UND Civil Engineering Department Newsletter

School of Engineering and Mines

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2007 - 2008 Civil Engineering Graduates

The following students received their ***Bachelor's Degree in Civil Engineering*** from UND during the 2007 - 2008 academic year:

December 2007: L-R: Nancy Huether (DEDP); Joseph Weiers; Matthew Petron; Corey Sadowsky; Keith Whittington (DEDP). Not pictured: Ayman Elokda (DEDP); Justin Forsman (DEDP); and Daniel Hansen.

May 2008: L-R: Row 1: Kelly Larson; Darin Schepp; Joseph Tonneson; Lindsay Weber; Brent Freese; Jason Seppala; Joshua Hassell. Row 2: Matthew Luger; Jesse Kadrmas; Joseph Snustad; George Palo, Jr.; Derek Gowan; Joseph Vistad. Row 3: Matthew Hangsleben; Andrew Knoll; Tony Nordby; Aaron Boonstra; Daniel Labo; Anthony Welder, Jr. Not Pictured: Daniel Heitzman and Beth Safranski.

August 2008: Jed Nordin (DEDP)

Graduates receiving honors: summa cum laude = 2 magna cum laude = 5 cum laude = 7

The following students received their ***Master's Degree in Civil Engineering*** from UND during the 2007 - 2008 academic year:

December 2007: Travis Sorum, M.Engr.; Jacob Wieland, M.Engr.

May 2008: Jasper Klein, M.Engr.

Civil Engineering Distance Engineering Degree Program (DEDP)

This fall semester we have over 70 students enrolled in civil engineering through DEDP. The DEDP advisors are Dr. Harvey Gullicks & Dr. Howe Lim.

Civil Engineering Cooperative Education

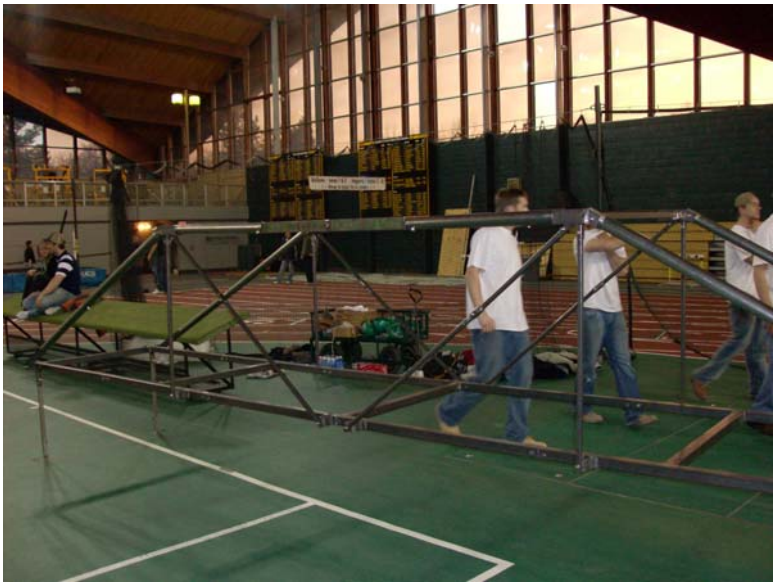
This summer and fall, nineteen civil engineering students participated in the UND cooperative education program. In this program, students receive course credits for working in engineering-related jobs. Participating companies are: Nodak Electric, Bolton & Menk; ND DOT; Minnehaha Creek Watershed District; Gowan Construction; Twin Ports Testing; US Army Corps of Engineers; AE2S; EAPC; Construction Engineers, Ltd.; Highlands Engineering Surveying, PLLC.

Alumni who are interested in employing engineering students as co-ops can contact UND Office of Career Services/Coop Education, 701-777-4143 or the Civil Engineering Department, 701-777-3562.

