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Region 8

# MOUNTAIN-PLAINS CONSORTIUM NEWS

## PROJECT HIGHLIGHTS

### Traffic safety evaluations are a first step to safety improvements on local roads

When a car crashes on one of North Dakota's rural roads, there's a good chance poor signage, outdated road design, improper or out-of-place roadside barriers or obstacles, or bad pavement markings may be at least partly to blame.

More than 40 percent of fatal motor vehicle crashes in North Dakota occurred on local roads – the two-lane gravel and pavement roads that make up the bulk of North Dakota's road systems. The U.S. Department of Transportation indicates up to a third of those crashes could have been avoided if the roads, markings and signs were updated.

## Contents



With support from the Mountain-Plains Consortium, the Upper Great Plains Transportation Institute at NDSU is working with local cities, counties and tribal authorities to conduct "traffic safety evaluations" on crash-prone road segments to identify safety improvements. "The idea is to implement low-cost improvements on road segments that local residents and road managers have identified as high-risk for crashes," notes researcher Kim Vachal.

"This is not a case where we go in and tell local officials what to do," Vachal says. County commissioners, road superintendents, law enforcement personnel, maintenance personnel, DOT staff and others may be involved in the evaluation. "We help them see and understand things they didn't before," she says. The team identifies three types of improvements:

- Immediate safety improvements that should be made, including vegetation removal to improve sight lines, sign replacement, etc.
- Low cost improvements that could have a positive impact on safety, such as improved signing, assuring there is an adequate clear zone around intersections, etc.

(traffic safety evaluations continued on page 2)

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## Corrosion of reinforcement in CRC pavements

Half-cell potential measurements of CRC pavement in South Dakota

In an MPC-funded project at SDSU, a team of researchers is investigating corrosion of steel reinforcement in continuously reinforced concrete (CRC) pavements. The study is expected to identify the causes and extent of reinforcement corrosion in CRC pavements in South Dakota and to assess the effectiveness of corrosion mitigation products.

Crack mapping and half-cell potential measurements were performed at three CRC pavement sites on I-29 and I-90 near Sioux Falls, SD. Several concrete cores and concrete dust samples at different pavement depths were also collected from the three sites. The cores and the dust samples are being analyzed to establish chloride penetration profiles at and away from pavement cracks. Chloride profiles will be used to determine if the use of deicing chemicals during winter maintenance is promoting the corrosion of the reinforcement. The rebar in the cores will also be subjected to scanning electron microscope (SEM) analysis to determine the extent of reinforcement corrosion. Laboratory specimens of concrete blocks with embedded reinforcement will be tested under corrosive conditions to demonstrate the effectiveness of various mitigation strategies including crack sealing and the use of corrosion inhibitors.

The study is co-sponsored by MPC and the South Dakota Department of Transportation. The research team consists of professor of environmental and civil engineering Nadim Wehbe, associate professor Allen Jones, and graduate research assistant Stephanie Peters.

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(traffic safety evaluations continued)

- High-cost improvements that could be considered when funds are available, such as rehabilitation or reconstruction to improve road condition and geometry.

One traffic safety audit was conducted along scenic Barnes County highway 21 which runs south of Valley City along the Sheyenne River. Examples of resulting improvements included upgraded signs and pavement markings on several curves and the removal of vegetation to improve visibility.

Vachal notes that transportation safety evaluations are a practical and proactive approach to safety that reduces crash incidents and severity through the low-cost, high-value improvements. They also create an environment where safety is a consistent consideration in road maintenance and improvement.

## Conclusions from gravel roads management study outlined in report

– by Khaled Ksaibati and George Huntington

Led by the Wyoming T2/LTAP Center and the University of Wyoming, a group of experts collaborated to develop recommendations for those attempting to implement gravel roads management. As a result of this collaboration, a final report, an implementation guide and a programming guide were prepared and printed as report number FHWA-WY-10/03F. Several conclusions were drawn from this effort:

- The overall effort required to implement a gravel roads management system for local agencies should be minimal.
  - Data collection efforts must be limited.
  - Analysis must be simple and transparent.
- There are four basic steps involved in implementing a GRMS:
  - Assessment
  - Inventory
  - Cost and maintenance history
  - Condition monitoring
- Cyclic maintenance programs may be developed once a network is inventoried and its maintenance history is available.
- Useful performance data are difficult to collect mainly because surface conditions change quickly due to weather, traffic and maintenance.

