2009

Annual Report

Year in Review

MPC

MOUNTAIN-PLAINS CONSORTIUM

Colorado State University • North Dakota State University
South Dakota State University • University of Utah • University of Wyoming

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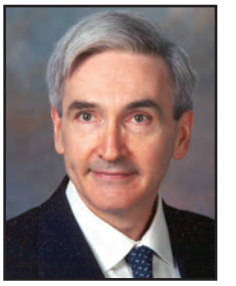
Contents

The Mountain-Plains Consortium (MPC) conducts research, education and training on transportation infrastructure and the movement of passengers and freight. It is a competitively selected university program, sponsored by the U.S. Department of Transportation, attracting the nation's best talent to study transportation and develop new transportation strategies and concepts. The Consortium includes North Dakota State University, Colorado State University, South Dakota State University, the University of Utah, and the University of Wyoming.

Director's Message



Dr. Denver Tolliver

The Mountain-Plains Consortium has always focused on the future, striving to improve transportation and mobility across our region, USDOT region 8. We've done that in numerous ways, from our work with students, the transportation professionals of tomorrow, to our efforts to extend the useful lives of pavements and bridges.

As our nation and region take a critical look at its transportation infrastructure and what it will take to maintain and improve that infrastructure for the next generation, our work is particularly relevant. The research, education and outreach of the Mountain-Plains Consortium will play a key role in guiding investments in infrastructure and in developing new knowledge to improve our transportation systems.

In the past year, we've launched several safety initiatives. These efforts focus on the rural roads that serve as vital links across our region. Unfortunately, the incidence of crashes and fatalities on those roads is considerably higher than on roads in more urban areas. We anticipate that our work will help identify some of the causes of this higher crash rates and develop strategies to reduce them.

We're also placing added emphasis on our education programs. According to the Bureau of Labor Statistics, transportation will be one of the fastest growing industries in the United States in the near future. This growth is occurring at a time when significant numbers of engineers and transportation professionals are nearing retirement. Because of its critical importance to the economy, transportation has been selected as one of 14 targeted industries in the President's High Growth Job Training Initiative. Our challenge is to meet the demand for well-trained professionals who are ready to address the needs of a diverse and complex transportation system. The growth in enrollment in our education programs and the addition of several new degree programs show that we're taking steps to meet that challenge.

This industry growth, coupled with economic stimulus investments in transportation infrastructure, is placing tremendous demands on the industry's current workforce. The Mountain-Plains Consortium, a long-time leader in offering distance education programs, is increasing its efforts in this area. Short-term training for transportation workers as well as longer-term education programs for professionals are helping the industry cope with growing demands.

This report details our student activities, research programs and our technology transfer activities. These accomplishments are evidence of the creativity and hard work of our faculty and the caliber of our students.

Student Program Activities

NDSU Graduate School Announces New Transportation Programs

The Transportation and Logistics Program in the North Dakota State University College of Graduate and Interdisciplinary Studies now offers two new graduate degrees and two certificate programs.

The programs will focus on urban transportation systems; linkages between transportation, land use, the environment, emergency response, and logistical delivery systems; coordinated planning, operations, and security; and the spatial dimensions of urban systems. The programs are coordinated by the Upper Great Plains Transportation Institute at NDSU and many of the classes will be taught by MPC faculty.

"Transportation systems have an enormous impact on urban systems," notes Denver Tolliver, associate director of the UGPTI. "These programs will prepare students and professionals to take an integrated approach to urban and transportation planning."

The master's degrees include:

- **Master of Science in Transportation and Urban Systems** degree which is targeted at students with strong research interests and capabilities who wish to work in the fields of research or education. Two courses for this program will be available in fall 2009.
- **Master of Transportation and Urban Systems** degree which is targeted at mid-career professionals and other candidates who wish to gain skills appropriate to their career without participating in advanced research. Two courses for this program will be available in fall 2009.

Certificate programs include:

- **Transportation and Urban Systems Certificate** which is an online program designed to enhance working professionals' credentials in the transportation and logistics field.
- **Transportation Leadership Certificate** which is an online program designed to prepare future leaders of the transportation industry. This prestigious program is an initiative of the Regional University Transportation Centers. NDSU is one of the premier institutions that will offer courses taught by graduate faculty. This program will be available fully online starting in spring semester 2010; however students are encouraged to begin the admission process in fall semester 2009.

Chad Stripling, SDSU Master's Grad, Named MPC Student of the Year


C. Stripling

Chad Stripling, a master's degree graduate from SDSU, was named Student of the Year for Region VIII at the Transportation Research Board annual meeting in Washington, DC, in January. Each year, the U.S. Department of Transportation honors an outstanding student from each participating University Transportation Center for achievements and promise for future contributions to the transportation field.

Students of the year are selected based on their accomplishments in such areas as technical merit and research, academic performance, professionalism, and leadership. Each student receives a certificate from the U.S. DOT and $1,000 from the student's university transportation center.

Stripling earned his M.S. in civil engineering from South Dakota State University in August 2008 and his B.S. in civil and environmental engineering from SDSU in 2006. He is currently a design engineer at S. A. Miro, Inc., a structural engineering firm in Denver. He is from Minneota, MN.

As a graduate research assistant in the Department of Civil and Environmental Engineering at SDSU from January 2007 to June 2008, Stripling's research focused on the structural performance of pre-stressed self-consolidating concrete bridge girders made with limestone aggregate. The study assessed the performance and feasibility of using pre-stressed self-consolidating concrete in South Dakota bridges. Stripling tested until failure, three full-scale bridge girders with composite decks in the Lohr Structures Laboratory at SDSU. In his thesis, Stripling analyzed the performance of the SCC girders including camber, transfer length, prestress losses, flexural stiffness and strength, and shear strength and compared the

results to those obtained from testing identical pre-stressed girders made with conventional concrete. A final report and two manuscripts that are based on Stripling's research are being prepared for publication.

Stripling graduated with a grade point average of 4.0 in both of his degrees. He was named SDSU Outstanding Senior and received the Phi Kappa Phi Outstanding Scholar Award, the John A. Focht National Chi Epsilon Scholarship, and the Golden Key International Honor Society Scholarship. He received the Minnesota Public Works Association Scholarship twice and the Minnesota County Engineers Association Scholarship four times. He also received a NSF Graduate Research Fellowship Honorable Mention.

In addition to his research duties, Stripling assisted in teaching undergraduate courses. While working toward his B.S., Stripling was a project engineer assistant at Daktronics, Inc., in Brookings, SD, where he designed and modeled structures for scoreboard display systems. From 2003 to 2006, he was a summer intern with the Lyon County Public Works Department in Marshall, MN, where he performed surveying work on highways using total station and GPS equipment.

Timely Dissertation Provides Flood Contingency Plan


M. Nasar

As emergency response officials in North Dakota pondered the possible evacuation of Fargo during the height of flooding in 2009, they looked to information developed by an MPC Ph.D. student at North Dakota State University for guidance.

Mohammad Naser was nearing completion of his dissertation in civil engineering on simulating emergency evacuations of small to mid-size cities. Most computer modeling of evacuation events had focused on larger cities and regional events such as hurricanes. For smaller cities, such as Fargo, there was little information available.

Although Naser's research provides a planning and modeling framework for any small urban area, his work used the Fargo-Moorhead area as a case study, drawing on information and expertise from the area and using local traffic models. The basic scenario he used in his research was a levee breach in the flood protection system along the Red River. "We wanted to know the average number of vehicles per household that would be evacuating the city and how long the evacuation would take," he explained.

Although existing traffic models could partially answer those questions, they were not designed to take into account the many human behavior factors that would come into play during an evacuation. Naser conducted household surveys to learn how many people would evacuate, how they would evacuate, how many vehicles they would use, what routes they would use and other information.

Naser's research indicates that human behavior research conducted in hurricane-prone areas may not translate well to evacuation planning in small communities in other areas of the country. The research will also help small communities identify resources available from their metropolitan planning organizations (like the Fargo-Moorhead Metropolitan Council of Governments, a cooperator in Naser's research) that can help them develop evacuation plans. The resources include traffic and transit plans, regional travel demand models and other data and planning resources.

"Traffic congestion caused by regional emergency evacuations can be life-threatening." Naser said. "The sudden increase in demand will result in excessive loads on roads not typically designed to handle those traffic volumes. The management of the transportation system during regional emergency events is critical to achieve a safe and efficient evacuation. The model developed for this study could be applied at the different stages of the emergency event and develop traffic management plans to support emergency evacuations."

That's exactly what officials in Fargo-Moorhead were looking for as record flood levels inundated the area in April. Fortunately, their plans for evacuation, at least in part based on Naser's research, never had to be implemented.

NDSU Students Present at Transportation Research Forum

Several Ph.D. students from North Dakota State University presented papers at the 50th Annual Transportation Research Forum held March 16-18 in Portland, OR. The Transportation Research Forum is an independent organization of transportation professionals which provides an impartial meeting ground for carriers, shippers, government officials, consultants, university researchers, suppliers, and

others seeking an exchange of information and ideas related to both passenger and freight transportation.


E. Lee

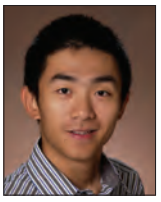
Eunsu Lee presented "Location and Routing Problems for Railroad Intermodal Terminal." The paper examines various scenarios for locating the intermodal terminals in the Upper Great Plains region and shows diverse transportation cost effects by selecting various routes. The study indicates that a new intermodal terminal in the study region will generate more demand and decrease the total logistics cost and congestion cost in the metropolitan areas.


L. Fan

Lei Fan presented "Optimization Model for Global Container Supply Chain - Imports to United States." The paper analyzes the supply chain network with primary focus on importing containers to the United States. An optimization model that integrates international trade and U.S. inland transport networks was developed. The model presents a framework for capturing impacts on the supply chain network due to underlying cost structure changes and potential infrastructure constraints.


I. Chen

Ieelong (Peter) Chen presented "Improving Cost Efficiency of Implementing RFID in the Railroad Industry." The paper examines potential benefits of adopting RFID technology in the rail industry. The results could be used for refining business processes and increasing the degree of visibility and decreasing expenditures for inventory, logistics, and transportation.


X. Chen

Xianzhe Chen presented "Optimal Dispatching Policy Under Transportation Disruption." The paper proposes an optimal vehicle dispatching policy for transportation disruption. This policy determines the optimal vehicle capacity and dispatching time along a route. The proposed method can be applied to various scenarios, such as mass transit dispatching, freight transportation, and aircraft shuttle scheduling.

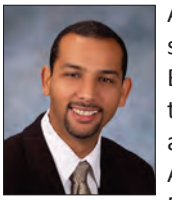
NDSU Student Earns TRF Foundation Scholarship


S. Leon

Steven Leon, Ph.D. student in transportation and logistics at NDSU, was awarded the Transportation Research Forum Foundation scholarship. This scholarship recognizes excellence in scholarship, research, and writing and is intended to encourage students to develop the interest and knowledge to support the long-term growth and modernization of the transportation industry. MPC Director Denver Tolliver recommended Leon for the award.

In addition to his studies, Leon is an adjunct professor at the University of North Dakota, teaching operations management and is a contributing writer for Professional Pilot Magazine. He is also the founder and president of The HighTOP Company, an e-learning enterprise which facilitates training and workforce development for small- and medium-sized companies.

Students Earn Paper Award


K. Bachkar

A paper presented by NDSU Ph.D. students Khalid Bachkar and Charles Briggs was selected as Best Paper in the Supply Chain Management Track at the 16th Annual Conference of American Society of Business and Behavioral Sciences Feb. 19-22 in Las Vegas. Their paper, "Managing Risk in Pharmaceutical Global Supply Chain Outsourcing: Applying Analytic Hierarchy Process Model," examines some of the risks associated with the trend toward global supply chain outsourcing in the pharmaceutical industry. The paper also suggests some management strategies that can be employed to tame a firm's exposure to supply chain outsourcing risk.


C. Briggs

CSU Student Earns WTS Honor


J. Wu

Jun Wu, a CSU Ph.D. student, was awarded the Helene M. Overly Memorial Graduate Scholarship of $3,000 in February by the Women's Transportation Seminar of Colorado. Wu was also recommended by the group for international level scholarship competition.

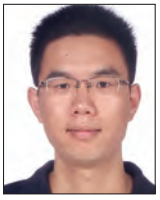
The award recognizes Wu's dedication and scholarship in the field of transportation. She has been involved in several MPC projects under the direction of her faculty advisor, Suren Chen, assistant professor in the CSU Department of Civil and Environmental Engineering.

CSU Student Defends Thesis


G. To

In December 2009, Giang Lam To successfully defended his doctoral thesis in structural engineering and mechanics at Colorado State University. His research was partially supported through MPC funding. He also received academic and housing support for three years from the Vietnamese government. A unique feature of his defense was the participation by academic committee member, Dr. Massimo Fragiacomo via a Skype link to the University of Canterbury in New Zealand where he was in residence as a visiting professor. Skype is a computer/telephone-based audio visual teleconference technology.

Student Presents at Wind Engineers Workshop


F. Chen

CSU Ph.D. student Feng Chen was awarded $500 in travel support from the American Association of Wind Engineers to attend the association's first workshop in Vail, CO, in August. At the workshop, Chen presented a paper about research on a novel vehicle stability assessment model that considers the effects between vehicles, wind, and other adverse environmental conditions. Co-author of the paper was Suren Chen, assistant professor in the CSU Department of Civil and Environmental Engineering.

Scholarships Awarded at NDSU

The UGPTI awarded four scholarships at its annual Awards Banquet Oct. 9. The $1,500 scholarships are awarded each year through the Mountain-Plains Consortium with funding from the US DOT University Transportation Centers Program.

Andrew Bratlien and Jacob Loegering received Transportation Engineering Scholarships. The scholarships recognize academic achievement and promote the education of transportation students at NDSU.


A. Bratlien

Bratlien is a senior in civil engineering from Laporte, MN. He is a graduate of Bemidji High School and the son of Harlan and Janet Bratlien. He is a member of the American Society of Civil Engineers, served as president and vice president of the NDSU chapter of the Institute of Transportation Engineers, was treasurer of Tau Beta Pi, and served as president and secretary of NDSU residence hall government. While at NDSU, he received an NDSU Presidential Scholarship and was named to the NDSU dean's list three times. He was also admitted to Tau Beta Pi, an engineering honor society. Students eligible for membership must be in the upper eighth of their junior class, and in the upper fifth of their senior class. Bratlien has been an undergraduate research assistant at the Institute's Advanced Traffic Analysis Center since March 2007. He assists in traffic data collection and analysis, simulation analysis, and transportation planning projects.


J. Loegering

Jacob Loegering is a senior in civil engineering from Milaca, MN. He is the son of Roger and Susan Loegering. While in high school, he earned college credits from Northwestern College and St. Could State University. He is a member of the American Society of Civil Engineers, the Knights of Columbus, the Fellowship of Catholic University Students, and Collegians for Life. At NDSU, he has received the Presidential Honor Award and was named to the NDSU dean's list for three semesters.

Kevin Buxa and Tyler Klain received Paul E.R. Abrahamson Scholarships. The scholarship is named in honor of Paul E.R. Abrahamson, the first administrator of the North Dakota Wheat Commission and a leader in the North Dakota agricultural community.


K. Buxa

Buxa is a junior in agricultural economics from Harvey, ND. He is a graduate of Harvey High School and is the son of Stan and Julie Buxa. He is a member of the NDSU Agribusiness Club and is active in NDSU intramural sports. He was named to the NDSU dean's list for three semesters.


T. Klain

Klain is a senior in agricultural economics from Ruso, ND. He is a graduate of Turtle Lake-Mercer High School and the Son of Durnell and Darcy Klain. Before coming to NDSU, he attended Minot State University and also earned college credit from Bismarck State College. At NDSU, he is a member of the Saddle and Sirloin Club, the Agribusiness Club, the National Society of Collegiate Scholars, Blue Key Honor Society, and is a nominee to the Phi Kappa Phi Honor Society. He is a vice president of membership for Alpha Kappa Psi, a professional business fraternity. He has served as vice president and president of the North Dakota Junior Simmental Association and has been a counselor for Kamp KACE (Kids Against Cancer Everywhere). He has been named to the NDSU dean's list five times.

New Transportation and Logistics Student Organization Meets

A new student organization at NDSU, the Association of Transportation and Logistics, met for the first time Oct. 3.

The group will focus on examining solutions to transportation challenges based on logistic technology. The group will look at "optimal multi-location shipment management, multi-carrier management, consolidations, real time tracking/ tracing, and automation of processes and security," said Peter Chen, president of the new student organization.

The group has a variety of activities planned for the upcoming year including RFID trainings and tours of various technology companies in the area. Chen said he hopes membership in the group can be increased to more than 50 by January. ATL is joining NDSU's list of more than 250 organizations.

NDSU Program Renamed to Reflect Broad Focus

The Master of Managerial Logistics Program is a new name for the Master of Military Logistics Program at North Dakota State University that more accurately reflects the program's breadth.

"The new name reflects the content of the courses in the program and will allow us to market the program to a broader audience and recruit students from a wide variety of disciplines," notes Denver Tolliver, director of the program. Tolliver also serves as director of the MPC.

The program was developed three years ago to educate military and department of defense professionals in principles and applications of business transportation and logistics and supply-chain management. It was anticipated that they would apply those principles in military settings. "We do not want to imply that we are focusing entirely on logistics within the military," Tolliver says.

Students in the intensive, one-year program leave with a strong grasp of the business side of transportation and supply chain management. "This education will benefit them after they leave the military," Tolliver says. "The new name will help them market themselves in the civilian job market."

Non-military students are more likely to enroll in the program if the name reflects its focus on supply chain practices in the private sector. "Broadening enrollment is critical to the sustainability and growth of the program. The simple change to 'managerial' logistics greatly increases our chances of growing the program and offering a broader perspective for class discussions," he says.

"The name change does not reflect disconnect between the original program and the current program," Tolliver notes. "The courses and content have not changed and the name change is consistent with the history and our growth expectations for the program. Retaining the MML acronym will allow us to capitalize on our existing name recognition. This step simply reflects the growth and progress of this program."

NDSU Students Earn Best Paper Award at International Conference


C. Enyinda

NDSU doctoral students Chris I. Enyinda and Charles Briggs and Won Koo, professor of agribusiness and applied economics, received a best paper award during the Global Academy of Business and Economic Research international conference in Orlando, FL, Sept. 17-19.

Briggs and Enyinda presented the paper, "The Role of Competitive Intelligence Leverage in Supply Chain Risk Management Strategy." The paper proposes a competitive intelligence approach to managing supply chain risks. The paper has been published in the Global Academy of Business and Economic Research Proceedings. It also is being considered for publication in the Journal of Global Business and Research.


C. Briggs

Briggs is studying transportation and logistics. He is from Nigeria and is on sabbatical from the faculty at Alabama A&M University in Normal, AL. Upon completion of his doctorate, he plans to return to Alabama A&M to continue a teaching, research, and publication career. Enyinda is a professor and coordinator of the Logistics/Supply Chain Management Program at Alabama A&M University and is working on his second doctorate. He originally is from Huntsville, AL.

Academic advisers are Denver Tolliver, MPC director, and Koo, who also is director of the Center for Agricultural Policy and Trade Studies at NDSU.

Students Attend International Transport Economics Conference

NDSU transportation and logistics graduate students attended the International Transport Economics Conference June 15-16 at the University of Minnesota. The MPC sponsored their trip.