Civil Engineering Scholarships

Civil engineering students were awarded approximately $20,000 in scholarships for the 2008-2009 academic year. The following are some of the civil engineering students who received scholarships:

Jonathan Bach - Raymond & Edyth Sullivan Memorial; ND Beta Chapter of Tau Beta Pi Scholarship; E.J.Larimore & S.P. Mathews Scholarship.
Traci Bentrup - William F. & Inez L. McDonald Endowment Scholarship; Louise Ferguson Presidential Scholarship.
Michael Bittner - Associated General Contractors of ND Scholarship (John Jardine).
Aaron Boonstra - ND Ready Mix PCA.
Matthew Hangsleben - Donald Floan Scholarship.
Taryn Kuusisto - Arthur Johnson Civil Engineering Scholarship.
Gary Kuzel - SMART Scholarship.
Matthew Nordine - Clifford Johnson Civil Engineering Scholarship.
Jordan Samuelson - Presidential Scholarship.
Alexa Skjold - UND SWE Freshman Scholarship.
Geoffrey Slick - Gil & Peggy Fossum Scholarship.
Grant Slick - Associated General Contractors of ND Scholarship (Walt Swingen); Tau Beta Pi Scholarship; E.J. Larimore & S.P. Mathews Scholarship; ND Ready Mix PCA.
Sarah Tondryk - Dean & Mae Wieland Scholarship; Presidential Scholarship.
Joseph Tonneson - ND Ready Mix PCA.
Joseph Vistad - Peterson Civil Engineering Scholarship.
Lisa Wersinger - Associated General Contractors of ND Scholarship; Concrete Inc. Civil Engineering Scholarship.



2008 UND ASCE Steel Bridge

2008 UND Steel Bridge Team:

L-R: Dr. Charles Moretti, Matt Hangsleben, George Palo, Tony Nordby, Aaron Boonstra; Zach Bopp, Michael Bittner, Andrew Knoll

ASCE Student Activities

This year's chapter president is Zach Bopp; vice president is Michael Bittner; treasurer is Marty Halvorson; and secretary is Jacob Bongard. The faculty advisor is Dr. Iraj Mamaghani.

A team of UND civil engineering students participated in the annual ASCE Steel Bridge Competition. The regional competition was held at the University of Iowa on March 1, 2008. Nine (9) universities participated in this competition. UND placed 4th.

Military Service

The Civil Engineering Faculty and Staff would like to extend a special thank you to those who have or are currently serving in the military. We look forward to your safe return.

Sympathy

Our deepest sympathy goes out to Dr. Ronald Apanian for the recent loss of his wife. She will be greatly missed by the family, friends and community. Dr. Apanian is a retired Chair and Professor in the Department of Civil Engineering.

Also our condolences go out to the other alumni families who have lost a loved one.

Alumni News

We would like to congratulate all of our alumni who have been inducted into the UND School of Engineering and Mines Academy. They are Mark Foss (2003); Charles Nelson (2003); Dean Wieland (2004); Robert A. Solberg (2005); Theodore Galambos (2006); Gary D. Sanders (2007); Walter Swingen (2008).

Mr. Walter Swingen, UND SEM 2008 Alumni Inductee

We also want to give special thanks to alumni Steve Burian, Wayne Gerszewski, and Nate Weisenburger, who have been doing a great job teaching our Contracts & Specifications course for the past several years.

Faculty News

For the past school year, the percentage of students who passed the Fundamentals of Engineering (FE) Exam was 75%.

Dr. Harvey Gullicks was nominated for the Chair position in Civil and Environmental Engineering at South Dakota State University (he declined consideration). He was nominated for the UND Outstanding Teaching Award (Undergraduate Teaching Award) Fall 2007 and 2008. Gullicks was also recognized as one of the Favorite UND Professors by residents of Brannon Hall for 2007-2008. And, Gullicks was recognized by a UND student and veteran of the Iraq War (received a US flag flown over the base in Iraq and a certificate) for support of his mission and comrades.