The next step after developing these recommendations is the process of putting them into practice. The University of Wyoming is beginning this process by collaborating with two and possibly three Wyoming counties. Preliminary steps are the evaluation of the counties' current data collection procedures, particularly those elements that are needed to develop cyclic maintenance schedules. Using available historical data from the counties, maintenance schedules are being developed. Through this process, the gaps and shortcomings in the counties' current data collection procedures are being identified, making future refinements and improvements possible.

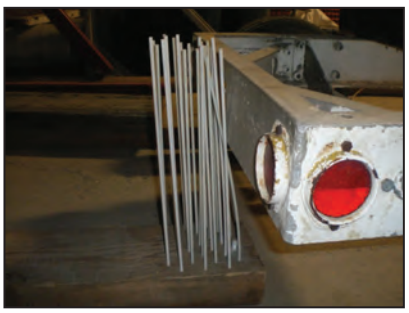
Once maintenance schedules are developed and the frost is out of the ground, routine maintenance of the counties' gravel roads will begin. For selected maintenance areas, the maintainer will evaluate the condition of the roads' surface immediately before they blade them. Comparing these conditions to designated minimum acceptable conditions will allow future maintenance schedules to be adjusted. Roads that are in better condition than their minimum can have their maintenance period extended, while those in worse condition can have their maintenance period shortened, thus adjusting the maintenance schedule based on each road's desired and actual performance. This approach will assist the counties with both providing adequate maintenance to all roads while avoiding performing excessive maintenance on any roads. This should minimize overall maintenance costs while still providing adequate service.

Eventually, as better historical data are gathered, they may be used to assess the performance of different maintenance practices. The performance of aggregate from various sources as well as the efficiency of many practices and various other factors, such as dust suppressants, may then be assessed.

The two fundamental goals of this implementation effort are: first, to determine which data should be collected and; second, to determine how best to use the available data. By using available data to generate preliminary maintenance schedules, gaps in the data will be identified, as will extraneous information. This knowledge will be used to recommend gravel roads management procedures and practices.

## Tests continue at CSU on highly flexible crash barriers

Testing at CSU continues on the use of flexible vertical rod networks for slowing or stopping vehicles. The basic principle of this work is to use materials that undergo large strain but small stress (as shown in the photo to the left below), allowing the accumulated nonlinear strain energy to supply the needed work to balance the change in linear momentum of the vehicles. Early attempts at using agricultural products, namely bamboo and other wood species, were supplemented by the use of small-diameter fiberglass rods, which have less tendency to deteriorate under environmental conditions. Larger-scale testing is currently in preparation using a 400-lb test cart under gravitationally induced velocities (as shown in the photo to the right below). Researchers on the project include Paul Heyliger, John van de Lindt, Doug Allen, Omar Amini, and Cameron Heyliger.



# EDUCATIONAL HIGHLIGHTS

## MPC sponsors MML program at NDSU

The MPC is now sponsoring the Masters of Managerial Logistics program at NDSU. The first of its kind program was launched in 2006 to provide training in military logistics and transportation to public, private and joint military civilian personnel. Sponsorship by the MPC will give the program broader exposure to potential audiences and will tighten its integration with NDSU's other educational programs in transportation and logistics.

The program was originally named the Masters of Military Logistics, but the name was changed to reflect its broader focus. The program is offered in collaboration with the U.S. Army Logistical Management College in Fort Lee, VA. This program focuses on logistics and supply chain management, global-international logistical systems, enterprise resource planning, remote sensing and adaptive logistics planning, joint total asset management, logistics, and security through technologies (RFID), contract management, crisis analysis, homeland security, and transportation analysis.