The International Transport Economics Conference (ITrEC) brings together researchers, practitioners, and policy makers interested in questions of transport economics. Key topics of the conference included: revenue and finance; congestion, pricing, and investment; production function and cost estimation; transport demand; energy and environment; safety; institutions and industrial organization; and transport and land use.

NDSU's transportation and logistics' graduate student Lei Fan presented his paper, "Global Supply Chain in Container Shipments: Impacts of Congestion on Imports to United States," at the conference. Other students who attended the conference were Qing Liu, Eunsu Lee, Elvis Ndembe, Khaled Bachkar, Eileen Campbell, Steven Leon, Ieelong Chen, and Chris DeHanna.

Chen Presents at Winter Simulation Conference

NDSU Ph.D. student Xianzhe "George" Chen presented, "Supply Chain Risks Analysis by Using Jump-Diffusion Model," at the annual Winter Simulation Conference in Orlando, FL, in December. His presentation was about modeling the supply chain demand disruption by using a jump-diffusion model and investigating the effects of demand risk on the performance of supply chain in continuous time setting by using simulated annealing simulation optimization method. The conference is the premier international forum for disseminating recent advances in the field of system simulation. Chen was selected as the chair of the "Monte Carlo Risk Analysis in Finance, Operations, and Optimization" track, which includes presentations from Northwestern University, the University of Maryland and NDSU.

Undergraduates Placed in Summer Internships

Seven Colorado State University (CSU) undergraduate students in civil and environmental engineering were placed in summer 2008 internships via the North Front Range Transportation Research Internship Program (NFR-TRIP). The NFR-TRIP is a collaborative program of CSU (via the Mountain-Plains Consortium) and the North Front Range Metropolitan Planning Organization. Interns placed were: Raymond Nickle with DMJM HARRIS and Todd Rullo with Stantec Consulting Inc., both in Denver; Matt Figgs and Kelly Larson with Weld County - engineering; Robert Redd with city of Loveland – engineering; William Mihelich with city of Loveland – stormwater; and Mark Fisher with city of Berthoud – public works department.

French Students in Residence at CSU

Three undergraduate students from France - Jonathan Finot, Antoine Morer, and Jean-Baptiste Poljak - were in residence at Colorado State University in summer 2008. They completed practical training requirements for their degree from their home institution, Ecole National Superieure Des Technolgies et Industries at the Universite Henri Poincare – Nancy 1. The students were involved in various research projects funded by the MPC and the National Science Foundation.

University of Utah Students Receive Grant

The University of Utah ITE Student Chapter (composed of Utah Traffic Lab research assistants) was recently awarded a $1,000 grant. The grant was given to the students from the national ITE offices for doing a parking and trip generation data collection project. The students collected data from senior adult and assisted living centers, and then completed a detailed report summarizing the data.

Student Profiles

Colorado State University

Susan Balogh is pursuing doctoral studies and research in the area of mechanics of solid wood deck systems and connections for interfacing with concrete in layered composite deck bridges. She earned an M.S. in civil engineering in 1995 from Budapest University of Technology and Economics. Presently, she is assistant professor at Metropolitan State College of Denver, where she serves as program coordinator for the Civil Engineering Technology academic program. Following her M.S. degree, she was principal engineer and a professional structural designer for BALO, LTD., in Budapest, Hungary. Following that, she was coordinator of the testing group for INTER-CAD, LTD., a structural software development company, also located in Budapest.

John Boulden is presently conducting research on the time-dependent behavior of cambered wood concrete beams as a predecessor to examining a short span bridge system. He is an M.S.-level graduate student and was supported as a research assistant by MPC funding. Presently, he is employed at the firm of CTL Thompson Structural Consulting Engineers as a staff engineer, after previous experience as a field technician with that firm. Before his experience with CTL, he was a pavement management intern with the city of Fort Collins, CO. John was the recipient of a Computer Science, Math and Engineering Scholarship from CSU in 2002.

Feng Chen received his master's degree and bachelor's degree from China Academy of Building Research and Peking University, respectively. Chen worked on wind effects on buildings between 2004 and 2007 and he has just started his second year Ph.D. study with Dr. Suren Chen at CSU. His Ph.D. research focuses primarily on transportation safety under adverse environmental conditions. He has been working on several research projects from different sponsors including one from MPC. He has published and presented his research findings in several conferences.

Thang Dao earned his B.S. in Vietnam and his M.S. from CSU in 2005 related to genetic algorithms applied to structural optimization. He is studying spatio-temporal load control on structures such as railroad bridges and has been funded by the MPC. His anticipated graduation date is 2009.

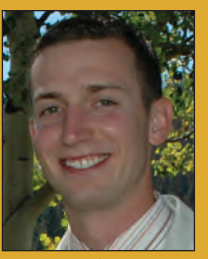
Nathan Miller received his B.S. degree in engineering from Dordt College in Iowa. He is presently a graduate teaching assistant in the Department of Civil and Environmental Engineering. He is conducting MPC-supported research on shear spiking to stiffen and strengthen 50- to 75-year-old timber railroad bridge members provided by the BNSF railroad. The BNSF is interested in the feasibility of the method for field repairs. Miller's thesis will focus on time-dependent effects on wood-concrete members comprised of salvaged utility poles.


S. Balogh


J. Boulden


F. Chen


T. Dao


C. Riley


C. Turnbull-Grimes

Carolyne Namagga holds a B.S. degree in civil engineering and is currently pursuing an M.S. degree in structural engineering at Colorado State University. She previously was employed for two years at an engineering consulting firm as a design engineer. She has undertaken various projects which involved structural design and supervision, soil investigations, and preparation of civil/structural drawings. Currently, she is working as a research assistant at the Department of Civil and Environmental Engineering, investigating the optimal usefulness of fly ash in structural concrete.

C.J. Riley received his B.S. in engineering from Swarthmore College in Pennsylvania in 2001. He came home to Colorado to obtain his master's from CSU in 2003. After two years working with the Wyoming DOT developing design software for transportation structures, Riley returned to CSU to complete a Ph.D. in structural mechanics with a focus on the numerical analysis of flexible structures.

Chris Turnbull-Grimes is an M.S. student in structural engineering and solid mechanics and received his B.S. degree in civil engineering from Colorado State University in spring 2007. He is a past president of the ASCE student chapter and co-captain of its steel bridge team. He is a research aide on MPC projects on improved safety of bus shelters and upgrading a vehicle impact facility to Department of State standards for testing anti-terrorism structures.

Giang Lam To is a graduate research assistant in civil engineering, pursuing a doctoral degree. His research interest is in advanced structural modeling of layered composite wood-concrete systems. To is studying time dependent behavior and rheological phenomena under structural loading, including creep, shrinkage, swelling, humidity, mechano-sorptive effects, etc. He completed his M.S. degree in 2001 at the University of Transport and Communications in Hanoi, Vietnam. His thesis was "Programming to Analyze Girder System with Arbitrary Boundary under Lateral Load by Finite Element Method." He is attending CSU in part because of competitive-based funding from his government for gifted, outstanding students.

Ethan Wiechert earned his B.S. degree in civil engineering from Colorado State University in 2002. Professionally, he has practiced in the fields of structural and geotechnical engineering. Ethan is currently a senior project engineer at Earth Engineering Consultants, Inc. of Windsor, CO, and is registered as a professional engineer in the state of Colorado. In 2008, he started his graduate studies in the geotechnical engineering program at CSU and has worked as a research assistant for Prof. Antonio Carraro. His research project is entitled "Beneficial Use of Off-Specification Coal Combustion Products to Increase the Stiffness of Expansive Soil and Rubber Mixtures."

Jun Wu finished her master's and bachelor's degrees at Chang'an University in China and is currently pursuing her Ph.D. degree in the structure group at CSU. Wu's research interest is focused on bridges and her research study focuses on lifetime analysis and damage detection of long-span bridges. She has been involved in several research projects including MPC research projects. Since Wu joined Dr. Suren Chen's group in the Department of Civil and Environmental Engineering in January 2007, her research results have been reported in several journal and conference papers.


G. To


J. Wu

North Dakota State University Ph.D. Students

Monsur Ahmed has been working as a graduate research assistant at the Upper Great Plains Transportation Institute since fall 2008. He received his B.S. and M.S. degrees in economics and master of science degree in economics as well, in the United States. Currently, he is working on his Ph.D. degree in transportation and logistics at North Dakota State University. In his research, Monsur focuses on economic and financial implications from the point of view of a transportation analyst in the field of transportation and logistics.

Khalid Bachkar is originally from Casablanca, Morocco. In 1999, Bachkar earned a bachelor's degree in business administration from Hassan II University – Mohammedia, Morocco. In 2005, he earned a master's degree in information systems from Shippensburg University – Pennsylvania. Currently, Bachkar is a member of the Association for Computing Machinery. In the future, he plans to teach and conduct research relating to international logistics and supply chain management.

Charles Briggs of Abonnema, Nigeria, is pursuing a concentration in transportation economics and regulation, and a possible second concentration in logistics and supply chain management. His research will primarily focus on the challenges facing the multinational petroleum industry supply chain. He received his B.B.A. in international business from Schiller International University in London, England. In 1986, he received his M.S. in economics from Alabama A&M University, with a concentration in finance. Upon graduation, Briggs was employed by the university to teach in the Department of Economics. Upon completing the Ph.D. program in transportation and logistics, Briggs will return to Alabama A&M University to continue his teaching career.

Eileen Campbell received her undergraduate degree in marketing with a concentration in E-commerce and an MBA from the Florida Gulf Coast University. Campbell began her studies at NDSU in 2008. Upon completion of her degree, Campbell hopes to continue her career at a research university where she will also teach. She is interested in the implications of port capacity on corporations with global operations particularly with regard to the outsourcing of manufacturing and the ports' ability to facilitate the large volume of imports to the United States. Campbell is also interested in how technology can increase opportunities for companies to embrace the green supply chain and become environmentally responsible.

Yolanda Carson is originally from Buffalo, NY. She earned her Ph.D. in industrial engineering and systems science in 1998 from the State University of New York at Binghamton under a National Science Foundation Fellowship. Her dissertation was "An Evolutionary-Strategy Based Simulation-Optimization Methodology for Multi-Objective-Optimization." She also earned an M.S. in industrial engineering with concentrations in production systems and manufacturing engineering and a B.S. in industrial engineering from the State University of New York at Buffalo. In the future, Carson would like to teach, conduct research, and consult in the area of operations research/ military operations research focusing on modeling and simulation, statistical analysis, and strategy development for applications in transportation, logistics, and supply chain systems.

Ieelong (Peter) Chen of Kaoshiung City, received his M.B.A. from California State University in Carson, CA, in 1999. Chen became interested in supply chain management when he noticed the distribution system in Taiwan suffering great changes due to manufacturing firms moving their production lines to other countries, where the labor cost is low. He is interested in how to apply radio frequency


M. Ahmed


K. Bachkar


C. Briggs


E. Campbell


Y. Carson


I. Chen


X. Chen


C. DeHaan


A. Dybing


C. Enyinda


L. Fan


T. Flanagan

identification (RFID) technology and integrate it with the current information system to improve the efficiency of the distribution. He is especially interested in studying new supply chain management theories.

Xianzhe Chen is working to finish his Ph.D. and expects to graduate in 2007. Chen received his B.S. in automation and business administration from the Wuhan University of Technology in China in 2003. He came to NDSU, earning an M.S. in industrial engineering in 2006. Chen is interested in researching quality, logistics and supply chain management, forecasting, and time series.

Christopher DeHaan of Fargo, ND, is finishing his MBA at NDSU. He will continue at NDSU with the Ph.D. in transportation and logistics program. DeHaan received his B.S. in manufacturing engineering from North Dakota State University in 2006. He is currently working full time as a manufacturing engineer in a local small business. He is interested in supply chain management and transportation security issues.

Mohamed Diab earned his M.S. degree in civil engineering from NDSU in 2006 with an emphasis in construction management. He earned his B.S. in architectural engineering from Ain Shams University in Cairo, Egypt in 1986. His research interests are total quality management, innovative project delivery methods and project construction and risk management. His current research study is on the impact of risk on highway transportation projects. He plans to finish his Ph.D. and MBA in the coming year. He has more than 20 years of experience in construction maagement. He recently worked as an adjunct faculty and assistant professor at NDSU and Minnesota State University-Moorhead where he taught design and construction management undergraduate and graduate courses. He received an NDSU teaching award for 2005-2006. He is currently working as a graduate research assistant with the Upper Great Plains Transportation Institute.

Alan Dybing is a researcher at the Upper Great Plains Transportation Institute focusing on the areas of regional economic impacts of transportation infrastructure investment in North Dakota and on modeling intermodal facility locations. Dybing received his B.S. in agricultural education from North Dakota State University in 1999, followed by his M.S. in 2002. Currently, Dybing is working on his doctoral dissertation.

Chris Enyinda of Huntsville, AL, is finishing his second Ph.D. Enyinda received his M.S. in economics with an option in management and an M.B.A. in management both from Alabama A&M University, Huntsville. Enyinda then went on to receive his first Ph.D. in applied agricultural economics with primary concentration in marketing and price analysis and secondary concentration in logistics and transportation in 1995 from the University of Tennessee, Knoxville. Enyinda's research focuses on "Modeling Risks Management in the Global Pharmaceutical Supply Chain Logistics." Enyinda hopes to provide insight to better understand the risks and vulnerabilities that can disrupt global pharmaceutical manufacturing supply chain logistics. Upon completing the Ph.D. program, he will return to teaching, research/ publishing, and consulting in the area of transportation, logistics, and supply chain management for Alabama A&M University.

Lei Fan is working to finish his Ph.D. in transportation and logistics. In addition, Fan researches material handling, warehousing, and grain terminal engineering. He is interested in modeling border crossing, port terminal trip generation, and strategic planning for supply chain systems. He earned his B.S. in engineering at Zhengzhous Grain College, now known as Henan University of Technology, in China. In 2005, Fan received his M.S. in engineering from the University of Manitoba in Canada. In the future, Fan wants to conduct consulting work in transportation and logistics engineering with a focus on research, design, and evaluation of engineering projects.

Thomas Flanagan received his B.S. from the United States Air Force Academy in Colorado Springs, CO. He also received a M.B.A. from Chapman University in Orange, CA. He earned an M.S. in global supply chain management from the University of Alaska at Anchorage. Flanagan does research at the UGPTI on remote logistics, remote disaster response, business development, military logistics, and global air logistics. In the future, Flanagan hopes to research the impacts and implications of transportation and logistics availability on the quality of life of remote arctic communities. In addition, he would like to help the development of Alaskan businesses by lowering rural logistic costs. Finally, by teaching, he hopes to help students reach their full potential.

Yinan Hu is from Wuhan, China. She plans to pursue a career in consulting, teaching or research. Her main research interests include supply chain management, logistics economics and highway planning. In 2007, she earned her bachelor's degree in management from Zhongan University of Economics and Laws in Wuhan. Hu received the third prize for Undergraduate Special Scholarship for excellent individual performance in academic competition three times, and is also a three-time recipient of the first place prize of National Renmin Scholarship.

Poyraz Kayabas of Ankara, Turkey, received a B.S. in mathematics and computer science and another B.S. in industrial engineering from Cankaya University in Ankara, Turkey, in 2003. He moved to Fargo, ND, in 2004 and in 2007 completed his M.S. in industrial engineering and management at NDSU. Kayabas is interested in supply chain management and optimization.

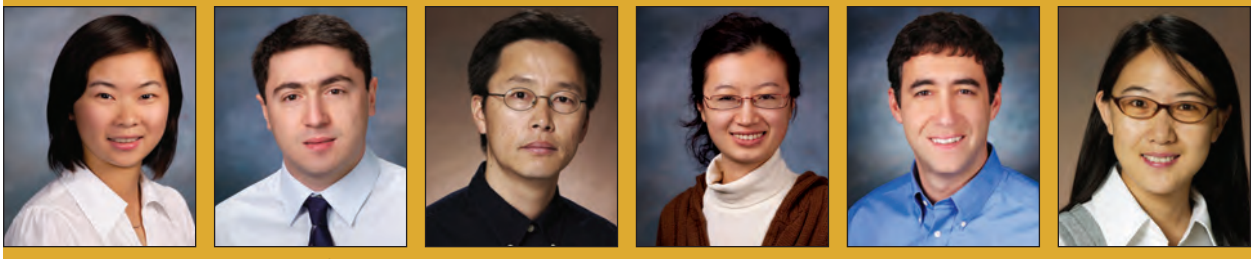
EunSu Lee received his B.S. in computer engineering from Kwandong University in South Korea in 1996. Lee received his M.B.A. from Hanyang University, also in South Korea, in 1999. Currently, Lee is working on his M.S. in industrial engineering. Lee conducts research at the UGPTI in the areas of multimodal routing, logistics network simulation, and aviation planning. After graduation, Lee plans to work as a consultant to enhance business or work for other institutions as a researcher.

Qing Liu is from Rizhao, China. Lui earned a bachelor's degree in transportation from Dalian Maritime University in Dalian, China. She plans to eventually earn her Ph.D. from NDSU. Her primary research interests include supply chain management and port planning.

Steven Leon, originally from Odenton, MD, graduated Magna Cum Laude from the University of North Dakota in 1990 with a degree in aeronautical sciences. He continued his education at Loyola College in Maryland where he received his MBA in International Business in 2006. Leon's research interests include aviation infrastructure investment, privatization of airlines and airports, as well as transportation policy. He plans to work with an international association or organization to establish aviation transportation systems that promote economic growth for developing countries. Leon would like to teach in the fields of supply chain management and operations management.

Pan Lu earned her B.S. at North China Electric Power University in 2002. She is currently a teaching assistant in the transportation and logistics program. Her primary research interest is developing mathematical models for asset management. Currently, she is working on a transportation fuel efficiency study which examines the relative efficiencies of surface transportation modes, and is using LTPP data to test statistical models of pavement performance using LTPP data.

Jeremy Mattson began working with UGPTI's Small Urban & Rural Transit Center in 2007. He has conducted research on alternative fuels, energy prices, and transit ridership. He holds a B.A. degree



Y. Hu | P. Kayabas | E. Lee | Q. Liu | S. Leon | P. Lu

in economics and business management and an M.S. degree in agricultural economics.

Diomo Motuba of Buea, Cameroon, earned his M.S. in agribusiness and applied economics from North Dakota State University, and may pursue a career in teaching or research. Motuba received his B.S. in botany from the University of Buea in Cameroon in 2000. At the UGPTI, Motuba researches freight transportation planning and the development and incorporation of freight into transportation planning models. In addition, he researches the use of GPS technology and logistics in improving planning models.

Elvis Ndembe began studying for his Ph.D. at NDSU in the spring semester of 2009. He holds an M.S. degree from NDSU in agribusiness and applied economics. He also holds a B.S. degree in banking and finance from the University of Buea in the Southwest Province of Camaroon. Ndembe is a native of that area. His research focuses on bridge management systems and related studies to evaluate the cost-effectiveness and strategies required for the maintenance, repair, and rehabilitation of bridges. After attaining his degree, Ndembe hopes to work for an international organization that promotes growth and development in developing countries. He would also like to teach and conduct research at the university level.

Jamie Paurus of Frazee, MN, is researching supply chain management. Paurus earned his B.S. in university studies in 2003 at NDSU. In 2005, Paurus received his master's of business administration also from NDSU. In the future, Paurus will continue teaching at Valley City State University, Valley City, ND, in the Business and Information Technology Division.

