Welcome from Lake Superior!

This CEE newsletter is the first one for me as the new Department Chair. I have served as Chair since July 1, 2008; so far, so good. It has been awhile since we communicated with each of you, and thus we have a range of stories that we would like to share, and, as you will see, we hope to get you to share stories of your own.

Since the last newsletter, we have welcomed three new faculty members into the Department: Dr. Jacob Hiller, Dr. Devin Harris, and Dr. Paul Doskey. Dr. Doskey came to us through the University’s first Strategic Faculty Hiring Initiative. The University is in the midst of the second Strategic Faculty Hiring Initiative. For more information go to http://www.mtu.edu/ssh/.

The Department houses the University Transportation Center, which was awarded by the US DOT. The Center specializes in MiSTI (see the article). Dr. Tess Ahlborn has been named co-chair of the Scientific Committee for the third congress of the I8 (see the article) to be held in Washington DC in 2010. The second D80 Conference was held in November, highlighting the international efforts of our students and faculty.

We have highlighted four young alumni: Krielda Cuellar, Santiago Aguilar, Laura (Arty) Gerold, and Moussa Sissoko. We intend to make this feature a regular part of our newsletters. If you know of a deserving young alumna, please send her or his name and information to the Department at cee@mtu.edu. We will include them as space permits.

The Concrete Canoe Team once again competed at the national competition held in Montreal, Quebec in June 2008. They placed 8th out of 22 teams. The team traveled to Montreal, Canada by way of Seattle. Highlights of the trip to Montreal included a 5th place finish in the overall final product category and a 2nd place finish in the men’s sprint race, which was held at the Olympic Basin in Montreal.

At the regional competition the team successfully defended their first place presentation title. This year the team’s presenters decided to shake things up, and dress as casino dealers rather than the standard suit and tie ensemble that has become associated with Michigan Tech. The presenters seamlessly delivered a summary of the team’s preparation for competition and answered challenging questions from the judges with poise and composure. On race day the paddlers had Lady Luck on their side and once again swept all 5 races. Everyone was pleased to see that the radically different hull design handled just as well as what had been hypothesized. The team’s gambling theme extended into all areas of the display. The display table featured a spinning roulette wheel to hold samples of the mix ingredients and a cylinder tray made to look like a poker chip tray.

The team traveled to Montreal, Canada by way of 12 passenger vans for the National Concrete Canoe Competition which occurred June 19-21, 2008. The team placed 8th out of the 22 teams competing and improved upon the results from the 2007 10th place showing in Seattle. Highlights of the trip to Montreal included a 5th place finish in the overall final product category and a 2nd place finish in the men’s sprint race, which was held at the Olympic Basin in Montreal.

Concrete Canoe Competition

The Michigan Tech concrete canoe team decided to throw caution and old ideas to the wind for 2008 and chose a gambling theme to reflect their commitment to risk everything in the pursuit of innovation. They were pleased at the payout they received for their efforts with a first place at the regional competition qualifying them for the 2008 National Concrete Canoe Competition which was held in Montreal, Canada.

The 2008 canoe, The Gambler, followed suit with its name and implemented a radically new hull design. In the past, the Michigan Tech team has used a rounded hull. The 2008 hull featured a hard chine to improve the maneuverability and speed during races. This presented concerns for the paddlers since the team had no experience with this type of canoe and do not get to test out the concrete creation until Race Day. To get them accustomed to this new hull design, a fiberglass replica of the concrete canoe was constructed and used during pool practices.

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Steel Bridge Team

The steel bridge team competed successfully in 2008 with a 2nd place finish at the regional competition. This allowed the team to qualify to compete at the national competition in Gainesville, Florida where they placed 16th in weight, 23rd in stiffness and had an overall finish of 31st out of the 42 teams. Most importantly the team learned a lot from meeting all the other teams and seeing their designs.

For the upcoming 2009 competition, the team has had to take many new rules into consideration when developing the bridge design. One of the changes that had the most significant impact on the 2009 design is the requirement of a bridge envelope that allows for an arch on the bottom of the bridge. For the past several years the rules had left room for an arch on top of the bridge. This change called for a complete redesign, and using structural analysis software, many different possibilities were explored to determine the most efficient shape. The team is excited to bring their new design to the regional competition in April that will be held at Lawrence Technological University.