In addition, the curriculum will include a synthesis course in military logistics case studies as well as logistics research methods designed to build the research and analytical skills of the students. More information on the program can be found at http://www.ndsu.edu/transportation/mml/.

## MPC extends educational reach through Alabama partnership

The University Transportation Center for Alabama at the University of Alabama-Birmingham and the MPC are cooperating to expand the educational opportunities offered by both centers. The two UTCs are finalizing plans that will enable practicing transportation professionals and, in some cases, transportation students in the Alabama area to participate in two distance learning transportation certification programs provided through this cutting edge collaboration.

Through the cooperative program, Alabama area transportation professionals will be able to pursue and earn a Certificate in Transportation and Urban Systems. The certificate can be pursued via online courses and is targeted at practicing professionals who are unable to participate in traditional coursework.

A second option will be the Transportation Leadership Graduate Certificate which is a nationwide program sponsored by the Regional University Transportation Centers. This certificate is a distance learning opportunity introducing participants to the skills needed to be a leader in the transportation field.

# MPC PUBLISHES RESEARCH REPORTS

Several reports have been published by the MPC recently. Full reports can be found at http://www.mountain-plains.org/pubs/. Use the search function to locate individual reports.

### Development of a Statewide User Cost Manual for Rural Work Zones (MPC-10-228B)

This report documents progress on MPC Project 314 and was written by Peter T. Martin and Piyali Chaudhuri. This report documents the research underway at the Utah Traffic Lab that will contribute to the development of the user cost manual. This study evaluates the impact of various work zone scenarios caused by roadway rehabilitation projects in Utah. The results for different scenarios are tabulated to construct the Road User Cost look-up tables. These tables will assist UDOT for faster contracting and project delivery purposes.

### Evaluation of Transit Signal Priority Strategies for 400 South Light Rail Line in Salt Lake County, UT – Part II (MPC-09-213B)

Authors Peter T. Martin, Aleksandar Stevanovic, and Milan Zlatkovic provide information on MPC Project 313. The goal of this study is to evaluate light rail priority strategies along the 400 S / 500 S corridor in Salt Lake County through analyzing benefits and impacts of the priority on transit and vehicular traffic through microsimulation. Results show that the existing priority strategies have no impacts on vehicular traffic along the corridor, while at the same time help reduce train travel times 20% to 30%. Three recommendations have emerged from the study. The first is to enable priority at 700 E. This would help transit without major impacts on vehicular traffic. The second is to reset priority parameters at intersections adjacent to LRT stations so that the priority call encompasses station dwell times. The last recommendation is to consider removing the queue jump strategies to reduce delays for the corridor through movements and help preserve coordination patterns.

### User Delay Costs Due to Work Zone Operations Near Echo Junction (MPC-10-228A)

Peter T. Martin and Bhagavan Nadimpalli evaluated the impact of proposed replacement on the travelers in Summit County. The purpose of this research is to provide UDOT an estimation of possible delay costs due to congested traffic resulting from the proposed work zone scenarios. The VISSIM micro-simulation tool is used to build and calibrate the models. Hourly traffic volumes, provided by UDOT, are added as vehicle inputs into the model. Two work zone scenarios were developed by UDOT: Echo and Weber River. In each scenario, one direction of traffic is closed at a time, while the opposite direction remains open for traffic. For the closed-direction, ramps are used as detours. Results for both the Echo and the Weber River scenarios show that the average daily user delay cost is lowest on Mondays and Tuesdays. This suggests that UDOT can complete the proposed ABC work on these days, to ensure minimum traffic disruption to travelers. The future work consists of estimating user delay costs caused by the replacement of the bridge on 2300 East on I-80. Similar analysis is required to determine the day of the week that would have minimum daily user cost. The report details MPC project 314.

