Hello Alumni and Friends!

In June Dr. Molly Gribb left SDSMT to become Dean of the College of Engineering, Mathematics and Science at the University of Wisconsin-Platteville. We all wish Dr. Gribb the best in her new position. I have been appointed Interim Department Head with support from Dr. Marc Robinson and together we look to keep the department moving forward. Undergraduate enrollment has remained level at 256, graduate enrollment is up with 44 graduate students of which four are PhD students. It is exciting to see the research effort grow while maintaining the excellence in undergraduate education. A highlight for me was attending the change of command ceremony where Colonel John Henderson (CEE 94, MSCE 02) took command of the US ACOE Omaha District. It is always rewarding to hear of the great success of our alumni. I encourage you to send us exciting news regarding your careers and family. I also enjoyed visiting with several alumni during the five year reunion last July. Lastly I always enjoy talking and emailing with all of you. Please do not hesitate to stop by the office, call or send an email.

Finally, while we think you will enjoy receiving these updates, if you do not wish to receive them, just send an email to Ellen.Haffner@sdsmt.edu with “unsubscribe” in the subject line and we’ll take you off the list.

Student News:

ASCE Student Chapter Update:

Regional Competition: The SDSM&T student chapter of the American Society of Civil Engineers (ASCE) placed 3rd out of 16 schools at the 2015 ASCE Rocky Mountain Regional Conference, hosted April 9-11, 2015 by the University of New Mexico in Albuquerque, New Mexico. The conference consists of seven different student competitions advised by CEE Professor Emeritus Dr. M.R. Hansen, CEE Assistant Professor Dr. Chris Shearer, practitioner advisor John Niemela and steel bridge advisor Dr. Andrea Surovek. The steel bridge team finished 1st place overall with their bridge, “Jurassic Arch,” and continued on to nationals in Kansas City, Missouri on May 22nd. The concrete canoe team placed 4th overall in the concrete canoe competition. This year’s theme for the canoe was Unearthed, based on the t-rex Sue, the largest, most complete and best preserved t-rex discovered in Faith, South Dakota. The pre-design team placed 7th overall. In this year’s pre-design competition, students were required to design a water filtration system that collected debris. The Mystery Design team’s objective was to create a Rube Goldburg machine, with at least six energy steps, that dropped a marble into a cup of water, used a source of renewable energy, and popped a balloon. Since this event is meant for social networking, the team was split with other universities to work on the most efficient design. There were two paper competitions. Brigit Kelly placed 7th for her non-technical paper and presentation on engineering ethics. Cody Schellinger received 5th place with his technical paper presentation on self-healing concrete. In addition, the School of Mines ASCE student chapter participated in a charity event where students had to design and build a coin donation box to be placed in the Great Albuquerque Habitat for Humanity ReStore locations.
The concrete canoe and steel bridge teams are part of the Center of Excellence for Advanced Manufacturing and Production (CAMP), a student-centered, hands-on engineering program. A key part of the CAMP experience involves designing, building, testing, and competing in a variety of engineering challenges. The program actively combines the classroom experience where students apply their developing technical skills in real-world situations that involve fundraising, planning, deadlines, and international competitions where the teams test their mettle against universities from around the world.

**National Competition:** The SDSM&T Steel Bridge Team placed 10th overall at the 2015 national Student Steel Bridge competition in Kansas City, Mo. Over 200 teams competed this year with 47 qualifying for the national competition. The team placed in the top 15 nationally in all of the competitive categories including top 10 finishes in efficiency and lightness. The bridge weighed 124 pounds and held 2,500 pounds of load with less than 1/2-inch of deflection. It was constructed by three students in less than 11 1/2 minutes. Their top ten finishes solidified their standing as one of the top teams in the country; they are also one of only 12 teams that have consistently done well enough in regional competition to qualify for the national competition in 8 of the last 9 years.

The event, cosponsored by the American Institute of Steel Construction and ASCE, was created to supplement civil engineering education with a comprehensive, student-driven project that culminates in a steel structure with optimal performance and economy.