Dr. Gullicks presented on chemical softening at the North Dakota Water and Pollution Control Conference in Bismarck, October 2008. Gullicks has provided consulting and research expertise related to a variety of issues at the Grand Forks Wastewater Treatment Plant and Water Treatment Plant. He serves as the Vice President for Chapter 1 of the North Dakota Society of Professional Engineers (NDSPE) for 2008-2009. He is also a member of the Education Committee for NDSPE. Gullicks is the Practitioner Advisor for the UND Student Chapter of the American Society of Civil Engineers.

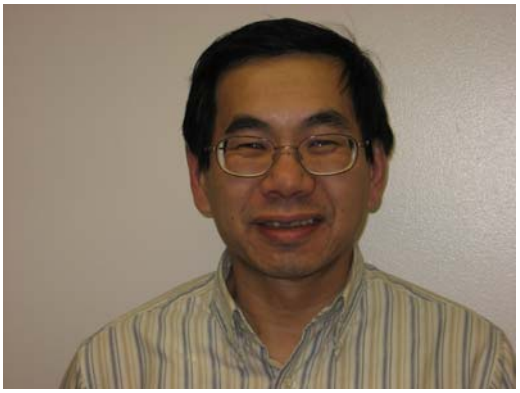
Dr. Charles Moretti has completed a five year research project with the ND DOT dealing with prevention of corrosion on highway bridges.

Dr. Iraj Mamaghani and Dr. Nabil Suleiman were both promoted to tenured faculty and Associate Professors in the fall 2008.

Research Notes

DR. GULLICKS - Currently has one project with the Grand Forks Water Treatment Plant (membrane brine reclamation) supporting graduate student Donovan Voeller. Voeller's research has shown the beneficial effects of chemically softening the brine to reduce membrane fowling potential of the reclaimed water and to produce a high sodium chloride and sulfate deicing liquid stream. Dr. Gullicks has another graduate student, Nicholas Kalenze, working on an unfunded research evaluation of the biogas collection feasibility at the existing Grand Forks landfill. Three other graduate students, Grant Slick, Geoffrey Slick, and Aaron Fornshell, will be advised by Dr. Gullicks. At least one of them will be involved in on-going evaluation of anaerobic pretreatment potential at the Grand Forks Wastewater Treatment Plant. And at least one of them will be involved in establishing a user-friendly spreadsheet for chemical softening calculations, using the bar graph calculation method. Gullicks served on thesis committees for five students in the chemical and environmental engineering master's programs.

DR. JERATH - Served on the thesis committee of Hemant Yadav, who graduated with an M.S. degree in December 2007. He is also serving on the thesis committees of two more graduate students. Dr. Jerath has published two conference papers, one in the area of bridge design, with a former graduate student S. Gurav (Ph.D.), and other in the area of dynamic stability of water tanks with Wei Qiao (M.S.). He is also pursuing research funding in the areas of concrete pavements, and the use of fly ash to prevent deterioration of concrete due to alkali silica reaction from the NDDOT and the U.S. department of defense. Dr. Jerath is also writing a text book "Structural Stability: Theory and Practice." Elsevier, Ltd., U.K.



DR. LIM – Current Research projects are: 1. Regional Flood Frequency Analysis Using L-moments Approach: Joseph Vistad, a master's student, is investigating the application of the L-moments approach in river basins. The Red River Basin has been studied using the same approach and reported in a journal paper by Lim and Voeller (2008). Joe will examine the existing Bulletin 17B procedure and address the problems identified in the paper by Lim and Voeller (2008) using datasets from other basins.

2. Riparian and Flood Mitigation Studies: The Watershed Committee of the Cart Creek, North Dakota has approved a grant proposal submitted in May 2008. Darin Schepp, a master's student under my supervision, is now supported by the Red River Regional Council to investigate the effects of a pocket of retention basins on the flood mitigation objectives established for the watershed. A computerized hydraulic model of the stream is being established based on a combination of data sources, including Lidar data and GIS survey data.

3. Hydrologic Modeling Using NASA's Data: A specific research is being proposed on the use of several NASA datasets in modeling streams that feed the Devils Lake in North Dakota. The lake has risen significantly in recent years, creating flooding problems. In preparation for an extended study, a limited study using conventional hydrologic modeling techniques is being carried out by Joshua Hassell, another master's student under my supervision. The study will lay the foundation work for the extended study involving the climate change factors.

