

Civil Talk

2012

Brigham Young University
Department of Civil & Environmental Engineering

Life Long Learning Conference

October 4-5, 2012

Held in Provo, Utah at the new Utah Valley Convention Center, this year's Life Long Learning Conference will focus on alternative energy initiatives and the role of civil engineers in this emerging market, world-wide events and how engineers have learned from recent events, as well as some very interesting local projects including the largest design-build highway project ever completed by UDOT. For those interested in water-related fields, transportation, structures, geotechnical, or environmental, this will be an opportunity to expand your knowledge base in an environment that is unmatched in any other conference. A total of nine professional development hours will be available for participants over both days of the conference.

Not only will you learn, relate, and relax, the proceeds of the conference go to the BYU Civil and Environmental Engineering Scholarship Society, which provides scholarships for students in the department. This has become an important part of the fundraising done by the Committee. We appreciate all of you who have donated in the past and encourage you to do so again this year.

The conference registration is \$500 per attendee for the full registration and increases to \$600 after September 1, 2012. Single day registration is also available. Online registration and information regarding the conference is available at <http://ceen.et.byu.edu> — make sure to check back for program updates!

Sponsors are still needed and information is available online for your organization to show your support for this event and BYU's Civil and Environmental Engineering program. Please contact the Civil Engineering department regarding all sponsorships.

To encourage early registration for this event and to help provide needed scholarship funds for our students, any donation to the Scholarship Society between \$100 and \$499 received by the department before July 31, 2012, will receive a 25% reduction in the conference registration fee. Donations between \$500 and \$999 will receive a 50% reduction, donations of \$1000 will receive one free registration, and sponsorships of \$5,000 or more will receive 6 free registrations. If you are interested in making such a donation, please contact Janice Sorenson, 801-422-2817, janice_sorenson@byu.edu, to express interest in both donating and receiving a discount.

Lee Camack, President
BYU Civil & Environmental Engineering Scholarship Society

Department Updates

Message from the New Department Chair

The Future: Grounded on a Sure Foundation



Thank you Dr. Benzley! You have led us well as evidenced by our outstanding accomplishments highlighted herein and on our website. I have seen you spend countless hours serving us, our students, and our alumni. Your dozens of 6-point font spreadsheets, with the help of a magnifying glass, always provided interesting and relevant facts and trends in our work. Thank you for forsaking many of your own interests for the broader interests of all of us in the BYU family.

I believe that the addition of Dr. Scott and Dr. Ames will even further energize us as a faculty. With their examples and the recent success of Dr. Jones and Dr. Nelson (see included article), I will encourage our faculty to think both big and collaboratively. Our Fulton College has added a part-time staffer to assist in locating research funding, so the time is right for us to climb to the next level of advanced research as a department. The department undergraduate and graduate committees will be reorganized and charged with thinking creatively and innovatively so we can maintain

our excellent teaching reputation as we expand our research prowess. Indeed it is an exciting time to be in the Department of Civil and Environmental Engineering!

I would like to thank and acknowledge my two Associate Chairs: Dr. Grant Schultz and Dr. David Jensen. They will be responsible for several aspects of department management, including watching over our ABET preparations and the plans for our new engineering building. With their help and that of our great staff I hope to spend significant time in leading by example.

My personal mission statement is simple: build, enable, and open the door. I will do my best to do so for our department. I invite all of you to consider how you, too, can build, enable, and open the door for our students as we move ahead.

A handwritten signature in black ink that reads "Rollin H. Hotchkiss". The signature is written in a cursive, flowing style.

