



# UND Civil Engineering Department Newsletter

School of Engineering  
and Mines

Volume 3, No. 1  
November 2007

## *2006 - 2007 Civil Engineering Graduates*

The following students received their *Bachelor's Degree in Civil Engineering* from UND during the 2006 - 2007 academic year:

**December 2006:** Michael Cook, Shane Duchscher, Brian Isaacson

**May 2007:** Casey Ackerman, Lee Becker, William Boucher, Aaron Derman, Nicholas Enblom, Luke Falken, Anne Girtz, Gregg Johnson, Ross Leppala, Shane Steiner, Troy Strassburg, Daniel Thomas

Graduates receiving honors:

one — summa cum laude

seven — cum laude

The following students received their *Master's Degree in Civil Engineering* from UND during the 2006 - 2007 academic year:

**December 2006:** Asif Mulla, M.S.

**August 2007:** Ryan Kotta, M.Engr.

The following students received their *Ph.D. in Engineering* (advisor Dr. Sukhvarsh Jerath) from UND during the 2006 - 2007 academic year:

**December 2006:** Sanjay Gurav

## *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); and Gary D. Sanders (2007).

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 few years.

## *Civil Engineering Cooperative Education*

This summer and fall, ten 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: Bolton & Menk; Gowan Construction; Richards Excavating; NDDOT; BDM Consulting Engineers; Construction Engineers; and Nodak Electric Cooperative.

Alumni who are interested in employing engineering students as co-ops can contact Don Johnson at the UND Office of Career Services/Coop Education, 701-777-4143.

## ***Civil Engineering Distance Engineering Degree Program (DEDP)***

This fall semester we have over 50 students enrolled in civil engineering through DEDP. The DEDP advisor is Dr. Harvey Gullicks. He can be reached at 701-777-3779 or harveygullicks@mail.und.edu.

## ***Civil Engineering Scholarships***

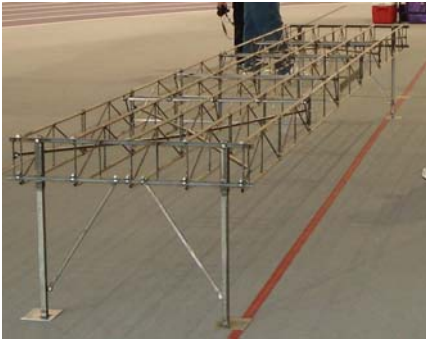
Civil engineering students were awarded approximately \$20,000 in scholarships for the 2007-2008 academic year. The following are some of the civil engineering students who received scholarships:

- Jonathan Bach - William F. and Inez L. McDonald Endowment Scholarship; Raymond & Edyth Sullivan Memorial; Pride of UND Scholarship.
- Aaron Boonstra - Associated General Contractors of ND Scholarship; Concrete Reinforcing Steel Institute Undergraduate Scholarship; Arthur Johnson Civil Engineering Scholarship.
- Brent Freese - Associated General Contractors of ND Scholarship (John Jardine).
- Derek Gown - Donald Floan Scholarship; UND Presidential Scholar Scholarship.
- Andrew Knoll - Clifford Johnson Civil Engineering Scholarship.
- Taryn Kuusisto - Marshall H. & Nellie Alworth Memorial Scholarship; Arthur Johnson Civil Engineering Scholarship.
- Matthew Luger - Associated General Contractors of ND Scholarship; Concrete Inc. Civil Engineering Scholarship; Arthur Johnson Civil Engineering Fellowship.
- John Rusten—William F. and Inez L. McDonald Endowment Scholarship.
- Corey Sadowsky - Gil & Peggy Fossum Scholarship; Pride of UND Scholarship.
- Matt Simmons - William F. and Inez L. McDonald Endowment Scholarship; UND Athletic Scholarship (Football).
- Alexa Skjold - Horatio Alger Scholarship; Outstanding High School Leadership Scholarship; UND Honors Presidential Scholarship; UND National Merit Presidential Scholarship.
- Geoffrey Slick - Minnesota Surveyors and Engineers Society (MSES) Scholarship.
- Grant Slick - Minnesota Surveyors and Engineers Society (MSES) Scholarship; Pride of UND Scholarship; Sigma Tau Scholarship; George & Joi Hase Swiggum Engineering Endowment; US Bank Scholarship.
- Joseph Snustad - Peterson Civil Engineering Scholarship.
- Sarah Tondryk - Donald Floan Scholarship; UND Presidential Scholar Scholarship.
- Joseph Tonneson - Associated General Contractors of ND Scholarship (Walt Swingen); Concrete Reinforcing Steel Institute Undergraduate Scholarship.
- Lisa Wersinger - Dean & Mae Wieland Scholarship.

## ***ASCE Student Activities***

This year's chapter president is Andrew Knoll; vice president is Joseph Tonneson; treasurer is Matthew Hangsleben; and secretary is Aaron Boonstra.

A team of UND civil engineering students participated in the annual ASCE steel bridge competition. The regional competition was held at the Minnesota State University-Mankato on March 10, 2007. Nine universities participated in this competition.