### Utah Department of Transportation Traffic Operation Center Operator Training (MPC-10-229A)

Peter T. Martin, Jeremy Gilbert, and Benjamin Shepherd summarized work performed by the Utah Traffic Lab to develop training programs for the Utah Department of Transportation Traffic Operations Center operators at both the basic and advanced levels. The basic training is designed to train operators in the basic knowledge, skills, and ability to work as traffic operators. The UTL found that understanding

the local and regional transportation network was the single most important factor in efficient incident management. The advanced training program is designed to develop the knowledge, skills, and ability of traffic operators to identify and solve advanced traffic management and operation problems encountered at the TOC. It supports incident management instruction at the highest level and utilizes the advantages of traffic operators who work 24/7 and continually monitor the traffic network through closed circuit television. The report explains who is qualified to receive the advanced training program. The work described is part of MPC Project 288.

### Developing a System for Consistent Messaging on Interstate 80 Dynamic Message Signs: Phase II (MPC-09-211B)

Traveler information has become increasingly important in rural areas, especially in areas with adverse weather conditions such as Wyoming. Dynamic message signs (DMS) are often used to provide information during a traveler's trip. Current research literature does not contain guidance for the rural use of DMSs. Raul Ringenberg and Rhonda Young at the University of Wyoming analyzed the effectiveness of traveler information, with a focus on the use of DMSs on the I-80 corridor between Laramie and Cheyenne in southeast Wyoming, using several different methods including surveys of both frequent and random travelers and a statistical analysis of the correlation between speed, weather and DMS data. The current message decision system utilized by the Wyoming Department of Transportation (WYDOT) is also described and evaluated. This report is a continuation of an earlier effort on this topic and details efforts of MPC Project 286.

### Performance of Recycled Asphalt Pavement in Gravel Roads (MPC-10-226A)

As more Recycled Asphalt Pavement (RAP) becomes available to use in roadways, the Wyoming T2/LTAP Center and two Wyoming Counties investigated the use of RAP in gravel roads. Authors Scott Koch and Khaled Ksaibati describe how the investigation explored the use RAP as a means of dust suppression on gravel roads while considering road serviceability. The performance of RAP sections was compared with the performance of gravel control sections. It was found that RAP-incorporated gravel roads can reduce dust loss without adversely affecting the road's serviceability. Other counties and agencies can expand on this research to add another tool to their toolbox for dust control on gravel roads. The report describes MPC Project 287.

### Pilot Project to Develop and Implement a Rural Youth Occupant Protection Education Platform (MPC-10-230)

Authors Andrea Huseth and Tamara VanWechel note that occupant protection is one of the easiest and most inexpensive ways to protect yourself when riding in a motor vehicle. Yet many North Dakota youth, especially rural youth, fail to wear their seat belts, even with a primary seat belt law for children under the age of 18 in the state of North Dakota. The primary goal of this North Dakota State University project was to integrate occupant protection education of 'tweens' (youths aged 10 to 14) with one of the most widely known youth programs in North Dakota – 4-H. Education modules which were developed and compiled were not implemented due to a lack of partners. However, resources developed and knowledge gained will be used in future projects. Disseminating traffic safety education information through the 4-H program is possible as evidenced by success stories in other states outlined in this report. This report describes MPC Project 308.

(Research Reports continued on page 8)

(Research Reports continued)

## Proper Seat Placement of Children Aged 12 or Younger Within Vehicles: A Rural/Urban Comparison (MPC-10-227)

In this paper, NDSU researcher Andrea Huseth analyzes rural and urban differences in child seat placement within vehicles. The objective of this research was to determine if there are rural/urban differences in child seat placement exist. Based on a small sample of vehicles observed at urban and rural elementary schools in North Dakota, the results of this study indicate that there are significant rural/urban differences in child seat placement. Nearly one-third of overall vehicles observed had children seated in the front seat. Significant urban/rural differences exist in child seat placement, with children in rural areas much more likely to be front-seated than children in urban areas. Differences also exist among vehicle type, with children riding in pickup trucks more likely to be front-seated than children in any other type of vehicle. Overall, parents were aware that seating a child in the rear of a vehicle is safer. The paper describes MPC Project 334.