Table of Contents

04 New Faculty
05 Strategic Hiring Initiative
06 Ahlborn Named Co-chair
07 Civil 1B: Then and Now
08 MiSTI: University Transportation Center
09 D80 Conference
10 Student Scholarships
12 Academy of Civil and Environmental Engineers
15 CEE Donor Recognition
15 Department Information
New Faculty

Devin K. Harris
Devin K. Harris joined the faculty as a Donald and Rose Ann Tomasi Assistant Professor of Structural Engineering. Dr. Harris received his M.S. and Ph.D. at Virginia Polytechnic Institute and State University in 2004 and 2007, respectively and his B.S. from the University of Florida. His teaching interests are in reinforced concrete, prestressed concrete, structural steel, and bridge engineering. Dr. Harris’ research interests include all aspects of structural engineering, with a main focus on bridge design and behavior. His research has included investigations of innovative civil infrastructure including Ultra-High Performance Concrete (UHPC) and the Sandwich Plate System (SPS) technology. Dr. Harris is also an active member in the American Concrete Institute (ACI), the Precast/ Prestressed Concrete Institute (PCI) and the National Society of Black Engineers (NSBE). Prior to attending Virginia Tech, he was employed by ExxonMobil Development Company in Houston, TX where he served as a Senior Project Engineer in the drilling group.

Jacob Hiller
Dr. Jacob Hiller is the Donald and Rose Ann Tomasi Assistant Professor of Transportation Engineering in the Department of Civil and Environmental Engineering. His specific research interests focus on the interaction between materials, mechanics, and concrete pavement performance. He received his B.S. and M.S. in Civil Engineering from Michigan State University and Ph.D. in Civil and Environmental Engineering from the University of Illinois at Urbana-Champaign in 2007. He has been involved in numerous sponsored projects conducting research related to concrete pavements, concrete materials, and sustainability. He serves on the board of directors of the International Society for Concrete Pavements and is active in many facets of the organization including technology transfer, workshop and conference planning, and dissemination of Society activities. He also is a board member of the Transportation Engineering and Road Research Alliance (TERRA). At Michigan Tech, Dr. Hiller has taught classes in pavement design as well as civil engineering materials. He currently serves as the Chi Epsilon advisor and is involved with the Pavement Design, Construction, and Materials (PDCM) Enterprise Program.

Strategic Faculty Hiring Initiative

The Strategic Faculty Hiring Initiative, which cuts across academic disciplines to focus on a research theme, hired seven new faculty members whose research focuses on sustainability. Two of those new hires will have appointments with the Civil and Environmental Engineering Department.

Paul V. Doskey
Professor Paul V. Doskey joined the Civil and Environmental Engineering faculty as one of Michigan Tech’s strategic hires in sustainability. Paul comes to Michigan Tech from Argonne National Laboratory, where he worked in the Climate Research Section. He earned his Ph.D. in Environmental Chemistry from the University of Wisconsin, Madison in 1982. His teaching interests include environmental biogeochemistry, atmospheric organic chemistry, and atmosphere-biosphere exchange. Paul studies environmental and biogeochemical processing of organic chemicals and of gases and aerosols that affect climate. He also develops models to predict the fate of chemicals in the environment under various conditions. Dr. Doskey has published in such diverse journals as Atmospheric Environment, Limnology and Oceanography, the Journal of Great Lakes Research, Environmental Science and Technology, Geophysical Research Letters, and the Journal of Geophysical Research. He is an author or co-author of 100+ journal, book, report, and conference publications and presentations. He will hold a joint appointment with the School of Forest Resources and Environmental Science (SFRES).

Civil3D Then and Now: Its place in the Civil and Environmental Engineering Curriculum

This fall I introduced a class called Computer Applications in Civil Engineering. The class primarily introduced students to using Autodesk Civil3D, a single comprehensive design package which has integrated AutoCAD, Land Desktop and Civil Design within an object oriented paradigm.