David Ripplinger is a researcher at the Upper Great Plains Transportation Institute in the areas of community transportation systems, intelligent transportation systems, student transportation and public transportation economics. Ripplinger received his B.S. from North Dakota State University in 2001, and his M.S. from Iowa State University in 2003.

Marc Scott hails from Trinidad and Tobago. He received his B.S. in business economics and an M.S. in transportation from South Carolina State University. Scott's research interests include: international logistics, supply chain management, transportation planning and policy, and strategy. In the future, he hopes to pursue a career in business, consulting, and research.

Meera Singh received a B.A. in economics from Banaras Hindu University, India, in 1993 and her M.A. in economics from Ch. Charan Singh University, India, in 1995. She also received her M.S. in statistics from NDSU in 2003. Singh is currently finalizing a dissertation in truck safety. Using data from the Large Truck Crash Causation Study, she has developed a statistical model to predict the likelihood of fatalities during crashes, as a function of: distractions to drivers, driver performance, roadway surface defects, roadway geometry, environmental conditions, and vehicle defects (such as inoperative brakes). Singh expects to graduate in the spring of 2010.

Jeffrey Wendt received his undergraduate degree in business management from Dallas Baptist University and an MBA with a concentration on supply chain management from the University of Dallas. His research interests are in the improvement of the supply chain distribution systems through the use of emerging technologies. Wendt is currently employed by a major school book publisher and plans to use the transportation and logistical knowledge he'll be gaining to improve the current supply chain structure within his company. His long-term goals are to teach, concentrating on supply systems specifically focused on implementation and utilization of advanced systems and technologies. Wendt is a member of Sigma Iota Epsilon (S.I.E.) for his academic achievements.


J. Mattson


D. Motuba

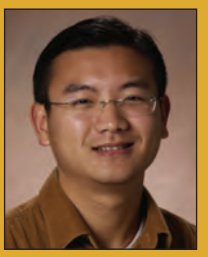

E. Ndembe


D. Ripplinger


M. Scott


M. Singh


J. Wendt


H. Zeng


S. Condon


Z. Roberson-Zetina

Hai Zeng expects to finish his Ph.D. in the spring of 2010. Zeng does research on the use of Radio Frequency Identification (RFID) in pharmaceutical loss management, as well as research on long-term pavement performance. Zeng earned his B.S. at the Guilin University of Electronic Technology in June 2003, and went on to earn his M.S. from NDSU in 2006. Zeng hopes to work at a logistics and supply chain consulting firm dealing with logistics and supply chain design and optimization or work with the applications of RFID.

Master's Students – Agribusiness and Applied Science

Steven Condon is from Clara City, MN. He graduated Summa Cum Laude with his B.A. in international business and Spanish, from Buena Vista University in Storm Lake, IA. He is currently analyzing data from 124 major trucking firms from 1999-2003 to determine which firms were most efficient and identify reasons for the lacking firms' inefficiencies.

Zoë Roberson-Zetina is from Belmopan, Belize. She earned her bachelor's degree in business administration from the University of Belize, Belmopan campus, in 2006. Her research will look at the spatial shifts in the U.S. potato industry to address the effects of and the extent to which variables such as land and water availability, location, environmental regulations, and transportation affect the spatial shifts and structure of processing and production in the industry. After she has completed her master's degree at NDSU, Roberson-Zetina plans to return to Belize to find a position within the government sector to assist in the development of Belize.

Jason Middleton – no bio available.

Master's Students – Civil Engineering

Jason Baker is an associate research fellow with the Advanced Traffic Analysis Center working in the areas of traffic operations and intelligent transportation systems. He previously worked with the center as an undergraduate research assistant. His work focuses on data collection procedures and enhanced traffic analysis through the use of advanced traffic sensors. Baker is currently working on his master's degree in civil engineering.

Andrew Bratlien has been working with the Advanced Traffic Analysis Center since March 2007. He assists in traffic data collection and analysis, simulation analysis, and transportation planning projects.

Eric Gunderson works with the UGPTI's Department of Transportation Support Center. He graduated with a civil engineering undergraduate degree in May. His research will involve urban work zone traffic control modeling and analysis.

Jeffrey Jirava – no bio available.

Mohammad Naser worked with the Advanced Traffic Analysis Center (ATAC) beginning in August of 2004. He holds a B.S. degree in civil engineering from the Jordan University and an M.S. degree in civil engineering from NDSU. Mohammad is primarily involved with transportation planning and travel demand modeling at ATAC. He is currently pursuing a Ph.D. in Civil Engineering at NDSU.


J. Baker


A. Bratlien


M. Naser

South Dakota State University


Z. Gutzmer


R. Larsen


J. Stripling


C. Stripling

Zachary Gutzmer is a civil engineering graduate student at South Dakota State University (SDSU). Gutzmer, a native of Garretson, SD, earned his B.S. in civil and environmental engineering from SDSU in December 2006. His graduate research involves the development and assessment of self-consolidating (SCC) mix designs for use in pre-stressed bridge girders. The experimental work was conducted at the Materials Laboratory at SDSU. Based on Gutzmer's findings, special SCC provisions will be developed for use by the South Dakota Department of Transportation. The research study is co-sponsored by MPC, the South Dakota Department of Transportation, and Cretex West of Rapid City, SD. Gutzmer completed his M.S. degree in May 2008.

Ryan Larsen is a graduate student in the civil and environmental engineering program at SDSU. He is a native of Elk Point, SD. Ryan entered the civil engineering program at SDSU in December 2004 and earned his B.S. degree in civil and environmental engineering in May 2008. He worked as an undergraduate research assistant with faculty members Francis Ting and Allen Jones on a study of scour simulation using the SRICOS method since the study started in January 2007. The study was co-funded by MPC. Ryan is now a graduate student at SDSU working on a co-funded project by MPC that is an extension of the work he performed as an undergraduate researcher. Ryan published a paper entitled "Erosion Function Apparatus" in Volume 6, 2008, of the Journal of Undergraduate Research by South Dakota State University. Jones and Ting were faculty sponsors.

Tom Larsen is a graduate student in the civil and environmental engineering program at SDSU. He is a native of Morgan, MN. Tom entered the civil engineering program at SDSU in September 2004 and earned his B.S. degree in civil and environmental engineering in May 2009. He worked as a summer intern for Bolton and Menk, Inc. and performed surveying and construction observation during the summers of 2006-2008. Tom is now a graduate student at SDSU and is working on a project co-funded by MPC and the South Dakota Department of Transportation. The project investigates the durability and retroreflectivity of different pavement markings on roads throughout the different regions of South Dakota.

Brooke Postma, a native of Madison, SD, is currently a senior undergraduate student at South Dakota State University. She began at SDSU in the fall of 2005 and will earn her B.S. degree in civil and environmental engineering in December 2009. Brooke plans on attending graduate school at SDSU in January 2010 and will complete her M.S. degree in civil engineering in May 2011. She is currently working on a research project co-funded by MPC and SDDOT. Her work involves performance evaluation of jointed plain concrete pavements incorporating different construction details. Following graduation, Brooke plans to work in transportation engineering in the Midwest.

Jason Stripling, a native of Minneota, MN, is a senior undergraduate student at South Dakota State University. He came to SDSU in the fall of 2004 and earned a B.S. degree in civil and environmental engineering in December 2008. Jason joined the graduate school at SDSU in January 2009 and is expected to complete his M.S. degree in civil engineering in May 2010. His research work will involve development and evaluation of concrete mix designs for improved concrete pavement performance. The research will be part of an MPC/SDDOT co-funded study to develop optimized design and construction methods of concrete pavement in South Dakota. Following graduation from the graduate school, Jason plans to work as a structural engineer.

Chad Stripling, a native of Minneota, MN, came to SDSU in the fall of 2002 and earned a B.S. degree in civil and environmental engineering in December 2006. Stripling joined the graduate school at SDSU in January 2007 and completed his M.S. in 2008. His research work entailed experimental and analytical evaluation of prestressed bridge girders made

with self-consolidating concrete. The project is co-sponsored by MPC, the South Dakota Department of Transportation, and Cretex West of Rapid City, SD.

Jason Zemlicka is a native of Miller, SD. After graduating from SDSU in December 2005 with a B.S. degree in civil and environmental engineering, Jason joined the graduate school. He worked on his M.S. degree in engineering. His research involved experimental and analytical investigation of the structural behavior of full-scale prestressed self-consolidating concrete bridge girders made with quartzite aggregates.

University of Utah

Piyali Chaudhuri is a Ph.D. student working in the Utah Traffic Lab under Dr. Peter Martin. She received her B.S. in civil engineering from Jadavpur University in Kolkata, India. Chaudhuri worked for a consultancy company in India for about three and a half years and earned her master's in civil engineering from the University of Windsor, Canada, in 2007. Presently, her research focuses on finding the optimal spacing of traffic monitoring stations on freeways. The project is co-sponsored by the Utah Department of Transportation. She has earned the departmental graduate student scholarship for 2008-2009 and won second place in the ITE Student Paper Competition in the local ITE meeting in 2009.

Jeremy Gilbert is an undergraduate student at the University of Utah. He is expecting to earn a B.S. in civil engineering in the spring of 2009 and earn a M.S. in civil engineering in the spring of 2010 through the Fastrax program. He is currently the president of the University of Utah ITE Student Chapter. He is a research assistant in the Utah Traffic Lab and has assisted with many projects including "High Occupancy-Toll Lane Experiment on I-15 in Salt Lake City Metropolitan Region: Traffic Flow Evaluation" and training of TOC operators at UDOT.

Devin Heaps completed his B.A. degree in classics at the University of Utah in May 2005. From 1997 to 2003, he served in the Army National Guard as a light-wheeled vehicle mechanic. He is currently working as the system administrator in the Utah Traffic Lab. His responsibilities include new acquisitions, software maintenance, and upkeep on the lab's 45 computers and network. In the December 2009, he will graduate with a master's of business administration with a special emphasis in network management.

Dejan Jovanovic completed his B.S. degree at the Department of Transport and Traffic Engineering at the University of Belgrade, Serbia and Montenegro, in 2005. He is working on two projects: VISUM Online and Fast Track IV (I-15 and 11400-new Interchange; I-80 State Street to 1300 East). VISUM-Online is a mesoscopic traffic flow simulation software used for prediction. It computes traffic conditions and travel times used for dynamic route guidance. The Fast Track IV project researches the impact of construction on traffic flow. Jovanovic is a research assistant for the Utah Traffic Lab.

James Mulandi earned a B.S. in civil engineering from the University of Nairobi and an M.S. in civil engineering from Kansas State University. He is currently working on a Ph.D. in civil engineering (emphasis in traffic engineering). His current research project seeks to evaluate the impacts that the I-15 express lane (HOV/HOT) in Salt Lake City has on traffic operations through microsimulation (VISSIM). VISSIM is a microscopic simulation tool that utilizes a psycho-physical car following mode.

Bhagavan Nadimpalli earned his B.S. degree in civil engineering at the Jawaharlal Nehru Technological University, Hyderabad, India. He began his career as an assistant transportation planner in Halcrow Consulting India Private Limited, New Delhi, India, where he worked on traffic data collections and traffic demand forecasting for several toll revenue projects. He is currently doing his master's in civil engineering and is working as a research assistant in the Utah Traffic Lab. He expects to graduate in fall 2009. He built a microscopic traffic simulation model in VISSIM for one of the largest HOV lanes in the nation. He is currently working on transportation impact studies where he uses VISSIM, VISUM and QuickZone to assess the road user impacts due to work zones on freeways. Bhagavan's career interests are transportation planning, modeling, and traffic engineering.

James Ries has been working in the traffic lab since May 2007. James is currently a senior in the civil and environmental engineering department at the University of Utah and expects to graduate with a master of engineering in spring 2010. He is working on two projects through the Utah Traffic Lab, ELGAME 2 the modeling of I-15, and a large data collection project for the MPO. James hopes to start his own AE firm in Salt Lake City.

Benjamin Shepherd is enrolled under the Army's Advanced Civil Schooling program. He is pursuing a master's of civil engineering and doing research at the UDOT Traffic Operations Center in Salt Lake City. Shepherd earned a B.S. degree in engineering management from the United States Military Academy, West Point, NY, in 2007. He served with the 18th Field Artillery Brigade (Airborne) at Fort Bragg, NC, from 2002 to 2007. He was deployed to Mosul, Iraq, from 2003 to 2004 and Tikrit, Iraq, from 2005 to 2006.

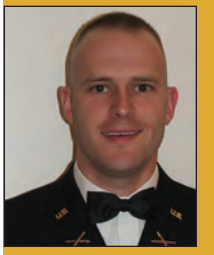
Aleksandar Stevanovic graduated from the University of Belgrade, Yugoslavia. He received a B.S. with honors in applied sciences and civil engineering in 1998. He earned his M.S. in civil and environmental engineering in 2003. He earned his Ph.D. from the University of Utah in civil and environmental engineering in 2005. Stevanovic is a post-doctorate research assistant professor in the Traffic Lab and has researched the deterioration of adaptive traffic control systems, the reliability of macroscopically optimized timing plans through microsimulation, and is developing a forecasting model for managed lanes using data from Utah's high occupancy vehicle (HOV) lanes.

Jelka Stevanovic is investigating traffic control signal settings optimization using genetic algorithms and is working on modification of the program so that it can be applied to a real network rather than a model network. She is a student at the University of Utah in civil and environmental engineering and is working on her M.S. degree in transportation. She graduated with her B.S. degree in 2003 in mathematics and informatics, at the University of Novi Sad, Serbia. Stevanovic is a research assistant at the Utah Traffic Lab.

Jagdish Thokala is pursuing a master's degree in computational engineering and science. His specialization involves modeling and simulation of systems. He had worked previously at Energy and GeoScience Institute(EGI) and the Utah Center for Advanced Imaging Research(UCAIR) at the University of Utah. He is now working as a programmer and his current research includes developing python scripts for inter-vehicle communication in VISSIM.

Ivana Vladisavljevic received her B.S. degree at the Department of Transportation and Traffic Engineering at the University of Belgrade, Serbia and Montenegro. She began her graduate studies at the Department of Transport and Traffic Engineering, at the University of Belgrade where she was awarded a scholarship for "young talents." She is continuing her graduate work at the University of Utah and is currently a research assistant at the Utah Traffic Lab. She is investigating the impact of the cell phone conversation on traffic flow using microsimulation software VISSIM, and has won the Intermountain Section Student Paper Contest and the District 6 Student Paper Competition for her research in this area.

Milan Zlatkovic is a Ph.D. student of civil engineering at the University of Utah and a research assistant at the Utah Traffic Lab. He holds a B.S. degree from the Faculty of Transport and Traffic Engineering, University of Belgrade, Serbia, and a M.S. degree in civil engineering from the University of Utah, with a major in transportation. His field of interest includes traffic control systems, microsimulation modeling, public transportation, Intelligent Transportation Systems, traffic flow theory, and highway design. He has been involved with several projects contracted with the Utah Transit Authority. His work consists of evaluating and analyzing benefits and impacts of transit signal priority for bus rapid transit and light rail transit using VISSIM microsimulation software, as well as analysis of urban traffic networks. He has presented his research at TRB, ITE Utah Chapter, PTV Vision User Group Meeting and National BRT Institute Workshop.

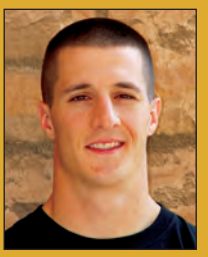


B. Shepherd

I. Vladisavljevic


K. Ahsan


S. Carter


Z. Coulter


M. Edwards


S. Koch


R. Price

University of Wyoming

Kamrul Ahsan is working toward his second M.S. in civil engineering. The first he earned from the Bangladesh University of Engineering and Technology. He also holds an M.S. in computer science from Montclair State University in New Jersey. He is studying soil stabilization of the subgrade and the effect of different agents on that process. He is also studying dust control. He plans to work as a transportation engineer in design or research. He was recognized for excellent performance as a teaching assistant at Montclair State.

Steven Carter received his M.S. in civil engineering in 2004. He helped the Wyoming Department of Transportation study the effectiveness of crack surfacing material for asphalt pavements including the performances of thermal stress restrained specimen test, data collection, and statistical analysis. He also earned his B.S. in civil engineering from the University of Wyoming. He is a member of the Tau Beta Pi Engineering Honor Society and is a registered engineer-in-training for the state of Wyoming.

Zebulun Coulter, a native of Laramie, WY, is a graduate student at the University of Wyoming. He started college at UW in the fall of 2004, and entered the graduate program, graduating with his B.S. degree in Civil Engineering in May of 2004. In May 2011, Zeb is expected to complete his M.S. degree in civil engineering and be commissioned as a second lieutenant in the Wyoming Army National Guard. His research aspires to find if there is a correlation between crashes and geometric features on rural roads in Wyoming. The research is part of a WYT^2/LTAP funded study to increase safety on rural roadways in Wyoming. Following graduation from graduate school Zeb plans to continue serving in the Wyoming Army National Guard, as well as working as a transportation engineer.

Michelle Edwards began her master's program in January 2008 after completing her B.S. degree in civil engineering at the University of Wyoming in December 2007. As an undergraduate, Edwards worked for the Wyoming Department of Transportation in its Laramie Design Squad for two years. Her research will focus on developing a decision-support system for dynamic message signs for the I-80 corridor between Laramie and Cheyenne.

Scott Koch is from Parker, CO. Scott entered the civil engineering program at UW in the Fall of 2004 and graduated with a B.S. degree in civil engineering in the Spring of 2009. He worked as an undergraduate research assistant for Dr. Khaled Ksaibati and Dr. Rhonda Young. For Dr. Young, Scott managed traffic counting equipment and performed and analyzed traffic counts. He worked on a MPC co-funded study with Dr. Ksaibati on the use of Recycled Asphalt Pavement (RAP) in gravel roads. Scott is now a graduate student at UW and is continuing work on the RAP study. He plans to attain a M.S. degree in civil engineering in the Spring of 2010.

Richard Price began in the Quick Start Master's program at the University of Wyoming in January 2007, while completing his bachelor's degree. As an undergraduate, he assisted in testing laminar wood joists and led the design and construction of the AISC-ASCE student steel bridge. Price's research topic is to establish a link between wind power maps and fatigue design of traffic signal and variable message structures, and then suggest specification modifications from the results of the findings.

Benjamin Weaver is studying the implementation of asset management systems in three Wyoming counties as part of his M.S. degree program. He earned a B.S. in civil engineering from the University of Wyoming in 2004 and an A.S. in engineering from Laramie County Community College in 2002. He is a member of Tau Beta Pi honor society and was named to the UW Dean's Honor Roll.

Christopher Wolffing earned his B.S. in civil engineering from the University of Wyoming in 2003. He is pursuing his M.S. in civil engineering. He is studying highway construction impacts on Wyoming businesses, focusing on traffic volume, tax revenue, commercial property data, and data from surveys of business owners and engineers. He is comparing actual economic data to perceived data from surveys. Wolffing served as the ITE student chapter vice president and plans to pursue a career in civil engineering.

Cheng Zhong started his master's program in 2006. He graduated from Nanjing University of Technology, China, with his bachelor's degree in computer science and technology in the summer of 2004. In 2006, Zhong worked on a Wyoming county roads survey of roadway classification systems and minimum geometric standards. His research will focus on traffic volume data collection and estimation for rural roads in Wyoming.

B. Weaver

C. Wolffing

C. Zhong

Research Highlights

SDSU Boosts the Research and Material Testing Infrastructure

The material testing capability at SDSU recently received a significant boost when the civil engineering program acquired several new pieces of testing equipment that will enhance existing research facilities.