# WORKSHOP & PRESENTATIONS

## SDSU Biennial Geotechnical Conference

The Department of Civil and Environmental Engineering at South Dakota State University (SDSU) held the Biennial Geotechnical Seminar on December 3 in Sioux Falls, SD. The one day seminar was sponsored by SDSU and the Mountain Plans Consortium. The seminar included a breadth of geotechnical engineering topics from micropiles to earthen embankments. Seven speakers travelled from Minnesota, South Dakota and Nebraska to make presentations. The seminar was well attended by more than 150 engineers, managers, and public officials, as well as exhibitors demonstrating products available to the geotechnical profession. The seminar was coordinated by SDSU Associate professor Allen Jones and SDSU Professor Richard Reid. The next seminar will be held December 7, 2012.

SDSU Geotechnical Conference

## Presentation on Highway Safety Screening Tool for South Dakota

Xiao Qin, assistant professor of civil and environment engineering at SDSU, and Adam Wellner, SDSU graduate research assistant presented their research paper "Application of Bivariate Ripley's K to Identify the Relationship Between Roadway Departure Crashes and Horizontal Curvature" in August at the Midcontinent Transportation Research Forum in Madison, WI, and "SD GIS Highway Safety Review Tools Demonstration" in October at the South Dakota Tribal Safety Summit in Lower Brule, SD. Both presentations are part of the research project "Highway Safety Screening Tool for South Dakota" co-sponsored by MPC and SDSU.

## MPC at TRB

Several MPC researchers, faculty and students were among the 10,000 transportation professionals who attended the 90th annual meeting of the Transportation Research Board in January in Washington D.C. The meeting program covers all transportation modes, with more than 4,000 presentations in nearly 650 sessions and workshops addressing topics of interest to all attendees—policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions. More information on papers, posters and other activity by MPC faculty and students will be included in the next issue of the Mountain-Plains Consortium News.

# STUDENT ACTIVITIES

## Steve Leon, NDSU Ph.D. Candidate, named MPC Student of the Year


Steve Leon, a doctoral student in transportation and logistics at NDSU, was named the Region VIII Mountain-Plains Consortium UTC Student of the Year. The U.S. Department of Transportation honors an outstanding student each year for achievement and the potential future contributions to the transportation field. Students are selected based on their accomplishments, academic merit, research and leadership.

An Odenton, MD., native, Leon attended the University of North Dakota and received a B.S. in aeronautical studies, graduating magna cum laude in 1990. In January 2007, Leon earned an M.B.A. from Loyola University Maryland with a concentration in international business. Leon is expected to graduate from NDSU with a Ph.D. in transportation and logistics in May 2011. Leon's dissertation is titled, "Global airlines: Modeling trends and portfolio for allocation to international regions."

At NDSU, Leon works as a research assistant for the Upper Great Plains Transportation Institute. He assisted in submitting a proposal to the North Dakota Aeronautics Commission as well as contributing to obtaining funding for air cargo research. His other research interests include economic development through air transportation as well as government policy, risk management and resource allocation in supply chain management.

In 2009, Leon received the Transportation Research Forum Foundation Scholarship. He is also a member of the Beta Gamma Sigma Honor Society at Loyola University Maryland and the Phi Kappa Phi Honor Society at NDSU. Leon served as the president of the NDSU Transportation and Logistics student organization. He has also taught undergraduate courses at NDSU, UND, and Embry Riddle Aeronautical University in Prescott, Ariz.

In addition, Leon makes time for volunteering and is known for his work ethic and dedication to excellence. He serves as a board member on the UND Aerospace Alumni Advisory Board and also offers his time as an assistant coach for the Fargo Youth Soccer League.

## NDSU Ph.D. student presents paper at simulation conference

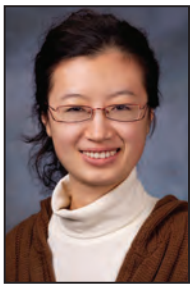

Lee

Eunsu Lee, an NDSU Ph.D. student in Transportation and Logistics, presented his paper, “Simulation of Base Stock Inventory Integrated with Transportation Strategy to Optimize Performance” at a recent conference of simulation scholars. The paper was co-authored with Farahmand Kambiz, professor of industrial and manufacturing engineering at NDSU.