4. Snowmelt Dynamics on the Highways: Blowing snow research has been conducted by the Surface Transportation Weather Research Center (STWRC), UND. It involves field data collection, GIS processing, and statistical analysis. However, the current highway snow storage design in North Dakota is based on limited knowledge of the dynamics of snow in the roadways. Damon Grabow, a staff member of STWRC, is pursuing a Ph.D. degree under my supervision studying the snowmelt dynamics in the highway environment.

5. Stilling Basin Modeling-McVille Dam Model: A larger set of baffle blocks was tested for the McVille Dam spillway model built in Upson I Room 100 by Jake Wieland (Master's, 2007). A master's student Nicholas Kalenze completed the modeling study on the new blocks as part of his study in Applied Hydraulics (Cien 523). The results compliment the previous set obtained by Jake Wieland. A significant reduction in the hydraulic jump within the basin was observed. The new set of data is being analyzed and compared.

DR. MORETTI - Current research interest is using the Civil 3D computer program to teach design and assist students with their senior design projects.

DR. MAMAGHANI - Current main research activities since he joined the University of North Dakota in August 2002 include: (a) Developing nonlinear constitutive models to simulate the behavior of structural steels and confined concrete under multiaxial cyclic loading; (b) Nonlinear finite element analysis and ductility evaluation of steel and partially concrete-filled steel structures subjected to cyclic/seismic loading, (c) Development of new design guidelines and specifications for design of new structures as well as retrofitting and strengthening of existing deteriorated structures, and (d) Discrete Finite Element Modeling of masonry structures and rock systems. He has developed a seismic design method for ultimate strength and ductility evaluation of hollow and concrete-filled thin-walled steel tubular beam-columns. The method involves an elastoplastic pushover analysis and definition of failure criterion taking into account local buckling ignoring residual stresses. Recently, Dr. Mamaghani modified this method for the effect of residual stresses.

Dr. Mamaghani has also developed a research program with the North Dakota Department of Transportation (NDDOT) and the concrete industry. Involving graduate students and in collaboration with the NDDOT materials and research division, activities include conducting experiments to produce Self Consolidating Concrete (SCC) for application in North Dakota Department of Transportation Projects.

Dr. Mamaghani has presented his research outcomes in international conferences, and had several presentations in state and federal level meetings, such as a presentation on the seismic design of steel bridges for the Bridge Division of the Federal Highway Administration. Dr. Mamaghani's paper titled" Seismic Design and Ductility Evaluation of Thin-Walled Steel Bridge Piers of Box Sections" is published in the Journal of Transportation Research Board (TRB No. 2050) in October 2008. Recently, five articles of Dr. Mamaghani's work are accepted for publication and presentation in the upcoming international conferences.

DR. SULEIMAN – Dr. Suleiman has recently completed two research projects: (1) investigating the performance of a coarse aggregate pavement section near Grafton, North Dakota; and (2) evaluating the effect of aggregate angularity on the performance of asphalt pavement mixtures in North Dakota. Dr. Suleiman is currently conducting a study on the performance of fine HMA mixes in North Dakota. If successful, such fine mixes can be used in thin overlays and maintenance applications. Currently, an undergraduate student is helping Dr. Suleiman with this project. Graduate students are needed to work with Dr. Suleiman on future projects. Dr. Suleiman has recently been tenured and promoted to associate professor.

Dr. Suleiman traveled overseas during the second week of November 2008 to present the findings of the coarse-aggregate study in an international conference on roads. A paper will also be published in the conference proceedings.

L-R: Terry Fuchs (ND DOT Research and Materials Division), Joe Tonneson (UND Masters Student); Dr. Iraj Mamaghani (UND Faculty); Tom Bold, Rebecca Espinoza, & Clayton Schumaker (NDDOT Research and Materials Division).

Prepare specimens for pull out test on SCC (Dr. Mamaghani's research).

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