Topping the list of new equipment is a 400,000-pound-capacity concrete testing machine that is equipped with a servo-controlled valve. The machine will not only enable the strength testing of ultra-high-strength concretes, but also will allow for capturing the entire stress-strain relationship of concrete in compression. Such research tools are invaluable for the study of high-performance concretes used in bridges and pavements. Additional new equipment includes a freeze-thaw cabinet with advanced controls and data acquisition, a sonometer for determining the dynamic modulus of concrete, an electric concrete mixer, and an assortment of displacement sensors.

The new equipment will be used for a research project on mix design optimization of jointed plain concrete pavements. The project is co-funded by MPC and the South Dakota Department of Transportation.

Chase the Wind Transportation Safety Studies on I-70


S. Chen

If you've ever watched the movie, "Twister," you may remember those scientists who chased tornados using sensors floating in the air. CSU researchers recently chased strong winds along I-70 with various sensors. Professor Suren Chen and research scientist Juhua Liu, along with two graduate students in the Department of Civil and Environmental Engineering at CSU, have been working on a research project entitled "Traffic Safety Vulnerability Information Platform (TS-VIP) for Highways in Mountainous Areas Using Geospatial Multimedia Technology," which is sponsored by the Mountain-Plains Consortium.

The research team integrates an advanced 3-D ultrasonic anemometer for wind measurements, an NI mobile data acquisition system for vehicle dynamics, three accelerometers, and a GPS-based video mapping system (VMS) for collecting geospatial multimedia information of the interstate highway. The overall goal of the project is to develop a framework and Web-based platform of a "transportation safety vulnerability map" with traffic safety characteristics on feature points. A large SUV and a Penske truck were used for the field testing along I-70 as well as I-25.

I-70 is a perfect example of many interstates in the country which undergo complicated weather and topographical conditions. The adverse environmental conditions, such as wind gusts and steep grades, greatly threaten the safety of many vehicles and are blamed for many serious accidents.

The equipment used for the research includes an advanced 3-D ultrasonic anemometer for wind measurements, an NI mobile data acquisition system for vehicle dynamics, and a GPS-based video mapping system (VMS) for collecting geospatial multimedia information of the driving path.

The project, for the first time in the country, integrates the real-time dynamic wind and advanced geospatial multi-media field measurements with mobile testing on major highways. The real-time wind and GPS multimedia data is to assess the environmental conditions of vulnerable vehicles, while the vehicle dynamic measurements are directly related to the varying vehicle accident risk at different locations on the highway. Based on the synchronized testing data and safety risk assessment, a GIS-based webpage is developed and put on the Internet.

The study will help transportation agencies and the trucking industry to identify those vulnerable locations on the highway during the planning stage and to study the causes and prevention strategies of high accident risks. The demonstration website includes the raw measurement data (e.g. mean wind speed and turbulence), corresponding safety risk index, and GPS-based video clip and still pictures at different locations along I-70

This MPC project is just the first step in a series of studies on traffic safety under adverse environments. Chen has recently secured funding from the Colorado Department of Transportation and the Mountain & Plain Education and Research Center (MAP-ERC) of the National Institute for Occupational Safety and Health (NIOSH) to further study large truck safety on I-70.

Utah Traffic Lab Tests Traffic Management Software Tool


P. Martin

Although traffic management technology has advanced significantly in the last decade, traffic planners are not always able to take full advantage of the abilities of technology to monitor, record, and archive traffic information. University of Utah Traffic Lab researchers are testing tools to integrate real-time monitoring and archiving tools with transportation planning models.

According to Traffic Lab Director Peter Martin, PTV Traffic Platform (otherwise known as "VISUM Online") is a traffic management system for processing online traffic data. The system implements both a road network model and a traffic demand model. VISUM Online uses all available real-time and historic data to calculate current and forecasted traffic conditions, not only for detectorized links, but also for all the links on the network.

VISUM Online has been installed in a few places around the world. This project, involving the Salt Lake metropolitan region, represented the first VISUM Online installation in North America. The results show that VISUM Online produces comparable traffic measures. The Utah project served as the groundwork for an ultimate deployment of VISUM-Online.

Martin explained that deployment of Intelligent Transportation Systems (ITS) is one of the solutions for mitigating traffic congestion. Most of the ITS sub-systems, such as Advanced Traffic Management Systems (ATMS) and Advanced Traveler Information Systems (ATIS), depend on the availability of real-time traffic and transit data. Many systems, which support real-time traffic monitoring and archiving, have emerged in the last decade to address this need. Although real-time traffic monitoring helps to respond to traffic incidents and accidents and, therefore, enables fast recovery to normal conditions, the real-time monitoring itself does not help in preventing future traffic congestion. On the other hand, some systems record and archive vast amounts of traffic data in real time, and subsequently reduce these data into 15-minute, hourly, or daily traffic volumes and speeds. Nevertheless, traffic planners benefit very little, if at all, from these advanced real-time activities in traffic monitoring and data archiving. Traffic planners still struggle to formulate some of the basic transportation planning data, such as accurate estimations of trip distributions between origin and destination zones and mode of travel.

The lack of integration between real-time monitoring and archiving tools and transportation planning models has been recognized as an important issue by many researchers. Only a few software tools, such as VISUM Online, have tried to overcome the missing link between transportation planning models and real-time (also known as "online") traffic management tools.

Students Use GIS to Evaluate Freight Corridor

Many North Dakotans drive over several bridges each day. Commercial vehicles carrying vital farm, petroleum, and manufactured goods cross these bridges as well.

Load limits, narrow lanes, poor approaches, or limiting vertical and horizontal clearances are some of the restrictions commercial vehicles come across on a daily bases.

NDSU students, along with Upper Great Plains Transportation Institute staff members Subhro Mitra, Alan Dybing, Kurt Johnson, and Denver Tolliver, are implementing a project to extend the capabilities of the North Dakota GIS model in hopes of addressing these problems for freight movers in the Northern Tier Freight Corridor.

The Northern Tier Freight Corridor includes Washington, Idaho, Montana, North Dakota, Minnesota, and Wisconsin.

The six Ph.D. students involved in the project have been broken into three subgroups. Monsur Ahmed, and Qing Liu will focus on administrative tasks. Khalid Backkar, and Poyraz Kayabas will focus on supply estimation capacity issues, and Lei Fan and Eunsu Lee will focus on demand estimation.

Staff and students will also address the growing concern of whether the nation's freight transportation

system will be able to keep up with the expected growth of the economy within the next 20 years.

After extensive evaluation of the current system as well as a projection of the freight demand of the next 20 years, the group will recommend a plan to address capacity issues.

Wyoming Rural Road Safety Program

The nation's rural roads are a critical link in the nation's transportation system, providing the primary routes of travel and commerce for the approximately 60 million people living in rural America. About 80 percent of the nation's roadway miles are in rural areas. Those roads are carrying growing levels of traffic and commerce, but often lack key safety features and experience serious traffic accidents at a rate far higher than other roads and highways.

Nationally, about 60 percent of traffic fatalities are rural, the majority of which occur on two-lane roads. Crashes in rural areas are more likely to result in fatalities due to a combination of factors including extreme terrain, faster speeds, more alcohol involvement, and the longer time intervals from the time of a crash to medical treatment.

To help counties identify high-risk rural locations and develop a strategy to obtain funding to reduce crashes on the top-ranked sections, the Wyoming LTAP Center developed the Wyoming Rural Road Safety Program (WRRSP). Development of the program was funded by WYDOT and the FHWA and in cooperation with Wyoming counties.

Program guidance was provided by a Local Road Safety Advisory Group (LRSAG) with representatives from: WYDOT, Wyoming LTAP, Wyoming Association of County Engineers and Road Supervisors (WACERS), Wyoming Association of Municipalities (WAM), and FHWA. The pilot phase of the program involved data collection from Carbon, Laramie, and Johnson counties to provide the variation in traffic patterns, crashes, and populations found among Wyoming counties.

A 5-step procedure was developed by the LTAP center and approved by the LRSAG. These five steps are:

1. Crash data analysis
2. Level I field evaluation
3. Combined ranking to identify potential high-risk locations based on steps 1 and 2
4. Level II field evaluation to identify countermeasures
5. Benefit/cost analysis

This program utilizes the combination of historical crash records and field safety evaluations in identifying high-risk locations. A benefit/cost analysis can then be applied to determine the most cost-effective countermeasures at the high-risk locations.

The Wyoming LRSAG has recommended statewide implementation of the Wyoming Rural Road Safety Program. In addition, WYDOT and the FHWA Division office approved the WRRSP for eligibility to receive funding from the High Risk Rural Road (HRRR) Program.

Counties interested in applying for funding from the HRRR program must follow the methodology set out in the program. Requests from all Wyoming counties will be submitted to the Local Government Office of WYDOT. The Wyoming Safety Management System (SMS) Committee will select a subcommittee to allocate the funding from the HRRR program for eligible and cost-effective requests. The Wyoming LTAP Center developed training materials to demonstrate to interested counties how they can implement this safety program. The workshops were held Nov. 18 in Riverton and Nov. 19 in Douglas.

Read more detailed information on the program in the Wyoming LTAP Summer 2008 newsletter at http:// wwweng.uwyo.edu/wyt2/index.php?includefile=newsletter.html.

Cell Phone Research Garners International Press Coverage

MPC sponsored research at the University of Utah that shows drivers on cell phones clog traffic garnered world-wide press coverage. The study showed that motorists on cell phones drive slower on the freeway, pass sluggish vehicles less often, and take longer to complete their trips. The research was conducted by University of Utah psychology professor Dave Strayer, psychology doctoral student Joel Cooper, civil and environmental engineering doctoral student Ivana Vladisavljevic, and Peter Martin, director of the University of Utah Traffic Lab. The research was published in World Review of Intermodal Transportation Research in 2007 and presented at the 2008 Transportation Board annual meeting.

Press coverage of the research has included the Inquirer of London, the Washington Times, the Canadian Broadcast Corporation, the Chicago Tribune, Asian News International, USA Today, the Los Angeles Times, CNN, CBS News, ABC News, Business Week, Reuters News Agency, Sydney Morning Herald, and Consumer Affairs.

Technology Transfer

MPC Sponsors National Conference on Transportation Policy in Denver

The MPC sponsored a two-day workshop to bring together industry, government, and academic leaders to address transportation policy and regulation. Beyond the Crossroads: A National Discourse on Transportation Policy and Regulation was held May 27-28 at the University of Denver in Denver CO.

"The workshop brought together bipartisan leaders from the political arena, professionals from various sectors of the economy and various modes of transportation, as well as academic specialists with expertise in various disciplines to address policy challenges facing the nation's transportation system," noted Denver Tolliver, MPC director.

"This is an ideal time for us to examine policy and regulatory issues related to transportation," Tolliver said. "A number of factors are coming together to focus attention on transportation in this country in an unprecedented way." He noted that the largest transportation spending bill in the history of the United States is being debated by Congress; significant regulatory changes are under consideration; transportation infrastructure in many areas of the country is nearing capacity; congestion costs taxpayers more than $200 billion a year; freight rail volume is expected to double by 2035; and the U.S. population is expected to increase 50% by 2050.

Published proceedings from the conference will serve as a guidebook for agency heads, political leaders and researchers who want to address transportation regulatory issues in this new environment.

Speakers included:

- Patrick Sherry, director of the National Center for Intermodal Transportation. He led a panel of experts in a discussion of global trade flows.
- William W. Millar, president of the American Public Transportation Association.
- Craig Lentzsch, a member of the National Infrastructure Financing Commission and chair of the American Bus Association.
- Rod Diridon, executive director of the Mineta Transportation Institute.
- Mortimer Downey, senior advisor with infrastructure consulting firm PB Consult, and former chair of the Obama Transportation Transition Team.
- Francis Mulvey, acting chair of the Surface Transportation Board.
- Gil Carmichael, chairman emeritus of the Intermodal Transportation Institute.
- Michael Ogborn, vice chair of the American Short Line and Regional Railroad Association.

In addition to the Mountain-Plains Consortium, other sponsors included the National Center for Intermodal Transportation, the Intermodal Transportation Institute at the University of Denver. the Rahall Institute, the Mineta Transportation Institute, and

in association with the Colorado Transportation and Logistics Organizations (including the Rocky Mountain Roundtable of Council of Supply Chain Management Professionals, the Colorado Chapter of the Women's Transportation Seminar, the Denver Transportation Club).

2008 International Summit on Agricultural Food Truck Transportation Held

More than 100 policy makers and industry leaders gathered in Washington, DC, for the 2008 International Summit on Agricultural Food Truck Transportation Dec. 2-3. The event brought together representatives from the trucking industry and agriculture and food transportation organizations, to discuss critical issues and generate ideas to strengthen commercial agricultural trucking as a key partner in the future success of U.S. and international agriculture.

More than 20 speakers/presenters from Congress, trucking and national and international agriculture organizations, federal government agencies, and private sector experts, addressed the 2008 Summit. The Mountain-Plains Consortium was a primary sponsor of the event which was organized by the Upper Great Plains Transportation Institute at NDSU.

"The summit was important to remind everyone of the importance of trucking and highways to food, agriculture, and rural development during the current economic crisis and in the future," noted Bruce Blanton, director of the USDA's Transportation Services Division. "The trucking industry, rural America, shippers, and receivers need to work together during the legislative and regulatory process to ensure a safe, efficient, and reliable transportation system."

The following were identified as critical issues during the Summit:

- Impacts of the new U.S. farm and energy legislation on domestic and international agricultural production and processing as a critical agent of change for the agricultural and trucking sectors.
- Trucking industry's ability to meet increasing demands from agricultural and food industries.
- Role of energy costs, renewable fuels and environmental issues on the agriculture and food industry.
- Effects of security concerns and requirements in agricultural and food transportation.
- Importance of truck weight reform on the U.S. interstate highway system for the transport of raw agricultural commodities and forest products.

The program featured experts in the field of international agricultural and transportation trade and food security. Former U.S. Secretary of Agriculture and U.S. Trade Representative Clayton Yeutter opened the initial session with an overview of agricultural trade and transportation in the 21st century. Jolanta Iwanicka, first secretary, Embassy of Poland, gave a presentation on the importance and status of biofuels in Poland and the European Union, and the impacts of renewable fuels on agriculture policy and transportation challenges. Wallace Tyner, professor of agricultural economics, Purdue University, was the presenter on the topic, "Food vs. Fuel, The Real Story."

In the area of U.S. energy and rural development issues, former U.S. Undersecretary of Agriculture for Rural Development Thomas Dorr, and David Kreutzer, senior policy analyst for the Heritage Foundation, were presenters. Also, Deputy Undersecretary of Agriculture for Farm and Foreign Agriculture Floyd Gaibler provided an overview of the impact of foreign agricultural programs on U.S. agriculture and agricultural transportation trends. Dealing with U.S.


Yeutter


Speranza


Whittington


Gaibler


Blanton


Iwanicka


Lynch

highway infrastructure challenges and agricultural truck transportation, were Bruce Blanton, director of Transportation Services Division, USDA, and Tony Furst, director of Freight Management and Operations, Federal Highway Administration. Also looking at infrastructure needs from the congressional vantage point and the 2009 Highway Reauthorization Bill was Janet Kavinoky, U.S. Chamber of Commerce; Tim Lynch, American Trucking Associations; and Richard Lewis, Forest Products Association. Charles Stenholm, former member of Congress and former ranking member of the Agriculture Committee, U.S. House of Representatives, presented a look into the political issues affecting agriculture and commercial agricultural transportation in both the current U.S. economy and the 111th Congress.

Presentations on current issues in food and agriculture from private sector executives were given by Paul Speranza Jr., vice chairman and general counsel of Wegman's Supermarkets; Charles "Shorty" Whittington, chairman, board of directors, American Trucking Associations; and Mike Townsley, president, Bob Evans Farms.

Vision Safe Drive Conference Held in South Dakota

Nearly 100 state and federal transportation officials, engineers, law enforcement personnel, first responders, and traffic safety experts attended the Vision Safe Drive Conference in Rapid City, SD, in May. The goal of the regional conference was to exchange information on emerging issues, successes, and challenges so that research and outreach efforts could be directed most effectively toward enhancing the region's traffic safety.

Although rural roads typically carry less traffic, they see more than their share of accidents including those that result in fatalities. And in rural areas, it may take longer for emergency responders to arrive on the scene of accidents and to transport those injured to medical facilities.

"Given limited resources and the vast number of lane-miles of rural roads in the United States, particularly in the Upper Great Plains and Mountain West, it is important to identify common priorities and share knowledge for reducing crashes and fatalities," noted Kimberly Vachal, director of the Upper Great Plains Transportation Institute's Rural Transportation Safety and Security Center. The center organized the conference with sponsorship from the MPC.

The conference featured panel discussions on strategies for improving road safety as well as presentations on successful efforts in states across the region. There were two concurrent sessions. The first focused on driver behavior and strategies to affect that behavior to improve rural road safety. The second session focused on implementing rural road safety improvements in planning and operations.

Directors of state departments of transportation participated in a question-and-answer session to explore practices implemented across the region. It's clear from those discussions that safety strategies at the state level must be a priority with leadership to be successful, noted Gene Griffin, director of the UGPTI and moderator of the panel. The states that have been most successful in implementing programs and projects to improve safety have been those where safety was identified as a priority by upper management and that priority was communicated throughout the organization.

The 2009 Vision Safe Drive Conference was the second event in the region. The first Vision Safe Drive Conference was held in Bismarck, ND, in 2007.

MPC is Part of Cooperative Distance Learning Effort

The Mountain-Plains Consortium is a founding member of a national cooperative effort to establish a Graduate Education Certificate program to assist in educating tomorrow's transportation leaders. MPC Director Denver Tolliver serves as chair of the program's policy board.

The nation's Regional University Transportation Centers (including MPC), in consultation and cooperation with leaders from the National Academy of Sciences (TRB), public and private sectors, and transportation related associations, have established the program. Its purpose is to provide wider

knowledge and a more comprehensive understanding of the issues required to deal with complex multimodal transportation challenges. In addition, the program will assist in making a significant contribution in helping to enhance the profession by expanding the pool of new professionals with essential competencies. The program's objective is to nurture those individuals with potential leadership qualities in both the public and private sectors and to assist them in moving along the promotion track from excellent technical contributions to management responsibilities and eventually on to leadership roles.

The theme of the program is "Transportation Policy, Management, and Operations." The certificate requires the completion of four theme-related graduate courses taught by graduate faculty at some of the nation's outstanding universities. All courses will be taken by distance learning media from an individual's home or place of employment. The courses incorporate all modes of transportation and include topics such as transportation systems, policy, planning, operations, economics, safety and security, social and environmental considerations, program management, environmental and climate change, and future technologies.

Participants in the program will be awarded a certificate endorsed by several public and private sector organizations. Completed courses will also be eligible for transfer toward a graduate degree.

More information is available from www. transleader. org.

SDSU Hosts Biennial Geotechnical Seminar

The Department of Civil and Environmental Engineering at SDSU held the SDSU Biennial Geotechnical Seminar Dec. 5 in Sioux Falls, SD. The one-day seminar was co-sponsored by the SDSU Department of Civil Engineering and the Mountain-Plains Consortium. The seminar included a breadth of topics from deep foundations to sustainable design. Seven speakers travelled from Atlanta, GA, Kansas City, MO, Minneapolis, MN, and Pierre, Brookings, and Rapid City, SD, to make presentations. The conference was well-attended by more than 120 engineers, managers, and public officials, as well as seven exhibitors demonstrating products applicable to the geotechnical profession. Attendees earned eight professional development hours. The seminar was coordinated by SDSU Associate Professor Allen Jones and SDSU Assistant Dean Richard Reid. The next conference will be held Dec. 3, 2010.