The Winter Simulation Conference (WSC) is the premier international forum for presenting recent advances in the field of system simulation. Lee was asked to present during the Ph.D. colloquium session focused logistics, transportation and health. His submission was a finalist for the Best Student Paper Award.

In his study, Lee applied discrete-event simulation to three layered manufacturing and distribution systems for simulating centralized and decentralized systems. He learned the balance between customer's orders and logistics considering lot-sizes, such as pallets and truck configurations, was critical for inventory and transportation costs.

## NDSU Ph.D. student earns TRF Foundation scholarship


Liu

Qing Liu recently received the Transportation Research Forum Foundation scholarship, awarded for excellence in her studies, research and writing.

In 2007, Liu earned a bachelor of engineering in maritime transportation from Dalian Maritime University in Dalian, China. She then began the transportation and logistics doctoral program at NDSU. Primarily, her work focuses on maritime shipping, port operation, and container transportation and logistics.

At NDSU, Liu conducts research through the Upper Great Plains Transportation Institute. Some of her projects include a Chinese railway study and a supply chain model using FAF2 and CFS2002. Additionally, Liu presented a poster at the Transportation Research Board’s Commodity Freight Survey Workshop in 2010. She will present a paper, "Incorporating Pollution in US Container Ports Efficiency Analysis,” at the Transportation Research Forum in 2011.

## NDSU Transportation and Logistics students selected to present at INFORMS

Two NDSU transportation and logistics Ph.D. students presented papers in November at the Institute for Operations Research and the Management Sciences (INFORMS) Simulation Conference in Austin, Texas.


Chen

Ieelong Peter Chen presented a paper on collaborative transportation management. The paper, “Collaborative Transportation Management in the Supply Chain: Shipper and Carrier Perspectives,” is unique from other literature because it presents information from the carrier’s perspective. The paper was co-authored by Joseph Szmerekovsky, associate professor of management at NDSU.

Sumdahur Shakya presented his paper “Valuing Pricing of Genetically Modified Traits Using Monte-Carlo Simulation: A Real Option Approach.” The paper presents the Monte-Carlo approach which has the advantage of providing full distribution of values of outcome instead of presenting one of the many scenarios. The paper was co-authored by researcher Bruce Dahl and professor William Wilson, both from the NDSU Department of Agribusiness and Applied Economics.


Shakya

## NDSU Master's Student Presents at Economic Conference

Yan Heng attended the Missouri Valley Economic Association (MVEA) Annual meeting in October in St. Louis. At the conference, Heng presented a paper, Accounting for Greenhouse Gas Emissions in Trucking Production, which she co-authored with Siew Hoon Lim, assistant professor of economics. In addition, she participated in discussions with researchers and professors from around the world. During the meeting, Heng attended sessions covering topics such as applied macroeconomics, global economics, health economics and the economics of water, which Heng hopes to apply to her own work in the future. She enjoyed attending the conference because she was able to connect with many people at the conference who had connections to NDSU. Heng is pursuing a master's degree in agribusiness and applied economics.

## NDSU student attends railroad environmental conference

NDSU transportation and logistics Ph.D. student Nimish Dharmadhikari attended the Railroad Environmental Conference 2010 in October at the University of Illinois at Urbana-Champaign. The conference focused factors such as pollution prevention, energy, emissions and air quality, and environmental liability, as they relate to railroads. Dharmadhikari will use this information in his research.

# NEW STUDENTS/STUDENT PROFILES

## South Dakota State University


Rossell

Ryan Rossell earned a B.S. degree in civil and environmental engineering from SDSU in May 2010. He joined the graduate school at SDSU in January 2011 to pursue a M.S. degree in civil engineering. Rossell has been working as a research assistant with Francis Ting, professor of civil and environmental engineering, on the compound channel flow project since September 2010. He has learned to conduct two-dimensional flow modeling using the Surface-Water Modeling system (SMS). His graduate research will involve using SMS and the SRICOS (Scour Rate in COhesive Soils) method to conduct a flow and scour analysis of the SR 37 bridge over the James River near Mitchell, SD. This project is co-sponsored by MPC and the South Dakota Department of Transportation. Ryan is a native of Omaha, Nebraska.