Team sponsors include True North Steel, Nucor Steel, Burns & McDonnell, SSAB and Kolberg-Pioneer, Inc. Tax-deductible donations to offset travel expenses may be made to the team by contacting the South Dakota Mines Foundation at foundation@sdsmt.edu.

**Congratulations:** The SDSM&T ASCE student chapter received a Certificate of Commendation from ASCE for its outstanding activities as recorded in the 2014 Chapter annual report. This is a distinction earned by only the top 15% of all Student Organizations. The award letter states, “The Chapter’s accomplishments reflect the enthusiasm and hard work of student officers and members, as well as fine guidance from a faculty advisor.”

**Grad Student Shrestha Awarded SD Solid Waste Management Scholarship:** Namita Shrestha, Ph.D. student studying civil and environmental engineering, was awarded a scholarship by the South Dakota Solid Waste Management Association, recognizing her passion and enthusiasm to protect and enhance our natural resources and environment. Shrestha’s research to reclaim municipal wastewater for use in thermal power plants is funded by Electric Power Research Institute. She currently conducts research under Venkataramana Gadhamshetty, Ph.D., assistant professor in the Department of Civil & Environmental Engineering. She plays an instrumental role in Gadhamshetty’s microbial-electrochemistry laboratory and develops next-generation technologies to recover electrons from municipal wastewater to produce sustainable electricity. The South Dakota Solid Waste Management Association scholarship will go toward tuition fees for her doctoral degree, which she intends to complete in 2018. After receiving her Ph.D., Shrestha plans to continue her research in academia.

**MS Student Phillips Awarded Funding**
MS student Jason Phillip’s proposal “Green Roof Research” was selected for funding by RESPEC. The project started September 1, 2015 and will conclude by August 15, 2016. Congratulations Jason!
Faculty News:

Congratulations Dr. Bang:

Grant: Korea Electric Power Corporation Research Institute has awarded South Dakota School of Mines & Technology Professor Emeritus Sangchul Bang a $320,000 grant to develop a new type of suction pile (smart suction pile) for off-shore wind turbines. Smart suction piles can temporarily increase the resistance against the external loading significantly by applying a negative water pressure inside the pile. This will be particularly useful when a storm or hurricane is expected since their duration is a short period of time. This allows the suction piles to be designed under normal loading conditions while providing increased resistance only when needed.

Patent: Sangchul and Sookie Bang recently received a US patent on their bio-cement. The invention relates to a method of manufacturing soil reinforced by microbe-based bio-binders and soil produced by the method. The bio-binders are not harmful to humans, do not cause environmental pollution and secure sufficiently the soil strength and resistance against wind.

Congratulations Dr. Kenner:

Grant: Dr. Scott Kenner along with eight other co-PI’s have been awarded an NSF grant to study “Hierarchical Functioning of River Macrosystems in Temperate Steppes - From Continental to Hydrogeomorphic Patch Scales.” The study will assess 18 rivers spread equally between the two largest temperate steppe biomes of the world: the North American Great Plains and the Euro-Asian Steppes (Mongolia). These rivers flow through 3 major types of ecoregions within these temperate steppe biomes: mountain steppe shrublands, short-to-tall grasslands, and semi-arid shrublands. Scientists and students from the USA and Mongolia will sample the structure and functioning of these 18 rivers in a variety of hydrogeomorphic areas, such as constricted, meandering, braided, and anastomosing channel sections. Dr. Kenner will be focusing on geomorphological characterization, function and connectivity of these rivers, evaluating the influence of human perturbations (e.g., dams, levees, and riparian modification) and the influence of climate differences. This project’s goals are to: (a) compare and contrast hierarchical scaling relationships and effects of system drivers and cross-scale interactions on rivers in similar biomes and ecoregions of the two continents; and (b) evaluate effects of climatic changes and anthropogenic disturbance to these river macrosystems. This project will provide research experiences for under-represented participants (particularly rural and Native American students), stimulate STEM program recruitment in largely under-represented (EPSCoR) states, support some faculty and students at primarily undergraduate institutions, and contribute to scientific education at both graduate and undergraduate institutions in two countries. The five year, total project funding is $4.26 million with $262,000 coming to SDSM&T.