Faculty Activities

MPC Faculty and Students Present at TRB

Several researchers and students from the Mountain-Plains Consortium participated in the Transportation Research Board's (TRB) annual meeting Jan. 11-15 in Washington, DC.

The TRB annual meeting brings together more than 10,000 policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions for a comprehensive look at all modes of transportation. The meeting offered more than 3,000 presentations in nearly 600 sessions. The TRB is a part of the National Academies of Science. The spotlight theme for the meeting was "Transportation, Energy, and Climate Change."


S. Chen

Colorado State University

Suren Chen was an author of "Traffic Flow Simulation on Bridge with Cellular Automaton Technique." The paper outlines a study that aims at developing a simulation platform to provide microscopic traffic information for various bridge-related studies.


K. Vachal

North Dakota State University

Kimberly Vachal presented "Young Male Drivers: Knowledge, Attitude, Behavior, and Beliefs Regarding Seat Belts and Impaired Driving." Vachal also chaired a meeting of the TRB's Agricultural Transportation Committee. The paper detailed efforts to develop a survey tool that will help plan programs and countermeasures that will reduce the incidence of impaired driving and improve seatbelt use among young male drivers, a group that has a high rate of fatal crashes. Co-authors were Tamara VanWechel and Laurel Benson of NDSU.

"Policy Perspectives for Graduated Driving in North Dakota," was another paper presented by Vachal. The goal of the research was to develop a better understanding of factors in crashes among teen drivers.


M. Lofgren

Mark Lofgren presented "Integrating Security into Small MPO Planning Activities: Case Study Analysis for Northern Rocky Mountain Region MPOs." His paper outlined the process for establishing the security element in the long-range transportation plan for a bi-state MPO with an urbanized area population of 160,000.


D. Tolliver

MPC Director Denver Tolliver presented "Highway User Costs at 2008 Prices." In the paper, highway user costs for rural and urban freeways are estimated using 2008 prices. Cost functions are synthesized from operational models in the Highway Economic Requirements System (HERS). NDSU researcher Alan Dybing was a co-author.

South Dakota State University

Ali Selim presented "Impact of Agribusiness on South Dakota's Local Roads: Successes and Failures." The paper showcased successes and failures of local roads impacted by the construction of new agriculture related businesses. The paper also illustrated how local agencies are handling the new wave of heavy trucks traveling over local roads at a rate that has never been experienced in the past. Co-authors were Ken Skorseth and Hesham Mahgoub, both of SDSU.

University of Wyoming


K. Ksaibati

Khaled Ksaibati, program director for the University of Wyoming, presented "Methodology for Evaluating Department of Transportation Research Programs: Case Study of Wyoming Department of Transportation." The study provided numerous observations of WYDOT's overall program and the

research investment portfolio as well as guidance for developing a strategic research agenda. Additional authors of the study included Gary Schneider of WYDOT, and Larry Redd of IPM Analytics.

Ksaibati also presented "Wyoming Rural Road Safety Program." The presentation detailed an MPC project in which safety techniques and methodologies were developed to identify and rank high-risk locations on all rural roadways in Wyoming. The main objective of this research was to develop and evaluate transportation safety techniques that can help Wyoming agencies in reducing crashes and fatalities on rural roads state-wide.

George Huntington presented "Methodology for Assessing Heavy Traffic Impacts on Gravel Roads," which outlined a three-year pilot asset management program. One objective of the program was to assess the impact on roads from oil and natural gas drilling activities." Huntington also presented, "Improvement Recommendations for Unpaved Roads" which detailed a method for recommending surfacing and drainage improvements to unpaved roads. The recommendations are used to assist with prioritizing county road and bridge activities and to present policy makers with reasonable assessments of each county's road network improvement needs. Khaled Ksaibati was a co-author of the paper.


R. Young

Rhonda Young moderated two sessions: one on innovations in statewide planning and a second titled "Evaluation of Engineering Technology, Reliability, and Network Outage: Applications of Benefit- Cost Analysis."


I. Vladisavljevic

University of Utah

Ivana Vladisvljevic presented "Importance of Integrating Driving and Traffic Simulations: Case Study of Impact of Cell Phone Drivers on Traffic Flow." This paper argued for integrating driving and traffic simulators by explaining the research opportunities and illustrates this through a case study. Co-authors included Joel M. Cooper, Peter T. Martin, and David L. Strayer, all from the University of Utah.

Vladisavljevic also presented "Compensatory Impact of Lane Changes When Distracted, Slower-Moving Cell-Phone-Using Drivers Impede Traffic Flow Efficiency." This paper investigated the impact of lane-changing maneuvers on traffic flow both with and without slow-moving vehicles. Various flows and their corresponding speeds were examined using the microsimulation software VISSIM. The results indicate that lane changes can partially offset the negative effect of slower moving vehicles. Cooper, Martin, and Strayer were co-authors on this paper as well.

Aleksandar Stevanovic presented "Microscopic Modeling of Traffic Signal Operations: Comparative Evaluation of Hardware-in-the-Loop and Software-in-the-Loop Simulations." This study investigated operational differences of the three primary methods modeling traffic signal operations by examining how each method operates in five experimental scenarios. Co-authors include Milan Zlatkovic from the University of Utah, and Ahmed Abdel-Rahim and Enas Amin of the University of Idaho.

Stevanovic also presented "Optimizing Traffic Control to Reduce Fuel Consumption and Vehicular Emissions: Integrated Approach with VISSIM, CMEM, and VISGAOST." The study advocated a fresh approach to integrating existing state-of-the-art tools for reassessing and ultimately minimizing fuel consumption and emissions by linking VISSIM, CMEM, and VISGAOST to optimize signal timings and minimize fuel consumption and CO2 emissions. Co-authors were Jelka Stevanovic of the University of Utah, and Kai Zhang and Stuart Batterman of the University of Michigan.

Stevanovic also presented "Optimizing Signal Timings from the Field: VISGAOST and VISSIM-ASC/3 Software-in-the-Loop Simulation." The paper presented a method where signal timings are downloaded from field controllers, optimized by a software package, and uploaded back to field controllers. Additional co-authors were Jelka Stevanovic and Peter Martin of the University of Utah.

"SCOOT and SCATS: Closer Look into Their Operations" was another paper presented by Stevanovic. The paper illuminated the structural differences between these two methods. The research presented a detailed comparison of SCOOT and SCATS signal timings and their influence on traffic performance measures in microsimulation. Co-authors included Cameron Kergaye of the Utah Department of Transportation and Peter T. Martin of the University of Utah.

Stevanovic and Martin also were co-authors of "Comparison of Before/After versus Off/On Adaptive Traffic Control Evaluations: Park City Case Study." The

paper presented a comparison of traffic operations before and after the Adaptive traffic control system. Another co-author was Cameron Kergaye of the Utah Department of Transportation.


B. Shepherd

Benjamin Shepherd presented "Military Approach to Network-Focused Operator Training for Traffic Management Centers: Case Study from UDOT's Traffic Operations Center, Salt Lake City." The paper summarizes work performed by the Utah Traffic Lab to develop a training program for the Utah Department of Transportation Traffic Operations Center operators. Martin was a co-author.

Xuesong Zhou was co-author of "Modeling the Role of Transportation Information in Mitigating Major Capacity Reductions in a Regional Network." The paper outlined a practical method presented for systematically evaluating the network impacts of Advanced Traveler Information Systems (ATIS) for the purpose of supporting well-informed project decisions and well-founded funding priorities. Co-authors included Hyejung Hu, Billy M. Williams, and Nagui M. Rouphail of North Carolina State University and Asad J. Khattak of Old Dominion University.

CSU Researchers Present at Conference on Structures Under Shock and Impact


R. Gutkowski

Colorado State University civil engineering professor Richard Gutkowski and student Chris Turnbull-Grimes attended the 10th Annual Conference on Structures Under Shock and Impact to present research on crash testing roadway/safety barriers. Their presentation focused on the crash testing facility constructed at CSU in 2004. The facility allows manufacturers to test safety barriers for their vehicles prior to a full-scale federal testing. The site also allows manufacturers to test structural adequacy of the barrier and post-collision vehicle trajectory. The facility is being upgraded to meet U.S. Department of State standards.


C. Turnbull-Grimes

Utah Traffic Control Research Presented

Aleksandar Stevanovic, research assistant professor of civil and environmental engineering at the University of Utah, and Kameron Cergaye, a UDOT project manager and a Ph.D. candidate at the University of Utah, presented "An Evaluation of SCOOT and SCATS through Microsimulation" at the 10th International Conference on Applications of Advanced Technologies in Transportation in Athens (Greece) in May. The paper, whose author was also Peter T. Martin, a professor at the University of Utah, represents the first side-by-side comparison of the two most widely deployed Adaptive Traffic Control Systems in the world – SCOOT (Split Cycle Offset Optimization Technique) and SCATS (Sydney Coordinated Adaptive Traffic System). The paper compared SCOOT and SCATS performance on a suburban arterial in Park City where frequent recreational and artistic events justify implementation of adaptive traffic control.

Stevanovic also presented "Optimizing ASC/3 Signal Timings through SILS" at the Traffic Signal Systems Committee Summer Meeting, July 19-21, 2008, in Livonia, MI. In the invited presentation, he explained a recently developed concept of optimizing traffic signal timings from the field. Traditionally, traffic signal engineers needed to transfer manually signal timings obtained from signal optimization software. The concept of signal timings optimized through SILS enables a signal timing database to be downloaded from the field controller, optimized in a microsimulation environment, and uploaded back to the field controller without further manipulation by engineers. The concept currently works only for signal timings used in ASC/3 Econolite controllers, but it represents the first application where signal timings used in the field are adjusted by optimization software.

Sanders Presents Dust Control Research


T. Sanders

Tom Sanders, associate professor of civil and environmental engineering at Colorado State University, presented two papers from MPC-supported research on dust control.

He presented "Road Dust Suppressants: A Win-Win Solution" at the 2008 Mine Expo in Las Vegas, NV, in September. In November, he presented his paper, "The Colorado State University

Dustometer-a Management Tool," at the Road Dust Management Practices and Future Needs Conference in San Antonio, TX.

CSU Faculty and Staff Present Research

Colorado State University faculty and students presented several papers at professional meetings.

- Feng Chen and Suren Chen presented "Advanced Vehicle Stability Under Wind Gust" to the First American Association of Wind Engineers workshop in Vail, CO, in August 2008.
- Suren Chen, Juhua Liu, Feng Chen, and Jun Wu were the authors of "Mobile Testing Scheme about Wind Measurement, Vehicle Dynamic Monitoring and Geospatial Multimedia Technology," which was presented at the same conference.
- Feng Chen and Suren Chen presented "Vehicle Rollover Risk Assessment on Bridges Considering Environmental Impacts" to the First American Academy of Mechanics Conference in New Orleans June 17-20, 2008. Also at the conference, Suren Chen organized the symposium, "Performance Evaluation and Mitigation of Bridge Dynamic Effects," and chaired three of its sessions.
- Jun Wu and Suren Chen authored "Traffic Flow Simulation Based on Cellular Automaton Model for Interaction Analysis Between Long-span Bridge and Traffic." The paper was presented at the Inaugural International Conference of the Engineering Mechanics Institute, American Society of Civil Engineering ASCE, May 18-21, 2008. Chen also organized and chaired the structural control and health monitoring session and the bridge engineering session at the conference.
- Suren Chen was also invited to present "Research on Transportation Infrastructure System and its Relationship to Injury Studies" at the Colorado Injury Control Research Center in Fort Collins on Feb 28, 2009.

Bridge Paper Accepted for Publication

"Design and Costs for Simple-Made-Continuous Rolled Steel Girder Bridges: A Literature Survey" by A. Stone, J.W. van de Lindt, and S. Chen at Colorado State University has been accepted for publication by the ASCE Practice Periodical on Structural Design and Construction.

Gutkowski Plans Research Visit to Italy

Professor Richard Gutkowski of Colorado State University received a grant from the Italian government for a short-term research visit May 26 to June 8, 2009, to the University of Sassari in Alghero, Italy. While there, he cooperated with Massimo Fragiacomo, associate professor of structural design in the Department of Architecture and Planning, in preparing technical journal papers on their joint research on long-term time-dependent behavior of composite wood-concrete structural floor and deck systems. Gutkowski also presented invited lectures on that and other MPC-supported research project activity.

Utah Professor Elected to Czech National Academy

Paul Tikalsky, chair and professor of civil and environmental engineering at the University of Utah, has been elected a Fellow (foreign) of the National Academy of Engineering of the Czech Republic (EACR), a member organization of the International Council of Academies of the Engineering and Technological Sciences. The announcement was made at the annual meeting of the EACR in Prague and recognizes the contributions Tikalsky has made in advancing simulation-based reliability assessment techniques for long-life structures in the European Union and the Czech Republic.

Utah Researcher Invents Device to Stop Teen Cell Phone Use While Driving

X. Zhou

Xuesong Zhou, assistant professor of civil and environmental engineering at the University of Utah, has invented a wireless car key device to stop teenage motorists from talking on cell phones and sending text messages while driving. When the key is extended from the device, it sends a signal, putting the phone in "driving mode" so it cannot be used to talk or send texts. Parents can control the system from a computer, which collects safety scores on cell phone use and on driving speed and

traffic violations tracked by Global Positioning System satellites.

For adult drivers, the system prevents texting and allows calls only on hands-free cell phones. Zhou says the goal for adults is to improve safety by encouraging them to reduce the time they spend talking while driving. The encouragement could come in the form of insurance discounts by insurers, who would receive monthly scores showing how well an adult driver avoided talking while driving. The university has licensed the technology, "Key2SafeDriving," to a private company, which hopes to have the device on the market within the next several months. Zhou invented the device with University of Utah Alumnus Wally Curry.

Selim Retires After 32 Years of Service

Ali Selim, professor emeritus of civil and environmental engineering, retired from SDSU at the end of September 2008. Selim served on the faculty of the Civil and Environmental Engineering Department at SDSU over a period of 32 years, teaching and conducting research in the fields of transportation engineering and pavement. He also served as the SD LTAP director since it was established in 1988.

Gutkowski Shares Research in Portugal

Colorado State University civil engineering professor Richard Gutkowski presented an overview of his ongoing MPC research on composite-wood concrete bridge systems at the University of Coimbra in Coimbra, Portugal. While there, he also provided advice and guidance for UC graduate students working on wood and bridge related research.

MPC Research Featured in Railway Age

Richard Gutkowski and a team from CSU were featured in the July 2008 issue of Railway Age for their work with railroad bridge restoration and maintenance. The MPC-funded research focused on strengthening rather than replacing the bridges because of expense and the decrease in accessibility of new materials. The study outlined in the July issue of the magazine focused on open-deck timber trestle bridges.

For the past five years, Gutkowski and Dr. Don Radford have been working on a bridge strengthening concept called Z-spiking which is adapted from the aircraft industry. Z-spiking provides an alternative to the costly and unattractive fiberglass wraps that are currently used.

"If you have a horizontal crack in the member, for example, you can use off-the-shelf pultruded FRP rods and cut them into Z spikes," Gutkowski said in the article. "You drill holes vertically down from the top or up from the bottom, then insert the spike after putting an adhesive in place." Initial tests of this method showed a 50-100% increase in stiffness. The study also found that the more damaged the member is, the more effective Z-spike becomes. The research team reported a 200% increase in stiffness in a flood-damaged bridge in Texas. "The solution is one-fifth to one-tenth the cost of wraps," said Gutowski. The repair method will be implemented in the field in 2009.

Railway Age is a railway and rail transit trade journal that features industry issues, new product information, and profiles of industry leaders.

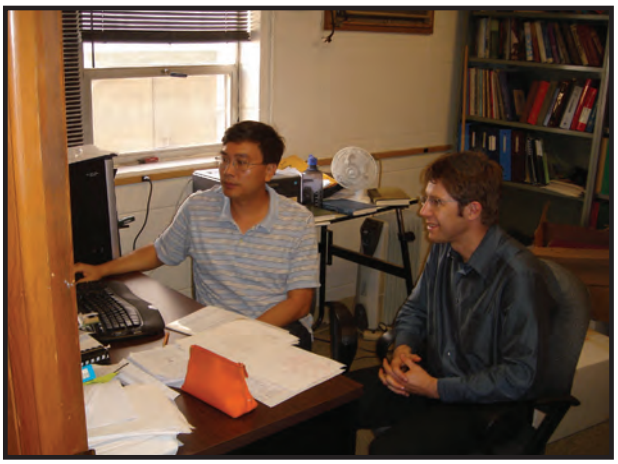
Italian Structural Design Professor Visits

Massimo Fragicaomo, associate professor of structural design, Faculty of Architecture, University of Sassari, Alghero, Italy, was a visiting scientist at Colorado State University from Aug. 29 to Sept. 5. Fragiacomo is a cooperator in the research of CSU civil engineering professor Richard Gutkowski.

Gutkowski has received a grant from the Italian government to be a short-term visiting professor at the University of Sassari in spring 2009, where he will give lectures on his research on repair and restoration of timber bridges. Fragiacomo serves on and participated in a meeting of the graduate committee for CSU doctoral candidate Giang Lam To.

To is working on rigorous computer modeling and experimental load testing of the long-term, time-dependent structural behavior of composite wood-concrete longitudinal deck bridges, research work supported by the MPC.

Visiting professor Massimo Fragiacomo and Ph.D. student Giang Lam To examine lab specimens



Visiting professor Massimo Fragiacomo and Ph.D. student Giang Lam To

Brachman and Mitra Publish Books

Jarret Brachman and Subhro Mitra, researchers with the Upper Great Plains Transportation Institute at NDSU, recently had their first books published.

Brachman's book, "Global Jihadism," explores the core doctrine and strategy of today's global Jihadist movement. The book is divided into two sections with the first section focusing on the ideas that groups, such as Al Qaeda, are built on. The second looks at the thinking and activities of Al Qaeda's propaganda. Brachman's book was published in September.

Mitra's book, "Statewide Freight Flow Model to Assess Spring Load Restrictions," presents a unique application of statewide freight planning. Mitra's model is used to analyze the effects spring load restrictions have on freight flows. Mitra's book was published in October.

J. Brachman

S. Mitra

The Mountain-Plains Consortium

MPC has a substantial set of institutional resources available to the UTC program. A description of member universities follows.

Colorado State University is a public land grant institution with an enrollment of nearly 25,000 students. The university offers 150 programs of study in eight colleges. CSU offers 40 doctoral and 62 master's degree programs. Primary transportation graduate education and outreach activities occur in the College of Engineering, with related activities in business, applied human sciences, and natural resources. Transportation-related graduate courses are available in civil engineering, mechanical engineering, earth resources, business, remote sensing, and construction management. The College of Engineering houses the Engineering Research Center (ERC) which includes facilities for river mechanics and hydraulics, especially as related to major bride construction; and wind tunnel testing. The Structural Engineering Laboratory includes an outdoor ramp facility for vehicle crash testing of safety and security barriers. A spatio-temporal test frame is available for simulating hurricane loadings and vehicle and train loadings. CSU also operates the Engines and Energy Conversion Laboratory. The Motorsport program includes topics such as racecar vehicle dynamics, advanced engines technology, fluid dynamics, and advanced materials.

