peshawar, Pakistan. He has a master's degree and doctorate in Civil and Environmental Engineering (Transportation Engineering) from the University of Wisconsin, Madison. Dr. Khan is married with two children.



Paper Presented at Beijing Conference...



A paper coauthored by Dr. Saad Merayyan was presented during an international conference held in Beijing in September. The “2013 Water for Mega Cities: Challenges and Solutions” conference, which was cosponsored by the American Water Resources Association and the Beijing Hydraulic Engineering Society, drew participants

from the world. Dr. Merayyan was one of three authors on a paper entitled “Water Demand Modeling and Urban Planning: California and Afghanistan Experience.”

Professor Delivers STEM Lecture...

For Sacramento State’s first STEM (Science, Technology, Engineering and Mathematics) Lecture this fall, Dr. Ben Fell, PE, discussed research progress toward identifying construction methods for building homes that can withstand earthquakes. “The Earthquake-Proof Home – Is It in Our Future?” focused on the effectiveness of pairing enhanced engineering with off-the-shelf building materials to limit earthquake damage to conventional homes.

Students

Summer Transportation Academy...

The first Summer Transportation Academy brought undergraduate students to the Sacramento State campus to learn more about graduate studies and career opportunities in the transportation field. The 10-week summer program offered field trips and presentations by transportation researchers and industry professionals, as well as workshops for graduate school applications. Participants visited the City of Sacramento, Sacramento County Airports, Caltrans, Sacramento Regional Transit, as well as local consulting firm Mark Thomas & Company.

Students also learned about graduate programs in transportation directly from graduate students and faculty at Sacramento State, UC Davis, Cal Poly Pomona, Cal Poly San Luis Obispo, and UC Irvine.

In addition, they participated in the conference Student Traffic Bowl where Sacramento finished fifth among 15 university teams. The summer program, which was



organized by Dr. Kevan Shafizadeh, PE, drew students from Sacramento State and Chico State in its first year. This program, funded by the University of California Transportation Center, is supported through the summer of 2015.

NEWS & NOTES

Students

Fall Graduate Student Mixer...

More than 35 current and incoming graduate students came together at a fall barbecue and mixer hosted by the Civil Engineering Department the week before the semester began. The event was designed to introduce incoming graduate students to the faculty and other graduate students in their discipline, as well as students and faculty in other civil engineering disciplines. It was also an opportunity for students to interact and ask questions of the faculty. Everyone enjoyed food and drink and a few civil engineering T-shirts from last year were given away. The event was successful and is expected to become an annual event during the first week of the semester (instead of the week before).



Ice Cream Social...

More than 30 students participated in the first-ever ice cream social networking event held by the Water Treatment Club in late September. "The networking opportunity was intended to help bridge the gap between the academic experience and the professional world for students," says Lee Davis, one of the organizers. "The event allowed professionals to share their experience and students to become more at ease with professional interaction." Among the participants were recent graduates who returned to share their experiences in the working world, as well as Emeritus Professor Dr. Ken Kerri and water and wastewater professionals.



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