The class used this powerful software tool to analyze survey data (contours, elevations, watersheds), apply it to design of horizontal and vertical alignments, and conduct simple grading and earthwork calculations. Students were also introduced to integrating Civil3D with other packages, such as the Michigan Engineer’s Resource Library (MERL), to develop owners’ estimates for highway construction projects in the state of Michigan. In addition, students were introduced to concepts in object-oriented programming that are critical to understanding how the Civil3D environment works. While the focus was on using Autodesk Civil3D, it is expected that students will be able to transfer their skills to similar design packages.

The course was very well received by the students, which has strengthened my conviction about its place in Civil and Environmental Engineering curriculum. Students were able to work on projects ranging from drainage canals in Bolivia to local area projects by using available global terrain data. The ability to visualize familiar terrains, and virtually interact with alternative designs helps to excite and effectively engage students—especially visual learners.

The question at hand is how to integrate this important class into the civil and environmental engineering curriculum. The class should be ideally taught as a lab in tandem with other required design classes. This would not only provide students exposure to the software, but also teach them how to apply it directly to design problems.

Industry has been excited about the direction in which the Civil3D package was evolving, though they seldom had the ability or resources to train their engineers in the software. As a result, students graduating with exposure to the design abilities that AutoCAD provided are highly valued.

Ahlborn to Co-chair Scientific Committee for Structural Concrete Congress

Associate Professor Tess Ahlborn (CEE) has been named the co-chair of the Scientific Committee for the Third Congress of the International Federation for Structural Concrete (fib), to be held in Washington, DC, May 29-June 2, 2010, in conjunction with the Precast/ Prestressed Concrete Institute (PCI) Convention and the National Bridge Conference. The Scientific Committee consists of experts spanning all interests within the international concrete industry and will shape the fib 2010 Technical and Scientific program. Ahlborn is “leading the effort to build an unprecedented international program for the 2010 event,” said Jim Tocas, president of PCI. More than 1,200 abstracts, 450-600 papers and posters and 40-50 sessions are expected.

Outstanding Faculty Award

The 2008 Howard E. Hill award for Outstanding Faculty of the Year was presented by the students of the Civil and Environmental Engineering Department to Dr. Kris G. Mattila.
Santiago Aguilar
Santiago Aguilar (BSCE '04 and MSCE '06) of BERGER/ABAM Engineers, Inc., has been away from his home country of Ecuador since coming to the United States to attend college in 2000. However the miles have not changed his desire to make a difference to people in need in his home country. Last spring, Ecuador suffered the worst rainy season that had been experienced in 30 years. Major flooding occurred in 13 of the 24 provinces and over 4 million people were affected directly by the floods. Santiago decided to do something to help and initiated a campaign through his company to raise funds to help those that had lost everything. Through the campaign he was also able to share some of the customs and culture of Ecuador with coworkers. “We can all make a difference to help those less fortunate; it is just up to us to do it,” added Santiago.

Mooussa Sissoko
Mooussa Sissoko (BSCE '04) was recognized at the 22nd Annual Black Engineer of the Year Awards (BEYA) for his outstanding contributions in engineering. Moussa was selected as a Modern-Day Technology Leader by BEYA's Science, Technology, Engineering and Math Global Competitiveness Conference. Modern-day technology leaders are individuals who are shaping the future of engineering, science and technology through outstanding performance and achievements that merit national recognition. Moussa is a Structural Engineer with Black and Veatch. He was nominated for this award for his contributions on several projects as well as his initiative in providing a training program at Black and Veatch on aspects of a Computer-Aided Drawing software package. Moussa is currently working on a master's degree in structures at Wayne State University.

Kriselda Cuellar
Kriselda Cuellar, P.E. (2002 BSCE and 2004 MSCE) was recently featured in the Winter 2006-Spring 2009 edition of Diversity/Careers in Engineering & Information Technology and is a second-generation American of Moroccan descent. Cuellar is a structural engineer for Opus Architects & Engineers, Inc. (Minnetonka, MN). Opus A&E, a member of the Opus Group, is a full-service architectural and engineering firm that provides design solutions for business, industrial and institutional users. Her job involves designing buildings and overseeing the overall construction. One of the recent projects she has worked on is the five-story NOAA headquarters in Maryland. Her current goal is to become a Leadership in Energy and Environmental Design Accredited Professional (LEED AP). More than 43,000 people have earned this credential since the program was launched in 2001. Certification is granted by the U.S. Green Building Council (www.usgbc.org) to professionals who have demonstrated a thorough understanding of “green” building practices and principles.

