



Welcome from the Department Head

Mississippi State's Civil and Environmental Engineering Department proactively uses teaching, research, and service to educate baccalaureate, masters, and doctoral students. We feel the first, best calling of our students is to become Professional Engineers by becoming competent, dynamic, and ethical engineers of the future. This E-newsletter is our effort to share a snippet of a few of the achievements we have made during this higher education journey.

High School Students Learn about Transportation at the Mississippi Summer Transportation Institute

In June, twenty high school students came to Mississippi State University to participate in the 2017 Mississippi Summer Transportation Institute. This was the eleventh year of CEE hosting this outreach program, which is funded by the Federal Highway Administration and the Mississippi Department of Transportation. Our version of MSTI is a two-week resident summer camp that exposes high school students to different modes of transportation, transportation-related careers, and the importance of a strong transportation infrastructure in economic and community development.

This year over eighty applications were received for the twenty positions. Applications consisted of essays on transportation, academic records, and recommendations from educational administrators. Those selected were invited to participate in MSTI at no cost. The Institute provided classroom, laboratory and field trip experiences that emphasized the importance of a strong science, technology, engineering and mathematics (STEM) education to be successful in the transportation fields.

Field trips to the Tupelo Auto Museum and the Natchez Trace Headquarters explored automotive travel. Waterway transportation featured a visit to the Tennessee-Tombigbee Waterway and the John C. Stennis Lock and Dam including a visit to the control structures and a trip on the department's research boat which included locking through Stennis L&D and a trip to the Columbus Port. Air travel was the focus of the tour of the Columbus Air Force Base flight line, control tower, TRACON, and T-1 and T-38 simulators. EAA Chapter 1189 also provided the attendees with a "Young Eagles" first flight experience at Starkville's George M. Bryan airport.

In addition to experiencing different types of transportation, field trips gave students insights into the manufacturing and materials side of transportation, with tours of Nissan's Canton Assembly Plant, PACCAR's motor manufacturing facility, Paragon Technical Services asphalt research and design lab, and MMC's batch concrete plant. The Mississippi Department of Transportation, one of the major sponsors of the Institute, also gave an important presentation on vehicle safety, as well as giving students a tour of the MDOT sign shop and the Traffic Management Center. Students also participated in group activities on campus, such as designing and building balsa wood bridges and boats out of wire mesh and asphalt mastic spray. Even though it was a busy two weeks, these fun activities and tours kept the students active and interested.

At the end of the camp, many students shared comments that they found the camp to be extremely beneficial to them, either helping them to decide on a future career, or showing them the necessary academic path to achieve that career goal.



*Mississippi State
 Mississippi Summer Transportation Institute
 Columbus Air Force Base, Mississippi
 June 21, 2017*



Faculty Promotions and Retirements

The Department of Civil and Environmental Engineering would like to acknowledge and congratulate four of our faculty on their recent "promotions."

1. **Dr. Isaac L. Howard, P.E.** has promoted from Associate Professor to Professor of Civil and Environmental Engineering. Holder of the Materials and Construction Industries Endowed Chair, Dr. Howard has developed a national reputation related to pavement and building materials. PI or Co-PI on over \$4.2 million of externally funded research supported by industrial, state and federal sources, he has been instrumental in resolving asphalt pavement system issues throughout the southeast and the application of Portland Limestone Cement on major projects in the state. Current efforts are focused on improving the sustainability of materials while reducing environmental impact for which he has been recognized nationally.



Dr. Howard is an outstanding mentor to graduate and undergraduate students. He has engaged a number of undergraduate students to research internships. He interacts with nearly one hundred students each year in our instructional laboratory, electing to be directly involved with the class rather than relying solely on a graduate teaching assistant to ensure educational quality and provide undergraduates with additional educational resources. Professional service of Isaac has included his membership of an NCHRP Project Panel, serving on the Institution of Civil Engineers' editorial advisory board, active participation in TRB committees, and contributions to ASTM. He was recently recognized by the Mississippi Section of ASCE by being named the 2016 Engineer of the Year, following being named Young Engineer of the Year by the same group just a few years previous.

2. **Dr. Veera G. Gude, P.E., BCEE** was promoted from Assistant Professor to Associate Professor. He has contributed to the instructional mission of the department by helping several classes at the undergraduate and graduate level, create the environmental engineering concentration in the undergraduate Bachelor of Science in Civil Engineering program, and supported the nationally-ranked distance graduate engineering program. He has incorporated a variety of innovative teaching approaches in the classroom and through research internships for undergraduates for which he has been recognized nationally by Chi Epsilon in being awarded their National Teaching Award. He has received similar awards from Mississippi State and ASEE.