2007 UND ASCE Steel Bridge



2007 UND Steel Bridge Team

L-R: William Boucher, Shane Steiner, Jacob Wieland, Aaron Boonstra, Joseph Tonneson, Andrew Knoll, Justin Becker, Luke Falken, Matthew Hangsleben

## *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.

## *Faculty Notes*

Sukhvarsh Jerath, Ph.D., P.E., a member of the American Society of Civil Engineers (ASCE) was recently elevated to the membership level of “Fellow” within the Society. The Fellow designation is considered one of the most esteemed honors that Civil Engineers can receive from their peers. Fewer than 6% of ASCE members hold the title of Fellow. Dr. Jerath is recognized for his extensive teaching, research and publications in the areas of concrete material properties, buckling of cylindrical storage tanks, structural analysis and design. He has taught nearly 20 different engineering courses at the undergraduate and graduate levels during his 36-year tenure at universities in India and the U.S. Dr. Jerath has advised and supervised dissertations and theses for eighteen students. He has transferred his scholarly work to industry application as a consultant. Dr. Jerath has been active in his service to ASCE and other societies at many levels since 1972. He has been past president of the North Dakota Section of ASCE, Chair of ASCE District 8 Council, past president of the Red River group of ASME, and was faculty advisor to the Student Chapter for seven years, in addition to participating on several technical committees.

## *Research Notes*

**DR. GULLICKS** — Currently has two projects with the Grand Forks Water Treatment Plant (filter evaluation and membrane brine reclamation) supporting graduate students Jasper Klein and Donovan Voeller.

**DR. MORETTI** — Current research involves an evaluation of corrosion on highway bridges caused by road salt. For this project, three bridge decks on Interstate 29 in Fargo, North Dakota were each constructed with a different type of concrete. Prior to pouring the concrete, the bridge decks were fitted with corrosion monitoring sensors. Additionally, concrete samples are being collected from the bridge decks each year and analyzed for chloride content.

**DR. JERATH** — Dr. Jerath advised two M.S. students who graduated in August and December 2006, and advised one Ph.D. student who graduated in December 2006. Their thesis and dissertation topics related to the stability of cylindrical tanks under earthquake loading, buildings under blast loading, and dynamics of bridges under moving loads.

Published two journal papers in the areas of vibration of pipes, and durability of fly ash concrete. Presented a paper related to the use of industrial by-products in making concrete for bridge decks at the American Academy of Sciences 3rd Environmental Science and Technology Conference in Houston, Texas. Also wrote one chapter for a Text Book, "Structural Stability: Theory and Practice," Elsevier, Ltd., UK.

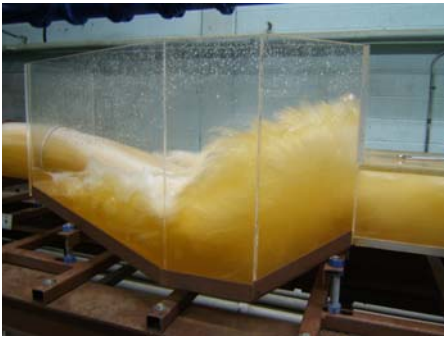
**DR. LIM** — The main research areas in hydraulics are characterization of turbulent flows in open channels and control structures, performance of energy dissipators, use of wavelet analysis in pipe-leak detections, and application of CFD. There are also research topics in hydrology that are of interest, including the use of L-moment approach in regional flood frequency analysis, and application of wavelet-based methods.

Current Projects: 1) Pipe-Leaks Detection : A unique scale model of a municipal water system has been designed and is being constructed by UND Civil Engineering graduate student Travis Sorum in the hydraulic engineering laboratory (Upson I Room 100) under the supervision of Dr. Yeo Howe Lim. The research titled "Detection of leaks in PVC pipeline using classical cepstrum with wavelet filtering" attempts to analyze collected pressure transient data from the water system to determine, at different pressures, the location of a leak in the time domain.

**DR. MAMAGHANI** — Dr. Mamaghani's 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 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. Recently, five articles of Dr. Mamaghani's work are accepted for publication and presentation in the upcoming international conferences.

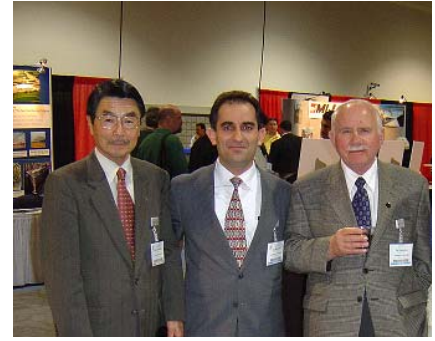
**DR. SULEIMAN** — Dr. Suleiman has developed a Special Research Outreach & Training Activities Program with the NDDOT and the asphalt industry. Activities include: setting up, calibrating, and Asphalt Pavement Analyzer (APA) testing; collaboration with NDDOT materials and research personnel in Bismarck and the Grand Forks District Office laboratories to train students and conduct experiments; and perform APA testing for Dakota Asphalt Pavement Association (DAPA) members. Dr. Suleiman has just completed two research projects investigating the performance of local asphalt mixtures in North Dakota. A third research study to evaluate the effect of aggregate angularity on the asphalt mixture is underway. Dr. Suleiman continues to seek graduate students with interest in topics related to asphalt pavement research.



Performance of truncated stilling basin modeled in a simulated 100-year flood event.



Dr. Nabil Suleiman



Professor Fukumoto; Dr. Iraj H.P. Mamaghani; and Professor Theodore Galambos at the ASCE Structures Congress in Long Beach, CA.



Travis Sorum has fabricated this pressurized constant head tank which will be utilized in his pipe-leak detections project using classical cepstrum method with wavelet filtering.



UND Civil Engineering Faculty/Staff  
L-R: Dr. Harvey Gullicks; Dr. Yeo Howe Lim; Mary Jo Rasmussen; Dr. Nabil Suleiman; Dr. Iraj H. Poulimamaghani; Dr. Sukhvarsh Jerath; Dr. Charles Moretti

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