Laar (Arth) Gerold
Laar (Arth) Gerold (BSEE '00 and MSEE '02) of Tetra Tech was awarded the ASCE Young Engineer of the Year award. Laura was selected for this honor by the American Society of Civil Engineers, Wisconsin Chapter. Ms. Gerold is a Water Resources Engineer with expertise in hydraulics, hydrology, wetlands, sediment transport, and storm water issues. Laura and her husband, Ben Gerold (BSCE '98, MSCE '00), reside near Milwaukee and are kept very busy by their two young sons, Kile and Daniel.

University Transportation Center - MiSTI
In 2006, Michigan Tech was awarded a tier II University Transportation Center (UTC). The UTC Program operates under the US Department of Transportation and is administered by the Research and Innovative Technology Administration (RITA). Funded through the Safe, Accountable, Flexible, Transportation Equity Act-A Legacy for Users (SAFETEA-LU), the Center operates on an annual budget of up to one million dollars including a 1:1 non-federal cost share requirement. There are currently 67 UTCs operating at universities across the country and each center is focused on addressing areas of critical need within transportation. Michigan Tech’s UTC specializes in Materials in Sustainable Transportation Infrastructure (MiSTI). Faculty, staff and students work closely under the UTC to examine the role materials have with respect to the social, environmental, and economic aspects of sustainable transportation infrastructure. This includes the development of new technologies like warm-mix asphalt, the use of recovered industrial materials like fly ash or cement kiln dust, and the recycling of concrete and asphalt pavements into new infrastructure.

Each UTC operates under the guidelines of the UTC program and a center specific, approved strategic plan (http://www.misti.mtu.edu/index.php). UTCs conduct activities in four main goal areas; research, education, workforce development and technology transfer. These activities are guided by a Technical Advisory Council of industry professionals with expertise at the Center’s theme.

To work towards the goal of workforce development, UTC-MiSTI and Michigan Tech had a high profile presence at Michigan’s first Construction Career Days held in April 2008 near Lansing. Attracting the next generation of transportation professionals is critical to the transportation industry. More than 1700 youth were transported, with financial support by the UTC-MiSTI, to the State Fairgrounds for two days of hands on learning and career exploration. The UTC-MiSTI is supporting MDOT’s efforts, with trainers, to introduce the American Association of State Highway Officials TRAC (Transportation and Civil Engineering) program to middle school and high school teachers throughout the state. The UTC-MiSTI provided its first MDOT TRAC scholarship to Morgan Han (CE) who began her Engineering studies at Michigan Tech in fall 2008 after participating in the TRAC program in high school and interning with MDOT during the summer of 2008. Also in 2008, the UTC-MiSTI sponsored $8,500 in scholarships for students in Construction and Materials (PDCM) Enterprise students engaged in leadership and sustainability related projects.

Outreach and partnerships are a vital component of the National UTC program which leverages the Federal financial investment with state, university, industry and private partners to double its investment and benefit to the industry. Recent UTC-MiSTI industry partners include We Energies, Mineral Resource Technologies, Inc. (MRT), Lafarge, the Portland Cement Association and the Great Lakes Cement Promotion Association. Research partners include the National Cooperative Highway Research Program-National Academies of Science, and Departments of Transportation in Michigan and Wisconsin and the University of Alaska-Fairbanks.

For more information on the UTC-MiSTI, including details about the research, education, workforce development and technology transfer initiatives, please visit the Center’s Web site at http://www.misti.mtu.edu or contact the Center.
The D80 programs were created through the visionary work of several faculty in engineering. An inspiring amount of grassroots energy from students, staff, and faculty has transformed the vision to overwhelming successes. The D80 philosophy, focusing on Design That Matters, has truly become a university-wide culture spreading from engineering through other disciplines including: humanities, social sciences, physical sciences, and business.