North Dakota State University is a land grant institution with an annual enrollment of more than 13,000 students. The university offers 43 doctorate and professional degree programs, 61 master's degree programs, and 106 baccalaureate degree programs. The MPC is administered by the Upper Great Plains Transportation Institute, which also administers several other related transportation research centers at NDSU. The Advanced Traffic Analysis Center focuses on traffic simulation, traffic signal control, intelligent transportation systems, and travel demand modeling. The DOT Support Center contains a highway design lab and provides experiential learning for junior and senior engineering students. The Rural Transportation Safety and Security Center focuses on identifying and characterizing rural transportation safety and security concerns. The Small Urban & Rural Transit Center works to improve the mobility of residents in rural and small urban areas through improved public transportation. The Local Technical Assistance Program fosters the exchange of technical assistance among units of government through training and educational programs. The Transportation Safety Systems Center develops and maintains software used by state and federal safety specialists nationwide at truck weigh stations and ports-of-entry for inspecting commercial vehicles.

South Dakota State University is a land grant institution with an annual enrollment of approximately 12,000 students. The university offers 200 majors, minors and specializations with 12 Ph.D. degree programs, and two professional doctorate programs. Twenty-four master's programs are offered. Supporting programs include the Geographic Information Science Center of Excellence, which is a joint collaboration between SDSU and the U. S. Geological Survey's National Center for Earth Resources Observation and Sciences. SDSU houses the South Dakota Local Transportation Assistance Program—one of five technology transfer and outreach programs provided by the Engineering Resource Center. Moreover, the Civil and Environmental Engineering Department at SDSU houses state-of-the-art laboratory facilities. The Lohr Structures Laboratory is a high-bay structural testing facility fitted with a strong floor, modular loading frame, and a 15-ton traveling bridge crane. The asphalt laboratory is equipped to perform a broad range of tests related to performance and mix design of flexible and rigid pavement.

The University of Utah has an annual enrollment of more than 28,000 students and offers 96 undergraduate degree programs and 93 graduate majors. The department of Civil and Environmental Engineering has well-equipped laboratories specializing in transportation, structural, geotechnical, hydraulic, environmental, and materials engineering. The Utah Traffic Laboratory is connected by fiber optic cable to the Utah DOT Traffic Operations Center. The lab has a state-of-the-art multimedia video conferencing studio with delivery, recording, and hosting capabilities for teaching, training, and research collaboration. The lab boasts the first North American installation of VISUM Online, which is an intelligent platform for traffic management. It excels at modeling current and expected traffic conditions

accurately and dynamically from real-time data. It links current and historical information intelligently.

The University of Wyoming has an annual enrollment of about 13,100 students and offers 89 undergraduate degree programs including eight teaching majors. The university offers 65 master's degree programs and 38 Ph.D. programs. The Department of Civil and Architectural Engineering provides a core of basic engineering courses for its undergraduates and allows them to specialize in any one or a combination of the following technical areas: structures, water resources, environmental engineering, geotechnical engineering, and transportation. The transportation program at the University of Wyoming provides learning opportunities for students in paving materials, traffic, safety, and planning. In addition, the WYDOT Material Certification Program and the Wyoming Local Technical Assistance Program are hosted at the University of Wyoming. A significant number of funded research projects are regularly conducted by the transportation faculty members at the University of Wyoming.

Historical Accomplishments

The Mountain-Plains Consortium was established in 1988 in response to the University Transportation Centers Program. MPC was selected as the center for federal Region 8 in the initial competition held by USDOT. MPC won subsequent re-competitions under ISTEA, TEA-21, and, most recently, SAFETEA-LU legislation. From 1988 through 2009, MPC produced a library of more than 200 research reports while attracting new faculty to the field of transportation. MPC universities continued to teach most of their pre-existing transportation courses and exceeded the targeted maintenance of effort funding levels specified by USDOT. During this period, MPC funds were used to leverage funding from agencies such as state and local transportation departments, USDA, FTA, FRA, and the American Association of Railroads.

Management Structure

The management structure of the Mountain-Plains Consortium involves three main components – the center director and administrative staff, four university program directors, and the executive committee. In addition, the MPC Advisory Board and the TLN board and programming committee play important roles in program planning and implementation. The roles and responsibilities of each administrative component are discussed in this section.

Center Director

The Mountain-Plains Consortium is located at the Upper Great Plains Transportation Institute at NDSU. Dr. Denver Tolliver is the MPC program director. He is involved in planning and administrative activities at all levels and sites. Although the center director is an employee of the lead university, he represents all four institutions. He administers the program to take advantage of the unique strengths and resources of each university and to produce the greatest impact for the consortium. Jody Bohn of NDSU provides administrative support for the center. Beverly Trittin of NDSU provides graphics support and additional administrative services. Patrick Nichols of NDSU is the center's website developer. He creates and maintains the MPC Web pages and helps design and implement Web-based applications for MPC faculty, staff and clients. Tom Jirik, MPC's communication coordinator, develops communication strategy for the center and provides editorial oversight for both traditional and electronic publications. He is also located at NDSU.

University Program Directors

Each university in the consortium has a designated university program director to perform local oversight and management of approved activities at each university. They also serve as coordinators of transportation activities on their respective campuses. They implement the MPC strategic plan at each institution in a coordinated manner, which considers the vision and theme of the Center and the strategies and activities of all consortium partners. The program directors are Dr. Richard Gutkowski, Colorado State University; Dr. Kimberly Vachal, North Dakota State University; Dr. Nadim Wehbe, South Dakota State University; Dr. Peter Martin, University of Utah; and Dr. Khaled Ksaibati, University of Wyoming.

Executive Committee

The center director, the five university program directors, and a USDOT liaison form a committee to oversee program planning and administrative functions for the grant period. The seven-member executive committee meets each year to monitor implementation strategies, collaborate with other centers in the region, and perform other planning and administrative functions. The executive committee has final responsibility for research project selection.

Transportation Learning Network (TLN)

The Transportation Learning Network continues to use technology to help people work together on transportation issues in the region. Each partner provides transportation programming, training, and technology transfer to the network. Efforts include technical training, transportation short courses, peer sessions, graduate-level classes, professional management and leadership courses and seminars. The five MPC universities are partners in the network which also includes three state transportation departments in Region 8: North Dakota, Montana, and Wyoming. The system carries interactive audio and video to conference rooms and classrooms at the respective sites. TLN enhances and improves the cost-effectiveness of the MPC by reducing travel costs and maximizing use of scarce faculty and administrative time. The TLN evolved from the TEL8 telecommunications network.

TLN Board and Programming Committee

The state transportation departments in the region provide substantial input to the MPC director and executive committee regarding educational and research needs. Much of this interaction results from a close working relationship between the MPC executive committee and the TLN board of directors. The four university program directors are members of the TLN board. The MPC executive committee and TLN board hold an overlapping meeting each year. The TLN executive director attends part of the MPC executive committee meeting and the center director attends part of the TLN board meeting. The TLN programming committee, which meets monthly, brings together representatives from the three state transportation departments and the MPC universities to plan a regional education and training program.

Professional Input and Review

In 2008-09, practicing engineers and administrators from Colorado, North Dakota, Utah, and Wyoming state transportation departments provided key input and critical review during the research selection process. Professionals from USDA, Federal Highway Administration, Federal Transit Administration, and the American Association of Railroads also review proposed problem statements. In this way, we ensure that we are researching problems of regional and national significance, which provides value to our primary customers, the end users of the research.

In addition, an advisory committee helps MPC directors identify key research needs within the region and develop a research program that addresses those needs. The committee plays a key role in setting the MPC's research agenda.

The MPC advisory committee includes:

- Carlos Braceras, Utah DOT
- Peggy Catlin, Colorado DOT
- Loran Frazier, Montana DOT
- Anthony Giancola, National Association of County Engineers
- David Huft, South Dakota DOT
- Christine Johnson, FHWA - western region
- Grant Levi, North Dakota DOT
- Jeff Loftus, Federal Motor Carrier Safety Administration
- Delbert McOmie, Wyoming DOT

Accountability for Decisions

Many key decisions and actions flow from committee meetings and other deliberations. However, the MPC executive committee retains decision-making responsibilities. All UTCP-funded activities conducted on the five campuses are approved first by the executive committee. The center director ultimately is accountable for all decisions pertaining to UTCP activities and the use of UTCP funds.

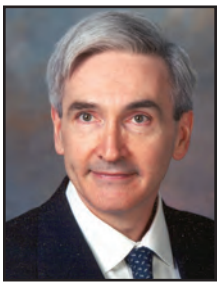
Annual Site Visits

The center director and USDOT liaison visit each campus annually to meet with principal investigators and program managers on each campus and to gauge progress toward program goals and objectives. The director also holds videoconferences as needed to evaluate progress and ensure that milestones are being met.

Regional Coordination

The director communicates with directors of the other centers in Region 8 on a regular basis.

Executive Committee


Tolliver

Dr. Denver Tolliver

is director of the Mountain-Plains Consortium. He is also associate director of UGPTI, where he has been employed since 1980. Before joining the faculty of NDSU, Tolliver was a rail planner for the North Dakota Department of Transportation. He has been the director of the Mountain-Plains Consortium since 1997. Moreover, he is the director of the Transportation & Logistics graduate program at NDSU– which includes an interdisciplinary Ph.D. in Transportation & Logistics (TL) and a Master of Managerial Logistics degree. He is a member of the Interdisciplinary Program Directors group at NDSU and coordinates the TL program with the transportation degree options in agribusiness and applied economics and civil engineering. Tolliver holds a baccalaureate degree in geography from Morehead State University and a master of urban and regional planning and a Ph.D. in environmental design and planning from Virginia Polytechnic Institute & State University. His primary research interests are: highway economics and planning, railroad planning and capacity analysis, cross-modal impact assessment, and energy and environmental analysis.


Gutkowski

Dr. Richard Gutkowski

is a professor of civil engineering at CSU. He has B.S. and M.S. degrees in civil engineering from Worcester Polytechnic Institute and a Ph.D. from the University of Wisconsin-Madison. Gutkowski is director of the Structural Engineering Laboratory at CSU's Engineering Research Center. He manages research, graduate education, technology transfer, summer diversity research activities, and student internship programs. He has published and presented more than 160 papers and reports and guided numerous theses and dissertations. Gutkowski wrote "Structures: Fundamental Theory and Behavior" (two editions) and co-authored the chapter "Composite Construction in Wood and Timber" in the Handbook of Composite Construction.


Ksaibati

Dr. Khaled Ksaibati

received a B.S. degree in civil engineering from Wayne State University. He later completed his M.S. degree and Ph.D. from Purdue University. Ksaibati has been a member of the civil engineering faculty at the University of Wyoming since 1990. He started his academic career as assistant professor and was promoted in 1997 to associate professor. He was promoted to the rank of full professor in 2001. Ksaibati is director of the Wyoming DOT Certification program at the UW. Between 200 and 250 highway professionals are certified every year in aggregate, asphalt, and concrete studies. He is a member of five Transportation Research Board committees dealing with various aspects of pavement. Ksaibati is the author or co-author of more than 29 technical refereed papers primarily in the areas of pavement design, performance, maintenance, and rehabilitation. Ksaibati also is the author or co-author of 33 other publications.


Martin

Dr. Peter T. Martin

earned a B.S. degree in civil engineering from the University of Wales in 1975, an M.S. degree in transportation engineering from the University of Wales in 1987 and a doctorate in "Real-Time Transportation Modeling" from the University of Nottingham, England, in 1992. From 1975 to 1984, he practiced as a civil engineer in highway planning, design and construction. He has built the "Utah Traffic Laboratory," which allows real-time connection to the Utah DOT ITS Traffic Operation Center. Currently, Martin is working on innovative funding methods through Intelligent Transportation Systems, and modeling and evaluation of Advanced Adaptive Traffic Signal Control Systems.

Wehbe

Dr. Nadim Wehbe

is an associate professor in the Department of Civil & Environmental Engineering, the director of the Mountain-Plains Consortium Program at SDSU, and the coordinator of the J. Lohr Structures Laboratory. He earned a B.E. in civil engineering from the American University of Beirut in 1980. He earned a M.S. and Ph.D. in civil engineering from the University of Nevada – Reno in 1992 and 1997 respectively. His areas of research interest relate to reinforced and pre-stressed concrete structures, earthquake resistant bridges, and advanced composites structural systems.

Vachal

Dr. Kimberly Vachal

is an advanced research fellow for UGPTI and works with local, regional, and national freight groups to identify logistical opportunities and assess policy implications. Her work focuses on promoting a competitive logistical system that will enhance the position of the region's products in both domestic and export markets. In addition, Vachal has completed many research studies on grain and oilseed transportation issues, and she has worked on a number of projects in cooperation with the USDA. She has published more than 30 research papers and journal articles related to agricultural logistics and rural economic development. She also directs the UGPTI's Rural Transportation Safety and Security Center. Vachal received M.S. and B.S. degrees in agricultural economics at North Dakota State University. She received her Ph.D. in Public Policy from George Mason University in 2004.

Dr. Christine Johnson

serves on the board as the liaison from the FHWA. She is the Director of Field Services for the FHWA's western region. The FHWA field organization delivers program services to the FHWA's partners and customers. The western region includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. Johnson is based in Salt Lake City, UT.

Key Faculty

Colorado State University

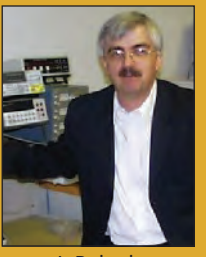
Dr. Rebecca Atadero is an assistant professor in the area of structural engineering in the Department of Civil and Environmental Engineering. She earned her bachelor's degree in civil engineering from Colorado State University. Atadero's master's and doctoral degrees are from the University of California in structural engineering. She developed research interests in the areas of fiber reinforced polymer composites (FRP) for civil engineering; structural reliability methods and reliability-based design; and transportation structures while working on her dissertation studying the development of load and resistance factor design (LRFD) for externally bonded FRP reinforcement for concrete bridges at the University of California, San Diego. At Colorado State University Atadero has continued to study reliability considerations for design with RTP materials, while also conducting research in new areas including development of sustainable materials. She has studied the use of coal fly ash for the manufacture of building products and in a new project is studying concretes made with high volumes of fly ash.

Dr. Jeno Balogh is an affiliate faculty member in the Department of Civil and Environmental Engineering. He has B.S. and Ph.D. degrees from Budapest University of Technology and Economics (Hungary). Presently, he is an assistant professor at Metropolitan State College of Denver, teaching in structural engineering. His research interests are computational mechanics, CAD, steel structures, and timber structures. Dr. Balogh is involved in several MPC projects including composite repair of bridge members, laboratory studies of timber railroad bridge members, and layered wood-concrete systems among others. He also teaches advanced finite element modeling using commercial software.

Dr. Antonio Carraro is an assistant professor in the Department of Civil and Environmental Engineering. He earned his B.S. and M.S. degrees from Universidade Federal do Rio Grande do Sul. He earned his Ph.D. degree from Purdue University. Dr. Carraro has extensive experience on laboratory testing of geo-materials and has served as a consultant for the Department of Public Works in Brazil. He is a member of the International Society for Soil Mechanics and Geotechnical Engineering, the American Society of Civil Engineers, and the Earthquake Engineering Research Institute. His research interests include soil behavior and experimental methods, geotechnical earthquake engineering, foundation engineering, and beneficial use of waste materials.

Dr. Suren Chen is an assistant professor in the Department of Civil and Environmental Engineering. He holds a Ph.D. degree from Louisiana State University where he earned the Michael A. Clause Memorial Outstanding Ph.D. student award. His doctoral dissertation was "Dynamic Performance of Bridges and Vehicles under Strong Winds." His research interests include performance of transportation infrastructure and vehicles under natural hazards, natural hazards using GIS, new materials application and health monitoring, and structural control of vibrations. He has worked on projects funded by the National Science Foundation, the National Research Council-NCHRP IDEA program, and the FHWA-IBRC program. Prior to accepting the CSU appointment, he was a civil engineer with Michael Baker Jr. Corporation, a major international firm.


R. Atadero


J. Balogh


A. Carraro


S. Chen

Dr. Marvin Criswell is professor of civil engineering and the associate department head for academic affairs in the Department of Civil and Environmental Engineering. He earned a B.S. degree from the University of Nebraska, Lincoln, and M.S. and Ph.D. degrees from the University of Illinois Urbana-Champaign. He served as an ABET engineering accreditation visitor and has served on the ASEE Board of Directors, as geographic zone (Zone IV) chairman, and as chairman of the ASEE Civil Engineering Division. His research interests include development of buildings and design code provisions related to reinforced concrete. Marvin advises on MPC supported research on composite wood/concrete bridge systems and timber trestle railroad bridges. He assists with graduate education activities on the TLN network.

Dr. Paul Heyliger has been on the faculty of the Department of Civil and Environmental Engineering for 15 years. He was awarded his Ph.D. in engineering mechanics from Virginia Tech and subsequently did a two-year National Research Council post-doctorate at the National Bureau of Standards. He has been a visiting faculty at the University of California at Santa Barbara, the University of Stuttgart, and the University of Hamburg. His primary research interests are in structural mechanics and analysis with special applications to highly flexible structural elements for energy absorption with application to transportation structures and crash barriers. He has more than 60 refereed journal articles and has been presented with several teaching awards. His research sponsors include the USDOT, National Science Foundation, NASA, USDA, the Army Research Office, AFOSR, and NIST.

Dr. Don Radford is an associate professor in the Department of Mechanical engineering. He earned his B.S. in mechanical engineering and his M.S. in metallurgical engineering from the University of British Columbia. He earned his Ph.D. in materials engineering from Rensselaer Polytechnic Institute. His research interests include process-induced distortion in composites, viscoelastic constitutive modeling, advanced polymer processing, and polymer foams, damage assessment and repair of composites and high temperature composites.

Dr. John W. van de Lindt is an associate professor in the structural engineering program. He earned his B.S. in civil engineering from California State University at Sacramento and both his M.S. and Ph.D. in civil engineering from Texas A&M University. His research interests include nonlinear dynamics, structural reliability, and woodframe structures subjected to seismic and wind loads. He currently chairs the ASCE Committee on the Reliability-Based Design of Wood Structures.


M. Criswell


P. Heyliger


D. Radford


J. van de Lindt


D. Benson


M. Berwick


J. Bitzan


J. Brachman


A. Dybing

North Dakota State University

Doug Benson is an associate research fellow at the UGPTI. Benson earned B.S. degrees in psychology, history, education, and computer science from the University of North Dakota in 1978, 1986, 1987, and 1988 respectively. He earned his M.S. in computer science from North Dakota State University in 1996. Some of his recent research involvements include development of a database management system for the American short line railroad industry, software analyst for a branch line benefit/cost modeling system, and Uniform Rail Costing System (URCS) analyst for the study of time-series grain railroad revenue/cost ratios. He also served as executive director for TEL8 (now TLN) from 1997 to 2004. His research interests include computerized transportation analysis, railroad operations, transportation database, and GIS transportation applications.

Mark Berwick has been involved with the UGPTI since 1995, specializing in the areas of logistics and transportation management, specifically in the areas of motor carrier costing, economic development, and business logistics. Most recently, he has been involved in studying cross-border transportation issues and intermodal transportation challenges and issues in North Dakota and surrounding states and provinces. Additional research has focused on motor carrier economics, the logistics of the North Dakota potato industry and characteristics of the farm truck fleet in the Upper Great Plains states. Since 1999 Berwick has been the director of the North Dakota Strategic Freight Analysis Program, which examines the transportation and logistics of different sectors of the economy every two years. Berwick holds master's and bachelor's degrees in agricultural economics from North Dakota State University.