Congratulations Dr. Shearer:

Grants: SDSM&T awarded Dr. Chris Shearer a $5,000 Nelson Research Grant. The title of the research is “Preliminary Investigation of Geopolymer Reaction Mechanisms.” The objective of this research is to bring new understanding to the fundamental reaction mechanisms of alkali-activated geopolymers using a novel microwave characterization technique. Dr. Shearer also received an award from the South Dakota Board of Regents Competitive Research Grant (CRG) for $98,056. This research will study the performance and behavior of fiber-reinforced shotcrete used for ground support in mining applications through the development of a field testing site at the Sanford Underground Research Facility.

Kiewit Faculty Scholar: Dr. Chris Shearer was selected as a 2015 Kiewit Faculty Scholar. As part of this scholar program, Dr. Shearer had the opportunity to gain valuable field experience as a practicing engineer on a large-scale construction project. He spent two weeks this summer working with Kiewit on the construction of a new 1,200 MW combined cycle natural gas plant in Paradise, KY under the supervision of Keith Rahe, General Superintendent. During this time, Dr. Shearer worked on mass concrete mix designs and testing, cost estimating, formwork and shoring design, surveying, and structural design among other things. He was able to shadow a wide variety of people working on the site ranging from construction engineers to concrete finishers.
“I’ve previously worked on the structural design of power plants. However, I was never able to see one being built in person so this was such a great experience. It was nice to get out of the office for a change,” said Dr. Shearer. He plans to use this experience with Kiewit to enhance his undergraduate and graduate courses by bringing real-world engineering problems and state-of-the-art construction practices into the classroom. It has also given him a better perspective on the many challenges his students will encounter after graduation on a complex construction project such as the Kiewit Paradise Project. “This experience has shown me that our students must be able to work on multi-disciplinary teams and have effective communication skills to succeed in the construction industry,” said Dr. Shearer.

In addition to his research activities, Dr. Shearer also attended the ASCE ExCEEd Teaching Workshop. This is a six-day practicum that provides engineering educators with an opportunity to improve their teaching abilities. Sample topics that are addressed during the workshop include principles of effective teaching and learning, class organization and course organization, and communication skills. The seminars are augmented by a series of demonstration classes by ExCEEd faculty mentors. During the latter half of the course, participants apply what they have learned by preparing and teaching three actual classes in a small-group setting. This collaborative "learn by doing" format ensures that participants will make substantive improvements in their teaching skills by the end of the course. ExCEEd 2015 Teaching Fellows are competitively selected from a large pool of applications to participate in this transformative opportunity.

**Congratulations Dr. Stone:**

Dr. Jim Stone has recently received four grants: South Dakota oilseed initiative for $45,000 (with Heidi Sieverding, Research Scientist I), National Science Foundation DakotaBioCon life cycle assessment for $100,000 (with CEE Professor Dr. Venkata Gadhamshetty and Heidi Sieverding, Research Scientist I), US Geological Survey National Competitive grant, $250,000 to study Hydrologic Life Cycle Impact of Mountain Pine Beetle Infestations (Co-PIs Dr. Kenner and Research Scientist Heidi Sieverding), and National Science Foundation Food/Energy/Water Nexus: A sustainable rural framework workshop for the Upper Great Plains for $50,000 (with Heidi Sieverding, Research Scientist I).

Dr. Stone was a guest on SDPB radio’s Dakota Midday program where he discussed his National Science Foundation grant and upcoming Oct. 19-20 workshop to identify core food-energy-water research needs to achieve rural sustainability on the Upper Great Plains. You can hear the broadcast at [http://listen.sdpb.org/post/dakota-midday-school-mines-awarded-grant-food-energy-water-workshop](http://listen.sdpb.org/post/dakota-midday-school-mines-awarded-grant-food-energy-water-workshop). The deadline to register for the workshop is today, Friday, October 9th, 2015. Late registration is available for $100 to cover food costs. For additional information about the conference or to register, please go to [http://www.sdsmt.edu/FEW-2015/](http://www.sdsmt.edu/FEW-2015/).