What does it take to attract 400 people to an all-day event on an early November Saturday in Houghton? Design that matters. The 2008 D80 Conference was held at Michigan Tech on November 8. For the second year running, nearly 400 people registered for the conference. Michigan Tech faculty and students comprised about half the participants, the other half being an enthusiastic mix of family, alumni, community members, students, and faculty from other universities. The D80 Conference, the major annual event sponsored by Michigan Tech’s D80 Center (www.d80.mtu.edu), is a venue for students, staff, faculty, and our partners to share their experiences in design projects.

This year’s keynote speaker was Dr. David Watkins, Associate Professor of Civil and Environmental Engineering, highlighting research at Michigan Tech to alleviate numerous sanitation and water challenges in the poorest parts of the world. The work of Dr. Watkins and doctoral student, Lauren Fry (also a CEE Peace Corps Master’s International alum), underscores the importance of sanitation infrastructure to solving global public health challenges. This compelling research and implementation was subsequently picked up by the international media.

The outcomes are clear; this work has profound professional and personal impacts, which are evident in the students’ passion as well as in the tearful eyes of the audience. Students and faculty attend to celebrate within a community of service-minded scholars. Families attend in support of their student’s contribution to a better world. Alumni attend to continue their connections to the programs, as well as recruit Michigan Tech’s best students for employment.

The D80 Conference provides a way for modern higher education to embrace these critical partners (students, faculty, family, alumni, and communities). It also demonstrates that as well as striving to be the best technological university in the world, Michigan Tech is on its way to being the best university for the world. See you at the 2009 D80 Conference, Saturday October 17.
Academy of Civil and Environmental Engineers

The eleventh Civil and Environmental Engineering ACADEMY induction was held on August 1, 2007. The ACADEMY was established in 1993 to recognize excellence and leadership in engineering and civic affairs of outstanding graduates and friends of the Civil and Environmental Engineering Department. Eight alumni were honored bringing the ACADEMY membership to 92. For a complete list of members and biographies please visit our department web site: www.cce.mtu.edu/academy.html

Dale K. Deibel, P.E., ’73

Dale Deibel, P.E., is currently the Chief Operating Officer at Spicer Group, Inc. Spicer Group, specializing in engineering, surveying, and planning, has over 150 employees with several offices in Michigan and also an office in Tempe, Arizona. Mr. Deibel has been with Spicer for over 33 years and currently works out of the company’s headquarters in Saginaw. Prior to providing administrative services, Dale specialized in watershed management, and worked on a wide variety of civil engineering projects for municipal, commercial, and industrial clients.

He is a member of the National Society of Professional Engineers, American Council of Engineering Companies, and the American Society of Civil Engineers. He is also active with community groups including the Saginaw Rotary Club and Saginaw County Chamber of Commerce.

Paul J. DeKeyser, P.E., ’78

Paul DeKeyser completed his baccalaureate degree in civil engineering in 1978 and his master’s degree in environmental engineering in 1979. Mr. DeKeyser is the Vice-President, Regional Manager of the Water Business Group at CH2M.Hill. He has 28 years of extensive experience in all phases of wastewater treatment, sludge handling and disposal, and environmental studies for treatment systems. He is considered an expert in the area of secondary treatment process kinetics and dynamic modeling. Mr. DeKeyser has managed large, complex projects, such as the $330 million expansion program for Allegheny County Sewage Authority. His responsibilities have also included the concept development and final design of the advanced wastewater treatment facilities for the $200 million expansion of the Upper Occoquan Sewage Authority. Mr. DeKeyser is a Professional Engineer in Michigan and Virginia. He is also an active member of the Water Environment Federation.