Rollin H. Hotchkiss, Chair
Department of Civil & Environmental Engineering
Ira A. Fulton College of Engineering and Technology
Brigham Young University

Dr. Kevin Franke, New Assistant Professor

Dr. Kevin Franke began as the department's newest Assistant Professor in January 2012, specializing in geotechnical earthquake engineering. Dr. Franke received his Ph.D. in Civil Engineering from BYU in 2011, his M.S. in Civil Engineering from the University of Washington in 2005, and his B.S. in Civil Engineering from Utah State University in 2004. His graduate research focused on the development of performance-based predictive models for lateral spread and kinematic pile response. His graduate research also involved developing detailed lateral spread case histories from several bridges damaged during the 1991 M7.6 earthquake near the Limon province in Costa Rica. Dr. Franke's current research activities involve continued development of the Costa Rica lateral spread case histories and development of simplified performance-based procedures related to liquefaction and its hazards.



Dr. Franke and his wife Ruby have 5 children: Shari (9), Chad (7), Abby (5), Julie (3), and Russell (10 months).

Joining the Department Later This Year

Dr. Michael Scott, New Assistant Professor

Dr. Michael Scott grew up in northern California and attended Brigham Young University, earning bachelor's (2005) and master's (2006) degrees in Civil Engineering. After graduating from BYU, Dr. Scott completed a master's in Computational and Applied Mathematics (2008) and a doctorate in Computational Science, Engineering, and Mathematics (2011) at the University of Texas at Austin. He then completed a one year post-doctoral fellowship at UT-Austin at the Institute for Computational Engineering and Science (ICES).

Dr. Scott's research focuses on the development of techniques which unify finite and boundary element analysis and modern techniques in computer-aided geometric design and computer graphics and which break down many of the traditional barriers between engineering design and analysis. Recently, his work has focused on the integration and application of isogeometric analysis and T-splines. Areas of application of T-spline-based isogeometric analysis are varied and growing and include the modeling of fracture and damage, fluid-structure interaction, plates and shells, and acoustics.

Dr. Scott and his wife, Camille, who earned a bachelor's degree in English at BYU, have four children: Tyler (9), Janae (7), Peter (5), and Jacob (2).

Dr. Daniel Ames, New Associate Professor

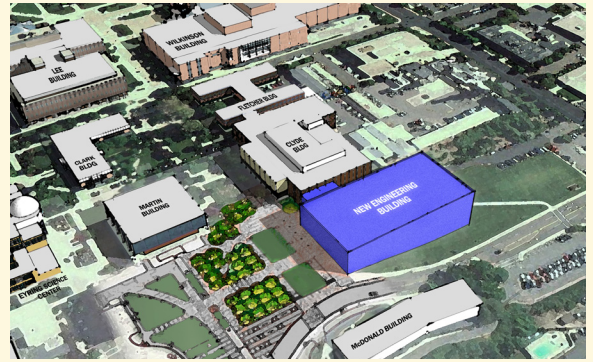
Dr. Daniel P. Ames (Dan) received his Ph.D. in Civil and Environmental Engineering from Utah State University (USU) in 2002 with a focus on water resources management, stochastic hydrology, and probabilistic modeling. During his Ph.D. and ensuing research faculty appointment at USU, Dr. Ames began the development of the free and open source MapWindow geographic information system (see www.mapwindow.org). This software is used throughout the world as both a simple spatial data visualization and analysis tool, and as a platform for 3rd party developers to extend through plugins (such as specific analytical tools and models).

In 2004, Dr. Ames joined the Department of Geosciences at Idaho State University (ISU) with a commission that included building up a GIS graduate degree program, strengthening teaching and research in watershed science, and establishing a research and teaching laboratory at the Idaho Falls outreach campus of ISU. During his time at ISU, Dr. Ames published several peer reviewed journal articles and book chapters on topics ranging from geospatial web services and hydrologic information systems to evapotranspiration and stream network modeling. In 2010, Dr. Ames received the Early Career Excellence Prize from IEMSS as well as the Idaho State University Distinguished Researcher Award.

Dr. Ames and his wife, Merrie Kay, have 4 children, including a BYU freshman who will be starting in Fall 2012.