**Congratulations Dr. Benning:**

Dr. Jennifer Benning (with Dr. Chris Shearer) was recently awarded a National Science Foundation (NSF) award for $556,698. The project, entitled “Collaborative Research: Intellectual Diversity and Critical Thinking Skills in Service Learning,” started September 1, 2015. This project is investigating the impacts of service learning on participating students’ intellectual diversity, critical thinking skills, and attitudes towards sustainability, social awareness, stakeholder involvement in engineering design by applying advanced assessment tools, including the Herrmann Brain Dominance Inventory, Reasoning About Current Issues Test, and the Lancaster Approaches to Studying Questionnaire. This project will increase critical thinking skills, engage culturally and intellectually diverse students, and improve student attitudes concerning their engineering studies and engineering as a profession.
Department News:

CEE Welcomes New Professors:

**Dr. Bret Lingwall:** Specializing in geotechnical and earthquake engineering, Dr. Lingwall joined SDSM&T this fall with 4 years of teaching experience since earning his PhD in 2011. His research has been sponsored primarily by Industry. Dr. Lingwall has published over 20 journal papers, conference papers and research reports. His active research portfolio includes numerical modeling, dams and levees, liquefied soils, seismic hazards analysis, surface fault rupture mitigation, very soft soils, retaining walls, geosynthetics, paving materials, laterally loaded foundations, and ground improvement. Dr. Lingwall also researches EPS Geofoam, and its use to prevent damage to buried structures from faulting, landslides, and lateral spread. Dr. Lingwall also has expertise with modeling, design and construction using EPS geofoam and other lightweight fill materials such as expanded shale or scoria. Dr. Lingwall has 10 years of global high-end design experience on billion dollar infrastructure and energy projects, and has served as a technical advisor for a variety of projects in Canada, South Korea, Guam, and across the US. Dr. Lingwall is currently mentoring a PhD candidate at the University of Utah.

**Keith Whitaker:** Joining SDSM&T this fall as an Assistant Professor in the Department of Civil and Environmental Engineering, Keith Whitaker began his role as coordinator for the Construction Engineering and Management program. Mr. Whitaker holds both civil and structural engineering licenses in several states and comes to SDSM&T from a position at the University of Alaska Fairbanks. Prior to beginning his academic career Mr. Whitaker served for nearly 20 years as President of a full service A/E firm located in the state of Maine specializing in construction engineering and partnering in design build construction projects. He was raised in a family owned New England commercial construction firm, obtained his BSCE from the University of Rhode Island, and JD from the University Of Maine School Of Law.

CEE Says Goodbye to Professors

**Dr. Molly Gribb:** Dr. Gribb, Department Head of the Civil and Environmental Engineering Department, accepted the position of dean of the University of Wisconsin-Platteville’s College of Engineering, Mathematics and Science. She began her new position July 20, 2015. Dr. Scott Kenner and Dr. Marc Robinson are serving jointly as Interim Head. Dr. Robinson is coordinating ABET accreditation efforts while Dr. Kenner is managing the day to day activities of the department.

**Dr. Sangchul Bang:** After teaching 30 years at SDSM&T, Dr. Bang, Professor, Geotechnical Engineering, retired in June, 2015. As professor emeritus, Dr. Bang continues his research work on a National Science Foundation project to reduce the spread of global desertification through bacterial cement applications in Kuwait and his recently received grant to develop offshore windmill designs.