Peters

Stephanie Peters, a native of Nerstrand, MN, is currently a graduate research assistant at SDSU. She earned her B.S. degree in civil and environmental engineering in May of 2010. During the summers of 2008 and 2009, she gained pavement management experience while working for the City of Northfield, MN. The focus of Stephanie's research is mitigation of corrosion in CRC pavement, which is co-funded by MPC and the South Dakota Department of Transportation. The project includes collecting half-cell potential data and concrete samples for chloride ion testing as part of an initial assessment of CRC pavement in South Dakota. Other work includes casting concrete specimens in the laboratory to evaluate the effectiveness of corrosion inhibitors and field testing of these corrosion inhibitors. She anticipates earning her M.S. in civil engineering in December of 2011.

## University of Wyoming


Safaripoor

Sadegh Safaripoor began working with Stephen Boyles, assistant professor of civil and architectural engineering, as a graduate research assistant in the fall 2010. His research interests include network optimization, decision analysis and ITS. Safaripoor holds a B.S. in civil engineering from Sharif University of Technology in Iran. As an undergraduate student he took some optional courses in transportation engineering and involved in some projects related to linear programing and decision analysis.

## Colorado State University


Zhou

Yufen Zhou is pursuing her Ph.D. in assistant professor Suren Chen's research group. She completed her B.S. and M.S. in civil engineering from Tongji University, China. Her current research work is concentrated on multi-hazard assessment of bridges, wind engineering, and structural stochastic vibration. Prior to joining our group at CSU, she conducted research on the aerodynamic performances of long-span bridges.


Nelson

Ryan Nelson finished his bachelor's degree at CSU in 2006 and went to work for a structural consulting firm for three years before returning to CSU to get his master's degree in structural engineering. While working toward his master's degree, Nelson has been performing wind tunnel experimental studies on long-span bridges under the supervision of assistant professor Suren Chen.

Matt Hardman was born and raised in the state of Washington. He is currently in my first year of studies toward his M.S. in structural engineering. He graduated with a B.S. in civil engineering from the University of Idaho in May 2010. He has a special interest in bridge engineering which was fostered by his involvement in the AISC/ASCE Student Steel Bridge Competition. He was a part of the team at the University of Idaho for three years. Hardman will work on the bridge seismic vulnerability study sponsored by MPC with assistant professor Suren Chen. (no photo file)

Douglas Gregory Allen is a new M.S. student working on MPC project 340 - Long Term Performance of FRP Repair Materials. He graduated in the spring of 2010 with a B.S. in civil engineering at CSU and is currently pursuing his M.S. in structural engineering.

Oscar Mata graduated with a B.S. degree from CSU in the Fall of 2010 and will be starting his M.S. in the Spring of 2011. He will also be working on MPC project 340.

Nathan Miller worked as an M.S. student with professor Richard Gutkowski on MPC 275, Z-Spike Rejuvenation to Salvage Timber Railroad Bridge Members, and MPC 276, Use of Salvaged Utility Poles in Roadway Bridges. Miller is returning to CSU and will work with assistant professors Rebecca Atadero and Suren Chen on MPC 343, Laboratory Testing of Innovative Steel Bridge Designs.

Omar Amini received summa cum laude honors along with his B.S. in civil engineering during the December 2010 graduation ceremony at CSU. Omar has worked with professors Paul Heyliger and John van de Lindt on several MPC projects.

Alivia Plankis began work in the spring semester of 2011 on her M.S. thesis on the MPC project "Off-grid MEMS Sensor Configurations for Transportation Structures." She will be collaborating with researchers at Colorado State University and National Institute of Standards and Technology-Boulder during the course of this project. Alivia received her B.S. in civil engineering from Iowa State University in 2010.