New Engineering Building

The University administration has indicated that the next big building project for the university will be a new engineering building. The College has been given approval to start planning and fund raising and is excited to be part of something that will have such a lasting impact on the university and its students. Watch our website for more information: <http://ceen.et.byu.edu/>.



Dr. Steven Benzley Retires



Professor Steven Benzley is retiring from the BYU Civil and Environmental Engineering Department at the end of this Spring term. His engineering career began at Sandia National Laboratories in 1967 and his academic career commenced in the BYU Civil and Environmental Engineering Department in 1980. During his tenure at BYU, he has served as associate dean of the College of Engineering and Technology, associate dean of BYU General Education and Honors, transfer professor for BYU Religious Education, associate chair of the CEEN Department, and most recently as department chair in the same department.

Many important things have transpired in the department during his six year watch as department chair. During this time, ABET accreditation was renewed, enrollment has increased from 443 to 546 students, the faculty productivity index (i.e., the number of published peer-reviewed papers per year) has increased from 2.6 to 4.9, the faculty activity index (i.e., the ratio of faculty involved in peer-reviewed publication) has increased from 0.9 to 1.0 (the highest possible), extramural research funding has increased from \$3.1 to over \$3.9 million/yr., student evaluation of faculty teaching has increased from a score of 6.5 to 7.0 (on an 8-point scale) and the three new faculty spotlighted in this newsletter, Kevin Franke, Mike Scott, and Dan Ames, were all identified and recruited. In addition, the department's Scholarship Society has been very active and involved in supporting the department needs. During Dr. Benzley's term as department chair, the Society has begun to organize and conduct the very successful biennial "Life Long Learning Conference" and has been successful in increasing the department's endowed scholarship funds from \$1.7 to \$2.7 million.

Dr. Benzley and his wife Karen are excited to begin a new career of full-time missionary service—plans which include assisting in the establishment of a new Civil Engineering Program at BYU–Idaho. Steve and Karen are the parents of five wonderful children and 18 marvelous grandchildren.

Sponsored Capstone Design Projects Update

The transition to a more comprehensive senior capstone design experience is now complete. This year forty-four students were divided into ten teams that prepared proposals to compete for engineering projects sponsored by public and private entities. Their efforts took the form of an "on-campus internship" during the winter semester and provided students with an opportunity to stretch, building on the foundation of their undergraduate education. The class provides an in-depth engineering design and teamwork experience. Feedback from both students and sponsors was overwhelmingly positive. You can check out their work at: <http://cecapstone.groups.et.byu.net/>. Many thanks to the sponsors for their invaluable efforts. Please consider how your company or agency might get involved in sponsoring a project in the future.

Brigham Young University
Civil & Environmental Engineering
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Alumni Update

We always enjoy hearing from our alumni! Please take a moment and fill out this short information form. You can also provide this information at our website: <http://ceen.et.byu.edu>.

Name _____ Spouse's name _____ Date _____

BYU Civil Engineering Degree(s) (level, date) _____

Other Additional Degree(s) (level, date, institution) _____

BYU ID (if you know it): _____

Your Employer _____ Job Title _____

Job Function _____

Business Address _____

Is this a new address? _____ Work Phone _____ Fax Number _____

Home Address _____

Is this a new address? _____ Home Phone _____ Cell Phone _____

Email: _____ Best way to contact you? Home / Cell / Email

We invite you to provide us with news of yourself. We are interested in your job description, jobs, new degrees, promotions, research, awards, publications, and news of your family and life outside of work. Also, if possible, please attach your business card and a picture of you or your family to this form when you return it.