Dr. John Bitzan is an assistant professor of management. He earned his B.S. degree in economics from St. Cloud State University, his M.A. in applied economics from Marquette University, and his Ph.D. in economics from the University of Wisconsin – Milwaukee, where he specialized in industrial organization and labor economics. Before joining the College of Business, he worked as a transportation economist with the UGPTI and an adjunct professor in agricultural economics.

Jarrett Brachman previously worked for the Central Intelligence Agency and West Point and has one published book on terrorist strategies. He received his undergraduate degree in government and international affairs from Augustana College in 2000 and went on to receive his master's and Ph.D. from the University of Delaware in political science and international relations. It was during his time at the University of Delaware that the attacks on the Twin Towers occurred. The attacks sparked Brachman's interest in why the event happened and what he could do to keep it from happening again. He is establishing a center for transportation and homeland security and teaches courses in the transportation and security fields for the master's of managerial logistics program.

Alan Dybing is an associate research fellow at the UGPTI. He is working toward his Ph.D. in transportation and logistics from NDSU. He earned his M.S. in agribusiness and applied economics and his B.S. in agricultural education from NDSU. He is a member of the Transportation Research Forum and has been doing research relating to the HERS-ST analysis of the North Dakota Highway System, the NDDOT rail plan update, economic impacts of transportation in North Dakota, and truck trip generation of large elevators in North Dakota.

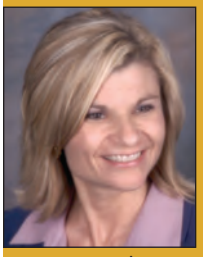
Dr. Jill Hough is an advanced research fellow at the UGPTI and the director of UGPTI's Small Urban & Rural Transit Center (SURTC), which focuses on research, education, and training for the public transportation industry. She earned her Ph.D. in the transportation technology and policy program at the University of California - Davis. She earned B.S. and M.S. degrees in agricultural economics at NDSU. She has published more than 35 reports and journal articles in the areas of public transportation, low-volume roads, logistics, and economic development. Her primary research areas presently relate to mobility of the elderly and disadvantaged as well as transit planning and management. She serves on the National Academies of Science Transit Cooperative Research Program Oversight Project Selection Committee and the National Transit Institute Board of Directors at Rutgers University in New Jersey.

Andrea Huseth-Zosel joined the Upper Great Plains Transportation Institute as an associate research fellow at UGPTI. She was previously a research analyst with MeritCare Health System in Fargo, ND. Huseth-Zosel holds a B.S. in secondary social studies education from Minnesota State University-Moorhead and B.A. and M.S. degrees in sociology from North Dakota State University. She is working with the UGPTI's Rural Transportation Safety and Security Center which promotes and enhances the region's transportation safety and security through research, education, and outreach. Her work focuses primarily on studying and enhancing rural traffic safety by addressing driver behavior issues. She is currently involved in an MPC project partnering with the NDSU Extension Service that is designed to raise awareness and reduce traffic deaths and injuries for North Dakota youth through a pilot educational program.

Dr. Brenda Lantz is an associate research fellow at the UGPTI and is the program director for the Transportation Safety Systems Center. She earned her Ph.D. in business administration and supply chain and information systems at Pennsylvania State University in 2006. She also received a M.S. in applied statistics and a B.S. in sociology from NDSU. She specializes in the areas of intelligent transportation systems for commercial vehicle operations, business logistics and commercial vehicle safety - subjects on which she has authored and presented numerous articles.

Mark Lofgren is an associate research fellow at the UGPTI. He earned his M.B.A. from NDSU and his B.S. in industrial management from Minnesota State University – Moorhead. His research interests include freight movement in North Dakota and the region, logistics and economic development, supply chain management, intermodal transportation, regional transportation issues and the effects on rural businesses and agriculture producers, transportation safety/security, and motor carriers.

Subhro Mitra is Associate Research Fellow at the Upper Great Plains Transportation Institute, and a faculty in the Transportation Logistics Ph.D. program; he is instructor of the following graduate courses: Spatial Transportation, Transportation System Modeling and Urban Transportation Systems Analysis. He has 14 years of diverse work experience in both operational and technical aspects of transportation and highway engineering. He is principal investigator of a number of ongoing projects funded by MPC and NDDOT. He had been involved in a significant number of transportation projects in India. He is a registered professional engineer of the State of North Dakota. He earned his Ph.D. in transportation and logistics at NDSU in 2006. While earning that degree, he was a research assistant at UGPTI.


J. Hough


A. Huseth-Zosel


B. Lantz


M. Lofgren


S. Mitra


A. Jones


H. Mahgoub


R. Reid


A. Sigl


F. Ting

South Dakota State University

Dr. John Ball is part of the Department of Horticulture, Forestry, Landscape & Parks. He earned a B.S. in forest management from Michigan Technological University. He earned a M.S. and Ph.D. in forest entomology from Michigan State University. His areas of research interest include the influence of urban development on forest fragmentation; the influence of tree cover on residential heating and cooling cost; the competitive relationships between ornamental trees and turf grasses; and industry training opportunities such as utility line clearance electrical hazards, logger education to advance professionalism (LEAP), and plant health care for arborists.

Dr. Allen Jones is an associate professor in the Department of Civil & Environmental Engineering. He earned his B.S. and M.S. in geological engineering, geotechnical option from the University of Idaho. He earned his Ph.D. in civil engineering from the University of Washington. His research interests include the following: probabilistic seismic hazard assessments, liquefaction induced ground damage, paleoliquefaction, time series analysis, probability and spatial statistics, lateral earth pressures and earth retaining structures, abandoned mine lands (AML) reclamation, AML data integration, and mine subsidence.

Dr. Hesham Mahgoub joined the Department of Civil and Environmental Engineering at SDSU as an assistant professor soon after the university became a partner in MPC. His previous research work includes virtual commercial vehicle inspection stations, sustainable infrastructure development for rural communities, pavement materials and construction, infrared technology in pavement evaluation, and recycled materials properties. Before joining SDSU in August 2006, Mahgoub was a visiting professor at the University of Central Florida in Orlando from 2001 until 2006. Mahgoub has a B.S., M.S., and Ph.D. degrees in civil engineering, all from the Cairo University, Egypt.

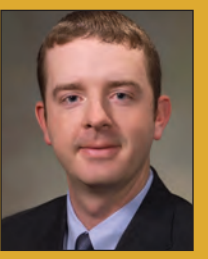
Dr. Richard Reid has extensive experience in design and construction of rigid pavement. He is investigating optimized design and construction methods of concrete pavement for South Dakota highways. The study, which will extend over a period of three years, is co-sponsored by South Dakota Department of Transportation and SDSU. Reid is the assistant dean of engineering and professor of civil and environmental engineering at SDSU. He has a B.S. in civil engineering from the Citadel, and his M.S. and Ph.D. degrees in civil engineering were earned at The Georgia Institute of Technology. He spent 13 years serving as an engineering officer in the US Air Force where he developed experience as an environmental, pavement and research engineer. His previous research includes investigating the effects of explosions on reinforced soil systems, performance of integral bridge abutments, pavement maintenance and soil testing. Since coming to SDSU in 1995, Reid has served as a civil engineering faculty member, interim department head and assistant dean. He has been named College of Engineering Teacher of the Year three times and was also recognized as Brookings Area Educator of the Year. He is a licensed professional engineer and also serves in the South Dakota Air National Guard.

Dr. Arden Sigl is a professor in the Department of Civil & Environmental Engineering. He received his B.S. and M.S. in civil engineering. He earned his Ph.D. in civil engineering from Northwestern University. His research has been in areas relating to concrete materials, high-performance concrete, instrumentation and assessment of the performance of full-scale structures, non-linear structures, and structural stability.

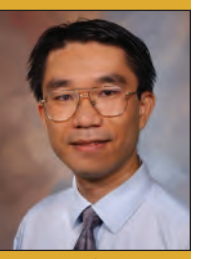
Dr. Ali Selim is director of the South Dakota Local Transportation Assistance Program and professor of civil and environmental engineering at South Dakota State University. In Selim's 30 years of experience, he has taught courses in highways and traffic engineering; bituminous materials; transportation engineering; highway capacity analysis; pavement management and rehabilitation; and statics. His research interests include: low-volume roads, gravel roads maintenance and design, asphalt mix technology, geometric design of roads and traffic accident investigations. Selim earned a B.S. from Ain-Shams University, Cairo, Egypt. He received his M.S. and Ph.D. from the University of Missouri-Rolla.

Dr. Francis Ting is a professor in the Department of Civil & Environmental Engineering. He earned his B.S. in civil engineering from the University of Manchester Institute of Science and Technology. He received his M.S. and Ph.D. from the California Institute of Technology. His research interests include breaking waves, fluid turbulence, sediment transport, bridge scour, and open-channel hydraulics.

University of Utah


R. Porter


P. Tikalsky


X. Zhou

Dr. Harald M. Hjelle is serving as a visiting faculty member at the University of Utah. During his sabbatical at the Utah Traffic Lab this fall, he will be working on a comparative study of the environmental performance of freight transport alternatives as well as the economic efficiency of intelligent transport systems.

Hjelle is a transport economist affiliated to Molde University College in Norway. He has his major in economics from the University of Oslo and a Ph.D. from the Norwegian University of Technology and Science (NTNU) in Trondheim. Before his career at Molde UC, he was a researcher at the Institute of Transport Economics in Oslo. His main research areas are methodology for appraisal of major transport infrastructure projects, optimal pricing of transport services, and the environmental performance of transport modes. He has been commissioned by the Norwegian Public Roads Administration, The Norwegian Civil Aviation Authority and the Norwegian Ministry of Transport and Communications in a project related to the development of appraisal methodology for infrastructure projects within the public road sector and aviation and pricing issues related to road use and the use of marine fairways and ports.

Dr. R.J. Porter joined the University of Utah's Civil and Environmental Engineering Department as an Assistant Professor in July 2009. He comes to Utah following two years of post-doctoral research work at the Texas Transportation Institute of the Texas A&M University System. Dr. Porter holds a B.S. (1999), M.Eng. (2000) and Ph.D. (2007) in Civil Engineering from The Pennsylvania State University. He was a full-time research assistant at the Pennsylvania Transportation Institute during completion of his doctoral degree. Prior to that, Dr. Porter was a Research Associate at the Virginia Tech Transportation Institute in Blacksburg, Virginia and a Research Assistant at the Last Resource Inc., in Bellefonte, Pennsylvania. Dr. Porter is a member of the Transportation Research Board (of the National Academies) Operational Effects of Geometrics Committee [AHB65] and Chair of the Subcommittee on Performance-Based Analysis of Geometric Design [AHB65(3)]. He was honored as a Leadership Fellow of the Eno Transportation Foundation in May 2005. He was also recognized at the 2006 Council of University Transportation Centers Awards Banquet as the Student-of-the-Year for the Mid-Atlantic Universities Transportation Center.

Dr. Aleksandar Stevanovic, is a post-doctoral research associate at the Utah Traffic Lab. He earned his B.S. degree in transportation and traffic engineering from the University of Belgrade in Serbia. He earned his M.S. and Ph.D. degrees in civil and environmental engineering from the University of Utah. At the University of Utah, he has been involved in research on traffic management through the use of traffic signal control systems, high-occupancy vehicle lanes.

Dr. Paul J. Tikalsky is professor and chair of the Department of Civil & Environmental Engineering. He joined the University of Utah in that position in 2006. Previously, he was professor of civil and environmental engineering at Pennsylvania State University, deputy director of the Pennsylvania Transportation Institute at Penn State; senior research fellow at the Czech National Academy of Sciences, and associate professor of civil engineering at Santa Clara University. He is a registered professional engineer in the State of California and a Fellow of the American Concrete Institute (ACI). He received his B.S. degree in civil and environmental engineering from the University of Wisconsin at Madison and his M.S. and Ph.D. degrees in structural engineering from the University of Texas at Austin. Tikalsky's research is in the area of the development and implementation of higher durability concrete structures and the use of admixtures and supplementary cementitious materials.

Xuesong Zhou is an assistant professor in the Department of Civil and Environmental Engineering at the University of Utah. He received his Ph.D. degree in civil engineering from the University of Maryland in 2004. Prior to joining the University of Utah, Zhou worked as a traffic data architect and senior software engineer at Dash Navigation Inc., designing and developing real-time traffic estimation and prediction algorithms for the first commercialized internet-connected GPS navigation system in the United States. Zhou's research interests include modeling and simulation of dynamic traffic systems, estimation and prediction of network traffic conditions using advanced sensor technologies. For the past seven years, he has been assisting the FHWA to develop and provide technical support for a large-scale simulation-based dynamic traffic assignment system, namely DYNASMART-P, which is one of FHWA's 24 priority, market-ready technologies and innovations.

University of Wyoming Faculty


T. Edgar


J. Puckett


E. Wilson


R. Young

Dr. Michael Barker is a professor of civil engineering. He specializes in steel bridges and bridge engineering and also does experimental and field testing. Barker's research centers on bridge serviceability and performance. Barker received his B.S. in civil engineering from Purdue University. Also at Purdue, he earned his M.S. in civil engineering. He received his Ph.D. in civil engineering from the University of Minnesota.

Dr. Thomas V. Edgar works with flow, deformation and pollutant migration in saturated and unsaturated porous media, slope stability, and expansive soils. An associate professor in the College of Engineering, Edgar recently worked with soil additives for unpaved road stability and long-term maintenance, investigated effects of freeze and thaw on highway soils, studied protection of wellhead areas for public water supplies and conducted research on consolidation of partially saturated soils due to applied stress, moisture and thermal gradients. His B.S. degree is from the University of Colorado and his M.S. and Ph.D. are from Colorado State University, all in civil engineering.

Dr. Jay A. Puckett is a professor of civil engineering and a licensed engineer who has worked in research and development for 22 years. He was a subconsultant in the development of the LRFD Bridge Design Specification. Puckett has conducted

numerous research projects in the area of software development and physical testing of bridges and bridge components ranging from lightly reinforced bridge decks, fiber-reinforced approach embankment fills, asphalt joints, temperature effects and wood girders. Software development efforts include analysis, design and rating tools for steel, concrete, pre-stressed concrete and wood. He has been honored with research, graduate teaching and Most Outstanding Professor awards. His B.S. degree is from the University of Missouri and his M.S. and Ph.D. degrees are from Colorado State University, all in civil engineering.

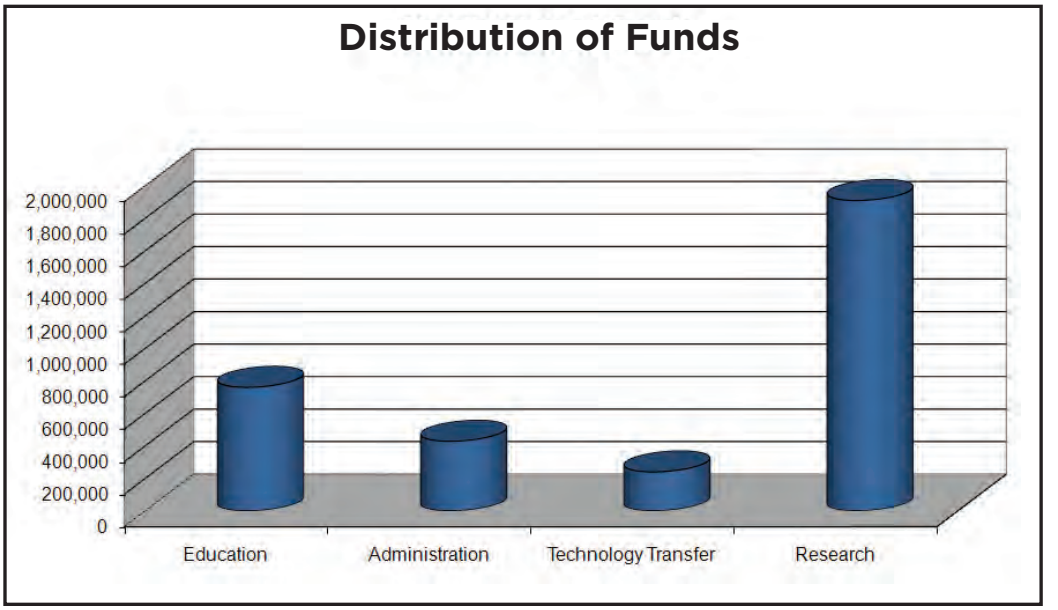
Dr. Eugene M. Wilson is professor emeritus of civil engineering and past program coordinator for the Mountain-Plains Consortium – Rural Transportation Research Program. Since 1975, he has been a traffic-engineering consultant working with both private and public sectors. Wilson is nationally certified as a Professional Traffic Operations Engineer. Named the 59th honorary member of ITE's international board of directors, he also earned the ITE Lifetime Achievement Award for the Colorado-Wyoming section. His B.S. and M.S. degrees were earned at the University of Wyoming and his Ph.D. is from Arizona State University, all in civil engineering. Iowa, Wyoming, and Colorado awarded him status as a professional engineer.

Dr. Rhonda K. Young is an assistant professor of civil engineering. Her research interests include transportation decision-making, statewide multimodal planning, and freight transportation. Her research efforts in transportation decision-making and multimodal planning stem from her work with the Washington State Department of Transportation in developing a computer-based tool to aid in funding decisions entitled Multimodal Investment Choice Analysis (MICA). Young's general interests in this area focus on methods to increase the efficiency of agency spending toward transportation infrastructure. Her work in the area of freight transportation deals with freight mobility issues and how freight transportation stakeholders can be brought into the statewide planning process. She received her bachelor degree in civil engineering from Oregon State University, master's and Ph.D. degrees in civil engineering from the University of Washington, and has a graduate certificate in transportation, trade, and logistics (GTTL) from the University of Washington.

University of Wyoming Staff

George Huntington works with the Wyoming T2/LTAP Center where he has taught workshops on erosion and sediment control, soils, work zone traffic control, pavement design, and other topics. He has also worked extensively on the Center's asset management project. Huntington received his bachelor's and master's degrees in civil engineering from the University of Wyoming. He spent eight years with WYDOT, including five years as a materials engineer in Cheyenne and three years as a project engineer in Sundance and Rawlins.