## University of Utah


Chaudhuri

Piyali Chaudhuri has been a Ph.D. student in the Utah Traffic Lab since Spring 2008. She received her B.S. Degree with honors in civil engineering at the Jadavpur University in Kolkata, West Bengal, India in 2002 and worked in a consulting firm in India from 2002 to 2005. In 2006 she began her master's program in civil engineering at the University of Windsor, Ontario, Canada, where she has earned the International Graduate Student Scholarship for 2 successive years. At the Utah Traffic Lab she is evaluating of optimal spacing of traffic monitoring stations on freeways using computational techniques and the microsimulation software VISSIM. She has earned the departmental graduate student scholarship for 2008-2009 and won second place in the ITE Student Paper Competition in the local Institute of Transportation Engineers Chapter in 2009.


Zlatkovic

Milan Zlatkovic is a civil engineering Ph.D. student 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 an M.S. degree in civil engineering from the University of Utah, with 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 under contract 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 the Transportation Research Board annual meeting, Institute of Transportation Engineers Utah Chapter, PTV Vision User Group Meeting and National Bus Rapid Transit Institute Workshop.


Heaps

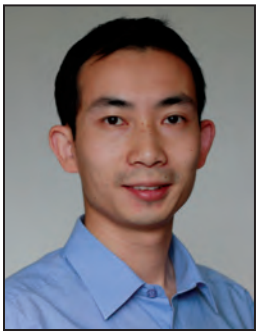
Devin Heaps completed his B.A. degree in classics at the University of Utah in 2005. From 1997 to 2003, he served in the Army National Guard as a light-wheeled vehicle mechanic. He is currently a system administrator in the Utah Traffic Lab. His responsibilities include new acquisitions, software maintenance,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

Tristan Pedersen began working at the Utah Traffic Lab in 2007 as an undergraduate research assistant and since then has helped at different times on a variety of projects. He completed a B.S. in civil engineering and a B.A. in geography from the University of Utah in 2009. He is currently working as a graduate research assistant for the Lab. He will graduate with an M.S. in civil engineering with an emphasis in transportation engineering in May.

Ivana Tasic began working in the Utah Traffic Lab Fall of 2010. She has received her B.S. in traffic and transportation engineering at the University of Belgrade, Serbia in 2009. Currently, she is continuing her master's studies at the University of Utah as a research assistant at the Utah Traffic Lab. She is reviewing the Advanced Traveler Information Systems and their influence on traffic incident management.

# New Faculty

## Shiling Pei Joins SDSU Faculty



Pei

Shiling Pei, PE, is the latest addition to the list of investigators working on MPC co-sponsored research studies at SDSU. With extensive experience in structural reliability and structural performance under hazard loading, Pei is leading an MPC project to develop a prototype system for remote monitoring of extreme lateral ice-load for cold-region bridge sub-structures and collaborating on a MPC project on short-span concrete structure type selection based on life cycle costs.

Pei joined SDSU in August 2010 and is currently an assistant professor of civil and environmental engineering. He obtained his BS in civil engineering from Southwest Jiaotong University, Chengdu, China, and his Ph.D. degree in civil engineering (structural engineering) at CSU. Prior to joining the SDSU faculty, Pei was a post-doctoral researcher at CSU working on performance-based seismic design of residential structures. He developed the Seismic Analysis Package for Woodframe Structures (SAPWood), which was designed for seismic performance evaluation of North American light-frame wood buildings. He also served a critical role in supervising the design, planning, and shake table testing of the 17,000-square-foot, seven-story, wood-steel hybrid building at Japan's E-defense facility (world's largest shake table) as part of the NSF (NEESR) funded NEESWood project. Pei's main research interests are seismic resiliency of infrastructure systems, structural safety and reliability under extreme loads and harsh environments, large scale structural testing, and performance based engineering. He is a member of American Society of Civil Engineers and serves on ASCE technical committee on design of wood structures. He is also a licensed professional engineer in California.

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