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Alumni Fish & Chicken Fry

Please RSVP by Monday, October 8

Friday, October 12
Clyde Building Student Lounge
Social Hour 5:00—5:30 PM
Dinner 5:30—7:00 PM

| | | | | | |
|--------------------------|----------|--------------------------|-----------------|--------------------------|------|
| <input type="checkbox"/> | Fish Fry | <input type="checkbox"/> | Golf Tournament | <input type="checkbox"/> | Both |
|--------------------------|----------|--------------------------|-----------------|--------------------------|------|

Name: Last _____ First _____ MI _____

Address _____ City/State/Zip _____

Email _____ Phone: Home _____ Cell _____

Amt for Fish Fry: Adults _____ Children _____

Amt for Golf Tournament _____

Names of people attending golf tournament _____

Options to RSVP:

1. Online at **<http://ceen.et.byu.edu/golfandfry>**
2. Call 801.422.2811
3. Mail to BYU Civil Engineering / Fish Fry / 368 CB / Provo, UT 84602

Scholarship Donation

Name: Last _____ First _____ MI _____

Address _____ City/State/Zip _____

Email _____ Phone: Home _____ Cell _____

| | | | |
|--------------------------|--------|--------------------------|----------------|
| <input type="checkbox"/> | Alumni | <input type="checkbox"/> | Friends of BYU |
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Select Amount

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| <input type="checkbox"/> | \$25 | <input type="checkbox"/> | \$50 | <input type="checkbox"/> | \$300 | <input type="checkbox"/> | \$1,000 | <input type="checkbox"/> | \$2,500 |
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Other _____

Please make checks payable to BYU Civil Engineering. You may also donate via credit card by visiting our department website, **<http://ceen.et.byu.edu>** and click on the "Contribute to CEEN" link. If you desire, you may also include a separate letter of explanation regarding this donation.

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Dr. Jones, Dr. Nelson, and Dr. Williams Receive CI-WATER Research Grant from NSF

An interdisciplinary team of 27 researchers from Brigham Young University, the University of Utah, Utah State University, and the University of Wyoming has received a \$6 million, three year award from the National Science Foundation (NSF) to develop a better understanding of the interconnectivity of natural and human water resources systems—a critical environmental sustainability problem facing both Utah and Wyoming.

The award will allow the team of researchers to develop high-performance computer modeling and computational resources (known as cyber-infrastructure or CI for short) to

simulate and study how factors such as population growth, shifting land uses and climate variability will impact water storage and availability in the Intermountain West.

The consortium of university researchers is lead by the BYU team of Norm Jones, Jim Nelson and Gus Williams with Norm Jones being the principal investigator of the entire grant. The BYU team will focus specifically on developing online modeling applications for groundwater and surface water applications stemming from their previous work in the Environmental Modeling Research Laboratory (EMRL).

Dr. Les Youd Receives PACE Award

Dr. Les Youd, Emeritus Professor, was awarded the Professional Achievement Citation in Engineering (PACE) from Iowa State. Established in 1968 to recognize superior technical or professional accomplishments in research, development administration, education, and other engineering activities, the citation recognizes alumni eminently known for their professional competence and creativity.

From 1967 to 1984, Dr. Youd was a research civil engineer with the U.S. Geological Survey at Menlo Park, California, where he conducted studies in earthquake engineering with emphasis on liquefaction and ground failure. In 1984, he joined the Civil Engineering faculty at BYU to teach courses in geotechnical and earthquake engineering. He retired from BYU in 2003, but continues his research and



writing on liquefaction and serves as a consultant on many projects involving liquefaction hazard.

Dr. Youd has conducted post-earthquake reconnaissance investigation of 20 earthquakes on 5 continents. He led U.S. Earthquake Engineering Research Institute (EERI) reconnaissance teams and edited reconnaissance reports following the 1993 Hokkaido, Japan, and 1999 Kocaeli, Turkey, earthquakes. He performed subsurface investigations at many sites affected by liquefaction, instrumented several sites likely to liquefy during future earthquakes, and developed widely used procedures for evaluating liquefaction resistance and estimating lateral spread displacement potential.

Dr. Youd and his wife, Denise, are parents of five and grandparents of 17.