James T. Emerson, P.E., ’60

James Emerson, originally from Omro, Wisconsin, completed his baccalaureate degree in civil engineering 1960. Mr. Emerson is President of B & E Engineers of Arcadia, California. For thirteen years following graduation he expanded his engineering expertise in the areas of coastal facilities, mountain road location studies, and land development with County of Los Angeles. In 1976 he co-founded Bechtel and Emerson, a civil engineering, land planning, and surveying firm in Los Angeles that has now served Southern California for over thirty years. In 1983 the company name was changed to B & E Engineers, and shortly after Mr. Emerson assumed the role of Principal, President, and Chairman of the Board, until selling the company in 2003 to NSJ Consultants, LTD.

George H. Hermanson, P.E., ’73

George Hermanson completed his baccalaureate degree in civil engineering 1973 and his master’s degree in 1975. He is Senior Vice-President and Principal of Hole Montes, Inc. in Naples, Florida, a 135-person consulting engineering firm specializing in civil and environmental engineering. Mr. Hermanson has been with Hole Montes for 23 years and a principal and shareholder for 10. During that time he has overseen major land development projects in southwest Florida encompassing over 20,000 total acres, 12,000 residential units, and over 1 million square feet of commercial retail and office space. Mr. Hermanson serves on multiple boards in Collier County including: Water Management Advisory Board, Environmental Advisory Board, and Development of Services Advisory Board. He also has a Gubernatorial appointment to the Big Cypress Basin of the South Florida Water Management District.

Charles G. Kellogg, ’66

Charles (Jeff) Kellogg completed his baccalaureate degree in civil engineering in 1966. He is the past President/CEO of Chateau Communities, Inc. of Englewood, Colorado. Chateau, Inc. is a self-administered and self-managed equity real estate investment trust and one of the largest owners/operators of manufactured housing communities in the United States. Mr. Kellogg joined Chateau Communities in 1973 as a construction superintendent. Prior to joining Chateau, Inc., Mr. Kellogg had previously worked as an engineer in the petroleum industry for Schlumberger, Inc. and Mobil Oil.

While at Michigan Tech, Jeff was active in many university student organizations including: Blue Key, Student Council, the student chapter of the American Society of Civil Engineers, and Theta Tau Fraternity. He was also on the varsity swim team and received the Most Valuable Swimmer Award.

Richard H. Lyon, P.E. ’76

Richard Lyon, P.E. completed his baccalaureate degree in civil engineering at Michigan Tech in 1976 and his Master of Business Administration at Saginaw Valley State in 1989.

Mr. Lyon is currently President of MacMillan Associates, a multi-disciplined consulting engineering company based in Bay City, Michigan that specializes in structural, mechanical and electrical engineering for buildings and structures. He has handled the structural design of over 750 building projects encompassing all building types, structural systems and materials. One of the major projects he has been involved with is the complete redesign of refrigerated warehouses to store over 235 million gallons of orange juice for major juice producers in Florida and California. Mr. Lyon is a registered Professional Engineer in six states and is involved with numerous community organizations.

William F. Marshall, P.E., ’69

William F. Marshall is Vice President of Engineering and Development of Mears Group, Inc., an international engineering and construction service provider to the pipeline industry with over 500 employees. Mr. Marshall joined Mears in 1989 as Director of Engineering; he assumed the role of Vice President of Engineering in 1994, and his current role as Vice President of Engineering and Development in 1997. Prior to joining Mears Group, Mr. Marshall spent 20 years with Michigan Consolidated Gas Company. Mr. Marshall is a Professional Engineer in Michigan and Ohio and a member of the Michigan Society of Professional Engineers. He is also a member of the National Association of Corrosion Engineers, American Gas Association, and Southern Gas Association.

Warren B. Peterson, ’52

Warren Peterson completed his baccalaureate degree in civil engineering in 1952. From there he spent 38 years with the Soo Line Railroad Company (now Canadian Pacific Railway), a Class I railroad. He held positions of increasing responsibility over his many years of service including: Chief Engineer, Assistant Vice President of Operations, Vice President of Production and Operations Planning, and Vice President of Development. In 1991 Mr. Peterson left the Soo Line Railroad and joined the Association of American Railroads as General Manager/Director of Marketing of the Transportation Technology Center. Over his professional career, he has been affiliated with the American Railway Engineering Association, serving on the Board of Directors from 1982 to 1990 and as President for one year in 1987.