Resources and Funding • 7.1.08 – 6.30.09



Funding Sources:

North Dakota Department of Transportation
Utah Department of Transportation
Wyoming Department of Transportation
Colorado State University
Bismarck/Mandan Metropolitan Planning Organization
North Dakota Wheat Commission
South Dakota Department of Transportation
Grand Forks/East Grand Forks Metropolitan Planning Organization
Utah Transit Authority
North Dakota State University
Fargo-Moorhead Council of Governments
South Dakota State University
University of Utah
University of Wyoming
Upper Great Plains Transportation Institute
Colorado Department of Local Affairs
BNSF Railroad
TLN Telecommunications Network (includes the NDDOT, WYDOT, MTDOT)

Research Project Status • 7.1.08 – 6.30.09

New Research Projects

MPC-301	Sustainable Concretes for Transportation Infrastructure (CSU, R. Atadero)
MPC-302	Enabling Innovate Steel Plate Grider Bridges: Simple Made Continuous (CSU, J.van de Lindt)
MPC-303	Seed Project-Beneficial Use of Off Specification Coal Combustion Products to Increase the Stiffness of Expansive Soil-Rubber Mixtures (CSU, A. Carraro)
MPC-304	Feasibility Study of Mobile Scanning Technology for Fast Damage Detection of Rural Bridges Using Wireless Sensors (CSU, S. Chen)
MPC-305	Jointed Plain Concrete (JPC) Design and Construction Review (SDSU, N. Wehbe)
MPC-306	Optimization of Pavement Marking Performance (SDSU, N. Wehbe)
MPC-307	Maximum Velocity and Shear Stress in Flow Fields around Bridge-Abutments in Compound Channels (University of Wyoming, R. Ettema)
MPC-308	Phase I: Pilot Project to Develop Rural Youth Occupant Protection Education Platform (NDSU, T. VanWechel)
MPC-309	Rural Road Signage: Simulated Driving to Evaluate Low-Cost Safety Improvements for Older Drivers (NDSU, K. Vachal)
MPC-310	Evacuation Modeling for Small to Medium Sized Metropolitan Areas (NDSU, S. Birst, M. Lofgren)
MPC-311	Forecasting Bridge Deterioration Rates and Improvement Costs (NDSU, S. Mitra, D. Tolliver, K. Johnson)
MPC-312	A GIS Model for Bridge Management and Routing (NDSU, S. Mitra, A. Dybing, K. Johnson, D. Tolliver)
MPC-313	Evaluation of LRT and BRT Impact on Traffic Operations in Salt Lake City Metropolitan Region (University of Utah, A. Stevanovic, P. Martin)
MPC-314	Assessing the User Impacts of Fast-Track Highway Construction (ABC) (University of Utah, P. Martin)

Ongoing Research Projects

MPC-179	Full-Scale Laboratory Testing of a Timber Railroad Bridge (CSU, R. Gutkowski)
MPC-193	Rigorous Computer Modeling of Timber Trestle Railroad Bridges (CSU, R. Gutkowski)
MPC-207	An Evaluation of Region 8 State Departments of Transportation and Metropolitan Planning Organizations' GIS Technology Application (NDSU, D. Benson)
MPC-248	Wyoming Freight Movement System Vulnerabilities and ITS (UWY, R. Young)
MPC-250	Interactive Effects of Traffic- and Environmental-Related Pavement Deteriorations (NDSU/UWY, D. Tolliver/K. Ksaibati)
MPC-260	Impact Performance Testing of Roadway Safety & Security Barriers - Phase 3 (CSU, R. Gutkowski)
MPC-262	Cambering of Wood-Concrete Highway Bridges (CSU, R. Gutkowski)
MPC-266	Small Urban and Rural Transportation - Phase II (NDSU, A. Smadi)
MPC-268	Accessing International Container Markets from the Northern Plains (NDSU, K. Vachal)
MPC-270	Serviceability Limits and Economical Steel Bridge Design (UWY, M. Barker)
MPC-271	A Comprehensive Transportation Safety Evaluation Program in the State of Wyoming (UWY, K. Ksaibati)
MPC-277	Safety Factor Increase to Fatigue Limit States through Shear Spiking for Timber Railroad Bridge Rehabilitation (CSU, J. van de Lindt)
MPC-278	Bus-Stop Shelters - Improved Safety (CSU, W. Charlie)
MPC-279	Structural Applications of Self-Consolidating Concrete (SDSU, N. Wehbe)
MPC-280	Bridge Scour in Cohesive Soils (SDSU, F. Ting)
MPC-281	The Assessment of Chloride Injury from De-Icing Salts in Trees Along State Highways in the Black Hills (SDSU, J. Ball)

MPC-287 Effectiveness of Using Recycled Asphalt Materials and other Dust Suppressants in Gravel Roads (UWY, K. Ksaibati)
MPC-288 Utah Department of Transportation Traffic Operations Center Operator Training (UUT, P. Martin)
MPC-290 A Comprehensive Transportation Safety Evaluation Program in the State of Wyoming (UUT, A. Stevanovic)
MPC-291 A New Generation of Emergency Escape Ramps (CSU, J. van de Lindt)
MPC-293 Development of GIS Multimodal Capacity Model for Northern Tier Freight Corridor (NDSU, S. Mitra)
MPC-294 Indian Reservation Roads (IRR) and Local Roads Modeling and Management Databases (NDSU, D. Benson)
MPC-297 Understanding Influence of Transportation and Other Factors on the Economic Growth on Non-metropolitan Cities (NDSU, K. Vachal)
MPC-300 Demand Estimation for Corn Transportation: A North Dakota Case Study (NDSU, A. Dybing)

MPC Completed Research Projects

MPC-175 An Evaluation of ITS/CVO Application Technology in Logistics and Supply Chain Management (NDSU, B. Lantz) MPC Report No. 06-186
MPC-176 Road Dust Suppression: Effect on Maintenance, Stability, Safety and the Environment (CSU, T. Sanders) MPC Report No. 04-156
MPC-177 Moment-Rotation Tests of High Performance Steel (HPS) I-Girders (CSU, B. Hartnagel) MPC Report No. 03-148
MPC-178 Experimental Wood-Concrete Railroad Bridge (CSU, R. Gutkowski) MPC Report No. 04-165
MPC-180 North Front Range Transportation Research Internships (CSU, R. Gutkowski) MPC Report No. 01-124
MPC-181 University Transportation Survey (CSU, R. Gutkowski) MPC Report No. 03-150
MPC-182 Evaluating the Long Term Pavement Performance Data (UWY, K. Ksaibati) MPC Report No. 02-130
MPC-183 Defining a Road Safety Audit Program for Enhancing Safety and Reducing Tort Liability (UWY, E. Wilson) MPC Report No. 00-113
MPC-184 Accident Data Availability (UofU, P. Martin) MPC Report No. 01-118
MPC-185 Incident Detection Algorithm Evaluation (UofU, P. Martin) MPC Report No. 01-122
MPC-186 Evaluation of Road Weather Information System Data & Dissemination of Data to the Public (UofU, P. Martin) MPC Report No. 01-119
MPC-187 Survey of Educational and Human Capital Needs of the Transportation Construction Industry (NDSU, O. Salem) MPC Report No. 02-134
MPC-188 An Evaluation of the Impacts of ITS/CVO Technologies Throughout the Supply Chain (NDSU, B. Lantz) MPC Report No. 01-117A
MPC-189 The Differential Effects of Deregulation on Rail Rates (NDSU, J. Bitzan) MPC Report No. 03-144
MPC-191 Transportation and Logistics Characteristics of the Potato Industry: Implications for Highway Planning (NDSU, M. Berwick) MPC Report No. 01-123
MPC-192 Biennial Strategic Transportation Analysis (NDSU, G. Griffin) MPC Report No. 01-127.1-5
MPC-194 Effects of Environmental Exposure on Timber Railroad Bridge/Track Members and Connectors (CSU, R. Gutkowski) MPC Report No. 04-167
MPC-195 North Front Range Transportation Research Internships (CSU, R. Gutkowski) MPC Report No. 01-124
MPC-196 Moment-Rotation Tests of High Performance Steel I-Girders (CSU, B. Hartnagel) MPC Report No. 03-148
MPC-197 Road Dust Suppression: Effect on Maintenance, Stability, Safety and the Environment (CSU, T. Sanders) MPC Report No. 04-156
MPC-198 Predicting the Fluctuations in Temperatures of Asphalt Pavements (UWY, C. Yavuzturk/K. Ksaibati) MPC Report No. 02-136
MPC-199 Low Volume Roads and Bridges (UWY, K. Ksaibati) MPC Report No. 02-130
MPC-200 Defining a Road Safety Audit Program for Enhancing Safety and Reducing Tort Liability (UWY, E. Wilson) MPC Report No. 02-129

MPC-201	Updating the Uniform Rail Costing System Regressions (NDSU, J. Bitzan) Terminated 8/31/03
MPC-202	Truck Costing Model for Transportation Managers (NDSU, M. Berwick) MPC Report No. 03-152
MPC-203	Containerized Grain & Oilseed Exporters - Industry Profile and Survey (NDSU, K. Vachal) MPC Report No. 02-132 and MPC Report No. 03-151
MPC-204	Strategies for Improving DOT Retention and Motivation among Professional Staff (NDSU, G. Griffin) MPC Report No. 02-137
MPC-205	Predicting and Classifying Voluntary Turnover Decisions for Truckload Drivers (NDSU, G. Griffin) MPC Report No. 02-135
MPC-208	Surface Street Level of Service Using Existing Detector Infrastructure (UofU), P. Martin) MPC Report No. 02-133
MPC-209	Advanced Traffic Management System Evaluation Data Collection Methodology (UofU, P. Martin) MPC Report No. 03-142
MPC-210	Adaptive Signal Control for Downtown Salt Lake City (UofU, P. Martin) MPC Report No. 03-141
MPC-211	Evaluating and Improving the Safety of Pedestrian Crossing in Utah (UofU, W. Cottrell) MPC Report No. 04-157
MPC-213	Paratransit Coordination for Rural Communities (UofU, P. Martin) MPC Report No. 04-161
MPC-214	Pultruded Composite Shear Spike for Repair of Large Timber Members (CSU, D. Radford) MPC Report No. 04-163
MPC-215	Support Motion Effects in a Timber Trestle Bridge: Physical and Analytical Modeling (CSU, R. Gutkowski) MPC Report No. 06-184
MPC-216	Experimental Thick-Deck Wood-Concrete Highway Bridge Construction Year 1 and 2 (CSU, R. Gutkowski) MPC Report No. 04-165
MPC-217	Road Dust Suppression: Effect on Maintenance, Stability, Safety and the Environment (CSU, T. Sanders) MPC Report No. 04-156
MPC-220	Costs, Pricing, and Regulatory Alternatives for Mergers (NDSU, J. Bitzan) MPC Report No. 03-145
MPC-221	Trip Generation Rates for Grain Elevators: A Tool for State and Local Highway Planners (NDSU, D. Tolliver) MPC Report No. 06-185
MPC-222	Strategies for Improving DOT Employee Retention and Motivation (NDSU, L. Kalnbach) MPC Report No. 02-137
MPC-223	Evaluating the Impact of DOTs QC/QA Programs on Pavement Performance: Year 2 (UWY, K. Ksaibati) MPC Report No. 03-146 and MPC Report No. 04-160
MPC-224	Utilizing the GLWT in Evaluating Moisture Susceptibility of Asphalt Mixes (UWY, K. Ksaibati) MPC Report No. 02-138
MPC-225	Evaluation of the I-15 High Occupancy Vehicle Lanes (UofU, P. Martin) MPC Report No. 04-158
MPC-226	Adaptive Signal Control for Downtown Salt Lake City, Part II (UofU, P. Martin) MPC Report No. 03-141
MPC-227	Small Urban University Transit: A Case Study (NDSU, J. Hough) MPC Report No. 05-169
MPC-228	Trucking Industry Churn and Its Impact on Communities and ITS Adoption (NDSU, J. Rodriguez) MPC Report No. 08-193
MPC-229	Asset Management of Roadway Signs through Advanced Technology (NDSU, Kellee Kruse) MPC Report No. 03-149
MPC-231	Automated Data Collection, Analysis, and Archival (UofU, P. Martin) MPC Report No. 03-153
MPC-232	Detector Technology Evaluation (UofU, P. Martin) MPC Report No. 03-154
MPC-233	Evaluate Effectiveness of Dilemma Zone Advanced Signal Warning (UofU, P. Martin) MPC Report No. 03-155
MPC-234	Simplified Impact Testing of Traffic Barrier Systems (CSU, R. Gutkowski) MPC Report No. 03-143 & 05-172
MPC-235	Highly Flexible Crash Barriers (CSU, P. Heyliger) MPC Report No. 04-162
MPC-236	Evaluation of Moisture Susceptibility of Asphalt Mixtures Containing Bottom Ash (UWY, K. Ksaibati) MPC Report No. 04-159
MPC-237	Affordable Trip Feasibility Scheduling for Rural Paratransit Systems (UofU, W. Grenney) MPC Report No. 05-171
MPC-238	Evaluation of Strategic Logistics of Rural Firms (NDSU, M. Berwick) MPC Report No. 05-177

MPC-239 Investment in Rural Roads: Willingness-to-Pay for Improved Gravel Road Services in Freight Transportation (NDSU, T VanWechel) MPC Report No. 04-168

MPC-240 Evaluation of Moisture Susceptibility of Asphalt Mixtures Containing Bottom Ash (UWY, K. Ksaibati) MPC Report No. 06-179

MPC-241 Evaluation of Pavement Crack Filling Materials (UWY, K. Ksaibati) MPC Report No. 06-180

MPC-242 Wyoming Freight Movement and Wind Vulnerability (UWY, R. Young) MPC Report No. 05-170

MPC-243 Assessment of Thermal Stresses in Asphalt Pavements Due to Environmental Conditions Including Freeze and Thaw Cycles (UWY, D. Yavuzturk) MPC Report No. 06-181

MPC-245 Video Imaging System Evaluation (UofU, P. Martin) MPC Report No. 04-166

MPC-246 High Occupancy Vehicle Evaluation II (UofU, P. Martin) MPC Report No. 04-164

MPC-247 Utilizing Recycled Glass in Roadway (UWY, K. Ksaibati) MPC Report No. 07-192

MPC-249 Pultruded Composite Shear Spike for Repair of Timber Bridge Members (CSU, R. Gutkowski) MPC Report No. 05-173

MPC-251 Adaptive Signal Control IV (UofU, P. Martin) MPC Report No. 06-182

MPC-252 High Occupancy Vehicle Lanes Evaluation III (UofU, P. Martin) MPC Report No. 05-174

MPC-253 Effectiveness of Traveler Information (UofU, P. Martin) MPC Report No. 05-175

MPC-254 Utah Intersection Safety: Issues, Contributing Factors and Mitigations (UofU, W. Cottrell) MPC Report No. 05-176

MPC-255 Network Planning Model for Local and Regional Railroad Systems (NDSU, D. Tolliver) Published in the State Rail Plan (2005)

MPC-256 Legal Establishment of County Roads in Wyoming (UWY, K. Ksaibati) MPC Report No. 07-191

MPC-257 Legal Establishment of County Roads (UWY, K. Ksaibati) MPC Report No. 07-191

MPC-258 Utilizing Recycled Glass in Roadways (UWY, K. Ksaibati) MPC Report No. 07-192

MPC-259 Relating Vehicle-Wildlife Crash Rates to Roadway Improvements (UWY, R. Young) MPC Report No. 07-189

MPC-261 Time-Dependent Loading of Repaired Timber Railroad Bridge Members (CSU, R. Gutkowski) MPC Report No. 07-190 New Title: Durability and Ultimate Flexural Loading of Shear Spike Repaired, Large-Scale Timber Railroad Bridge Members

MPC-263 Traffic Operations in Small Urban and Rural Areas (NDSU, A. Smadi) Website: www.surtoc.org with on-line survey 11/1/07

MPC-264 Evaluation, Definition, and Identification of the Criteria for Establishing Freight Corridors (NDSU, M. Berwick) MPC Report No. 08-201

MPC-265 Design/Build vs. Traditional Construction User Delay Modeling: An Evaluation of the Cost Effectiveness of Innovative Construction Methods for New Construction (UofU, P. Martin) MPC Report No. 07-187A and MPC Report No. 07-187B

MPC-267 Estimating Local Economic Impacts of Rail Investments and Rail Capacity Constraints in the HRS Wheat Market (NDSU, K. Vachal) Project Terminated 2/7/08

MPC-269 Economic and Environmental Implications of Alternative Fuel Use and Regulations in the Mountain-Plains Region (NDSU, M. Berwick) MPC Report No. 08-203

MPC-272 Use of Wind Power Maps to Establish Fatigue Design Criteria for Traffic Signal and Variable Message Structures (UWY, J. Puckett) MPC Report No. 08-201

MPC-273 Low-Cost Soft Crash Barriers (CSU, P. Heyliger) MPC Report No, 08-198

MPC-274 Beneficial Use of Waste Tire Rubber in Low-Volume Road and Bridge Construction (CSU, J. Carraro) MPC Report No. 08-202

MPC-275 Z-Spike Rejuvenation to Salvage Timber Railroad Bridge Members (CSU, R. Gutkowski) MPC Report No. 08-208

MPC-276 Use of Salvaged Utility Poles in Roadway Bridges (CSU, R. Gutkowski) MPC Report No. 08-197

MPC-282 Express Lane Genetic Algorithm Microsimulation Modeling (UofU, P. Martin) MPC Report No. 09-210

MPC-283 Seismic Vulnerability and Emergency Response of UDOT Lifelines (UofU, P. Martin) Project Postponed until further discussion 6/7/07

MPC-284 Adaptive Signal Control Evaluation V (UofU, P. Martin) MPC Report No. 08-200

MPC-285 Structural Performance of Self Consolidating Concrete Made with Limestone Aggregates (SDSU, N. Wehbe) MPC Report No. 08-186

MPC-286 Developing System for Consistent Messaging on Interstate 80's Dynamic Message Signs (UWY, R. Youngs) MPC Report No. 09-211

MPC-289 Evaluation of Optimal Traffic Monitoring Station Spacing on Freeways (UUT, P. Martin) MPC Report No. 09-214

MPC-292 Traffic Safety Vulnerability Information Platform for Highways in Mountainous Areas Using Geospatial Multimedia Technology (CSU, S. Chen) MPC Report No. 08-209

MPC-295 Integrating Security into Small MPO Planning Activities (NDSU, M. Lofgren) MPC Report No. 08-199

MPC-296 Phase II, Driver Knowledge, Attitude, Behavior and Beliefs: Focus Group - Young Male Drivers (NDSU, T. VanWechel)

MPC-298 Generating Public Involvement in Transportation Policy and Funding Decision Making Process (NDSU, J. Mielke) Report on file with NDDOT due to confidentiality of data.

MPC-299 Integrating Planning and Operations Models to Predict Work Zone Traffic (NDSU, A. Smadi) MPC Report No. 08-205

(Before TEA21 Funding)

MPC-042 Dynamic Impact Load Tests on a Moderate-Weight Bridge Guardrail (CSU, R. Gutkowski) MPC Report No. 07-188

MPC-125 Factors Affecting Rail Car Supply (NDSU, K. Vachal) MPC Report No. 01-121

MPC-137 Railroad Bridge Strengthening Needs - Year 2 (CSU, R. Gutkowski) MPC Report No. 03-147

MPC-138 Full Scale Laboratory Testing of a Timber Trestle Railroad Bridge (CSU, R. Gutkowski) MPC Report No. 02-139

MPC-140 Shear Key for Strengthening Bridges (CSU, R. Gutkowski) MPC Report No. 01-126

MPC-149 ATM for Non-Metro Communities During Special Events and Severe Weather Conditions Using Remote Weather Information Systems (USU, B. Grenney) MPC Report No. 01-120

MPC-154 An Assessment of Rural Road Needs in the Mountain-Plains Region (NDSU, J. Hough) MPC Report No. 03-140

MPC-156 Short Line Railroad-Factors Contributing to Success (NDSU, J. Bitzan, D. Tolliver, P. Fisher) MPC Report No. 01-128

MPC-162 Field Evaluation of Cement Treated Bases (UWY, K. Ksaibati) MPC Report No. 00-115

MPC-164 Refining the Road Safety Audit Process for Local Rural Roads (UWY, E. Wilson) MPC Report No. 00-114

MPC-169 County Road Planning Workbook (NDSU, J. Hough) MPC Report No. 06-183

MPC-171 An Evaluation of ITS Transit Applications Used to Facilitate the Welfare to Work Program (NDSU, J. Hough) MPC Report No. 02-131

MPC-174 Assessing Agriculture's Long-Term Rail Needs (NDSU, J. Bitzan) MPC Report No. 01-116