Dr. Schultz Receives Educator of the Year Award

Dr. Grant G. Schultz was awarded the 2011 Educator of the Year award by the Utah Chapter of the Institute of Transportation Engineers (ITE) at the 2012 Utah Chapter Annual Meeting in Salt Lake City in January. This was the first year the Utah Chapter awarded an Educator of the Year Award, and Dr. Schultz was very pleased to receive the inaugural award.

In order to receive this prestigious award, Dr. Schultz was rated on his teaching and professional accomplishments, professional society service and active participation, professional standards, communication and mentoring. Dr. Schultz was nominated for the award by a group of current and former students.

Dr. Schultz joined ITE at BYU in 1994 and later served as student chapter president at Texas A&M University. He is currently co-advisor and mentor to the BYU student chapter and a member of the International ITE Transportation Education Council Executive Committee.



Dr. C., 2012 ASCE Utah Engineer of the Year

The Utah Section Board of ASCE just announced Dr. Henry N. Christiansen, Professor Emeritus of Civil and Environmental Engineering at Brigham Young University as the 2012 ASCE Utah Engineer of the Year.

Dr. Mitsuru Saito, Appointed Associate Editor, ITE Journal of Transportation



Dr. Saito, a Fellow of the Institute of Transportation Engineers (ITE), was recently invited to serve as an associate editor for the Journal of Transportation of the ITE, beginning with its third publication. The Journal of Transportation of ITE was recently founded and its first and second issues were published in March 2011 and October 2011. The Journal “seeks to publish basic and applied transportation research findings aimed at advancing transportation knowledge and practices for the benefit of society. The content of the Journal differs from that of ITE Journal, ITE’s monthly publication for transportation professionals. Whereas ITE Journal publishes technical articles, case studies and informational pieces for practitioners, offering immediate solutions to the day-to-day problems they face, the Journal of Transportation publishes peer-reviewed articles based on thoroughly researched projects that have been conducted by preeminent transportation researchers.” The journal is published on a semiannual

basis. Dr. Saito has been a reviewer to many technical journals and conferences. For the full story see: <http://ceen.et.byu.edu/news/dr-saito-now-associate-editor-journal-transportation-institute-transportation-engineers>.

2012 Mexico Study Abroad Transportation Element

Under the direction of Dr. Saito, BYU transportation students Scott Johnson, Adam Leslie, Joe Yaede, and Nikra Wilkinson worked on an urban traffic congestion problem in the City of Guanajuato, Mexico. The study site was a 1.5 kilometer stretch of a main highway, containing one three-leg intersection, two “roundabouts” and uncontrolled access from businesses establishments along the highway. These roundabouts are old designs with unclear right of way and safety issues. Increasing population in the suburbs of this state capital have introduced significant traffic congestion.

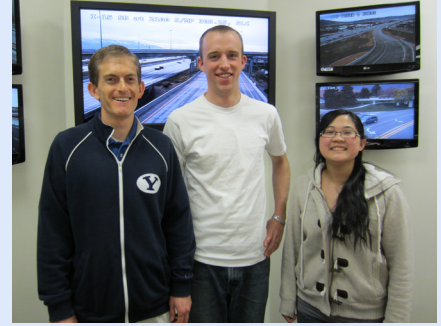
The project was identified by Mr. José Femat, P.E., of the University of Zacatecas (UAZ) and Dr. Alejandro Flamenco of the University of Guanajuato (UGTO). The BYU students began in January, collecting information about the site, working with UGTO students, studying potential improvements, and creating prototype simulation models. In March they traveled to Guanajuato for one week, along with other BYU students working on water resource related projects. Students from BYU and UGTO observed the existing traffic flow and safety conditions, and discussed potential improvements. They conducted a traffic count at the three intersections



during morning and afternoon rush hours. Back on UGTO campus they recommended improvements and developed simulation models for the existing condition and two alternatives to evaluate improvement to traffic flow in terms of travel speed and delay. Their cooperative work culminated in a technical presentation (in Spanish) to all Mexico Study Abroad students and invited guests from UGTO, followed by a poster and final report, in both English and Spanish. This study abroad program provided valuable leadership experiences to all team members.