**M.R. Hansen Receives 2015 Guy E. March Medal:**

The 2015 Guy E. March Medal recipient is alumnus and professor emeritus Dr. M.R. Hansen (CE69). Dr. Hansen received his bachelor’s and master’s degrees in civil engineering from SDSM&T in 1969 and 1973, respectively. He became a faculty member in the SDSM&T CEE Department in 1985. Dr. Hansen served for many years as the faculty advisor to the student chapter of the American Society of Civil Engineers (ASCE), and has been a persuasive advocate of student participation in the concrete canoe and steel bridge regional and national competitions. Under his guidance and leadership, the Mines team won the ASCE National Concrete Canoe Competition in 1995, and was selected as the recipient of the prestigious Ridgeway Award as the best ASCE student chapter in the United States in 1998. Dr. Hansen was also recognized by ASCE as the top faculty advisor in the nation in 1996. Dr. Hansen has also been heavily involved in student recruitment. He was a key participant in the Visiting Scientist Program and each year would visit ten to fifteen high schools in western South Dakota. He would deliver down-to-earth technical presentations to the delight of the students and the instructors. Further, Dr. Hansen and his wife, Barbara, have travelled to all
seven community colleges in Wyoming to develop articulation agreements. He has also travelled to regional high schools with members of the SDSM&T steel bridge team. Concurrent with these activities, he has been instrumental in making the long-running Concrete Conference a success each year on the School of Mines campus. In the 1999-2000 school year, Dr. Hansen developed a dialogue with the Mongolian University of Science and Technology, and took a one-year sabbatical to the university in 2001-2002. This relationship between the Mongolian University and the School of Mines continues to this day. In 2007, he founded the Mines student chapter of Engineers and Scientists Abroad. Dr. Hansen was the recipient of the 2010 Presidential Award for Outstanding Professor for demonstrating a sustained record of outstanding overall accomplishments at the School of Mines. Dr. Hansen and his wife have participated in many of the five-year all-school reunions since 1970, as well as many of the annual alumni president’s dinners since 1986, M-day events each year, and recent annual Pierre alumni tailgate festivities in January. He has also served as a member of the Board of Directors of the Alumni Association. He has a sustaining interest in the preservation and maintenance of M-Hill and is member of the Lifetime Contributors of the Alumni Association. Congratulations MR!

Colonel John W. Henderson Assumes Command:
Colonel John Henderson (CEE 94, MSCE 02) assumed command of the Omaha District U.S. Army Corps of Engineers July 31, 2015. As commander, he will oversee civil projects in nine states and environmental restoration projects in 41 states. The Omaha District employs 1,300 civilians and service members. It operates the six main dams on the Missouri River along with 21 dams on its tributaries. Under Colonel Henderson’s command, the Omaha District will manage the design and construction of facilities for the Army and Air Force, coordinate cleanup of hazardous waste sites for the Department of Defense and the Environmental Protection Agency and provide regulatory and real estate services that benefit the Nation.

Andrew Patceg Awarded 2015 Civil Engineering Outstanding Recent Graduate:
Andrew Patceg (CE05, MSCE06) was one of 14 recent Mines graduates to receive the Outstanding Recent Graduate Award at the 2015 M-Week Alumni Dinner October 2. These alumni join an elite group of graduates dating back to the award’s inception in 1984. Andy completed one of the largest studies conducted by the SD Department of Environmental and Natural Resources. He deals with watershed management, river restoration, water quality improvement, mining reclamation, and water rights petitioning. He is the lead engineer for Aqua Terra Consultants in Sheridan, Wyoming. He held a leadership position in the Georgia Association of Water Professionals Young Members Group, and was co-chair for a committee with the American Water Works Association that brought the first annual Model Water Tower Competition to Georgia. Andy and his wife, Brandy, have two boys and two girls whom they homeschool. They love spending time in the outdoors, especially in the Big Horn National Forest just outside their front door. Congratulations Andy!

Rapid City and Mines Enter Into Research Partnership:
The City of Rapid City and South Dakota School of Mines & Technology have entered into a five-year agreement for Mines students to provide expertise on projects requiring scientific research for the City. The agreement is a win-win situation for both entities. It will provide excellent research and training opportunities for graduate and upper-level undergraduate students at SDSM&T and will assist the City on projects requiring expertise and research in the areas of civil, environmental and sustainable engineering. Once the projects requiring research work have been identified, Mines faculty will provide a work plan and budget and will advise students throughout the process. Each project will be presented and negotiated by the public works director on a per project basis and once approved, South Dakota Mines vice president for research will authorize each contracted project. Oversight of the work at SDSM&T will be provided by Jennifer Benning, Ph.D., and Scott Kenner, Ph.D.
Thank you:

Thanks to Our Donors:
So many of you help our department in so many ways. Thank you for your support! SDSM&T and the Civil Department are better because of all of you. If you would like to donate online to the CEE department, please visit foundation@sdsmt.edu. Be sure to designate “other” and list “CEE Department” to direct your gift. Thank you!