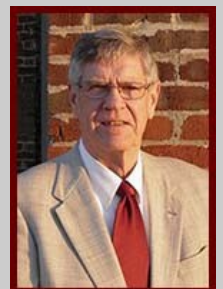
Dr. Gude has an extensive research collaboration base resulting from work as presenter, session organizer, guest editor, review panelist, external reviewer, or editor for a number of journals, conferences, and national and international funding organizations; including, NSF, China, Qatar, Saudi Arabia, Israel, India, Netherlands, and Kazakhstan. With over seventy conference and research presentations, and through the university and national successes of his graduate students at conferences, his impact in increasing the body of knowledge is notable, capped by nine book chapters to his credit. He jointly holds a patent for solar desalinization which as pulled him into internationally collaborations. His work on alternative fuels and integrated waste treatment, biofuels generation, and electrical generation through the use of biofuel cells as is on the front lines of integrated environmental and energy management.

3. Lastly, **Dr. Farshid Vahedifard, P.E.** was promoted from Assistant Professor to Associate Professor. Advancing our understanding of several areas related to geotechnical engineering, Dr. Vahedifard has secured about \$1.5 million dollars in external funding, has developed a quarter-time research position in the nSparc center, and has been successful in helping Southern Company secure over \$1 million dollars in funding. Farshid has been successful at converting his research into scholarly publications at a prolific rate; producing an annual average of over five journal papers. Annual average peer-reviewed conference papers published or in print exceeds three per year. Equally noteworthy is the fact that he had a paper named "Best Practical Paper" by the ASTM Journal of Geotechnical Testing. He has supervised eight PhD and six MS students, having graduated two PhD and six MS students since his arrival at Mississippi State.



Dr. Vahedifard has contributed to the instructional mission of the department in numerous ways. He has developed several classes at the graduate level and led the efforts to redesign our graduate program in geotechnical engineering for delivery to on campus and off students. Farshid's outreach and service efforts have led him to achieve national recognition by the national press and the scientific press alike. Of particular note are the regularity he is cited in the media related to the impact of climate change and subsequent drought on the west coast levee systems.

4. Of additional note is the "promotion" of **Dr. Thomas D. White, P.E.**, to the rank of Professor Emeritus of CEE. Tom retired from the university following 17 years of service as Department Head, Professor, researcher, educator, and faculty advisor for the Chi Epsilon student chapter at Mississippi State.





MSU Hosts Showing of *Dream Big*



The Mississippi State Student Chapter of ASCE received a grant from ASCE Region 5 to sponsor a showing of *Dream Big*, MacGillivray Freeman's giant-screen film that celebrates the wonders of engineering.

Students from the Houston Solar Car team, from nearby Houston, Mississippi's high school, were featured in the film. It detailed the work that they did to create a solar-powered car for the World Solar Challenge, a race across the Australian Outback. Houston's team came in first place in the Adventure Class in 2015. Unfortunately, even though their big win was documented in *Dream Big*,

it was difficult for the team to get a chance to see the film, since there were no IMAX or big screen theaters that were showing it in the state of Mississippi.

MSU's Civil and Environmental Engineering department wanted to host a showing of *Dream Big* not only to invite Houston high school's engineering team to view, but also to show to Mississippi State University students and local Starkville residents, to encourage them to pursue engineering. Although the film was created for IMAX and big screen, the department was able to acquire the film in Blu-Ray format, so that it could be shown on the projector screen in Humphrey Coliseum.

The showing *Dream Big* was held on April 25, was free to the public. Members of the Starkville Community and the Houston Solar Car team attended the free showing. It was the only showing of the film in the state of Mississippi.

Interview with Our Graduates: Braden Smith

Get to know our graduate students who are finishing their degrees! We will be interviewing one of our upcoming graduates for each newsletter. This month we're interviewing Braden Smith, a MS student.

When do you graduate?

I graduate in August, 2017.

What is your dissertation?

Dissertation Title: *Characterizing Short and Long Term Mixture Aging of a Full-Scale and Non-Trafficked Asphalt Test Section*

My work focuses on asphalt pavement aging associated with construction practices and longer term weathering. I studied the effects of the Mississippi climate on a full-scale test section in Columbus, MS and developed conditioning protocols that reasonably simulate the effects of weather over a three to five year period in Mississippi.

Do you have any plans lined up for after graduation?

My wife and I are moving to Alabama so I can begin work with Hunt Refining Company as a Paving Asphalt Specialist.

What made you first interested in engineering?

I couldn't help but be interested in engineering. My dad is an electrical engineer and was teaching me circuits before I was 10 years old. However, I chose construction materials within civil engineering because I have always been interested in what things are made of.

Where would you like to see yourself in 5-10 years?

I see myself being an asphalt pavements professional who accepts that there is always something more to learn.



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