Students Sweep ITE UT Chapter Paper Competition

The Institute of Transportation Engineers (ITE) Utah Chapter held their annual Student Paper Competition on April 17, 2012. Papers were solicited from universities across the state and the top three made presentations at the monthly luncheon. We were pleased to have all of the top papers from our own BYU ITE Student Chapter. Congratulations to Bradley Mecham for his first place finish and Elizabeth (Buffie) Chau and Clancy Black, who completed the top three. *Faculty Advisor: Dr. Grant Schultz*



Students Compete in 2011 Big Beam Contest



In 2011, students Jason Hirschi, Bryce Albrecht, Sam Thompson and Alex Debirk formed a team to compete with fellow civil engineering students nationwide in the annual student Big Beam Competition sponsored by the Precast/Prestressed Concrete Institute (PCI). The challenge was to design and construct a pre-tensioned concrete beam that would meet both the contest's strength and failure specifications.

The beam had to be simply supported at a span of 15 feet and reinforced with pre-tensioned and/or post-tensioned steel bar and/or strand. A portion of the challenge was to design and construct the beam so that it

would not exhibit any cracking under a 20 kip mid-span point load. The biggest challenge was to design and construct the beam to also hold a 32 kip mid-span point load and fail before reaching a 39 kip mid-span point load. Students not only designed, constructed, and tested the concrete beam, but were also required to accurately predict when the beam would exhibit cracking and when the beam would fail during loading.

The PCI Big Beam Contest provided students with a unique opportunity to solidify classroom knowledge with hands-on experience. The BYU team was privileged to work with concrete professionals at Hanson Structural Precast to test various concrete recipes, construct and test the beam they designed. A video of BYU students testing the prestressed concrete beam is available at www.youtube.com/user/BYUBigBeam/. *Faculty Advisors: Dr. Spencer Guthrie and Dr. Paul Richards*

BYU EERI



EERI Student Chapter Team competed in May in an annual seismic design competition in Memphis, Tennessee, under the advisement of Dr. Paul Richards.

Jake Tolbert Receives Fellowship Award

Dr. Guthrie's graduate student Jake Tolbert was awarded the 2012 PCA Education Foundation Fellowship for the amount of \$20,000. Designed for research on Evaluation of Full-Depth Reclamation Mixtures with High Percentages of Reclaimed Asphalt Pavement, Jake was one of two students to receive this award.

ASCE Steel Bridge Place 1st

Earning first place in regional competitions, the ASCE Student Chapter qualified for the 2012 ASCE/AISC National Student Steel Bridge Competition held in May at Clemson University in South Carolina. The team placed 16th overall and had the 7th fastest construction time. They had great success for their first time and are excited for next year's competition to be held at the University of Washington in Seattle. *Faculty Advisor: Dr. Paul Richards*

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2012 Golf Tournament

The Fourth Annual Civil Engineering Golf Tournament will be held Saturday, October 13th, 2012 at Sleepy Ridge Golf Course in conjunction with BYU Homecoming. Meet at the golf course at 8:00 AM and there will be a shotgun start at 8:30 AM. The Golf Tournament is open to all Civil Engineering Alumni and their families and friends. The tournament will be a 4-man scramble (9 holes). There will be prizes awarded to the first place team, the person with the longest drive, and the person who gets closest to the hole. The cost to enter this tournament is \$35.00 per person or \$140 per team. Included in the cost are greens fees, a cart, a sleeve of balls, and lunch! Get your team together or just sign up and be placed on a team. Space is limited to 72 players. RSVP by October 8, 2012 by calling 801-422-2811, or visiting our website at <http://ceen.et.byu.edu/golfandfry> and click on the link for the "Fourth Annual Civil Engineering Golf Tournament" to ensure your spot (first come - first served). Please provide your name, email, phone #, and the names of the people who will be playing.

