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Region 8
MOUNTAIN-PLAINS CONSORTIUM NEWS

PROJECT HIGHLIGHTS

Integrating Security into Small MPO Planning Activities

Mark Lofgren

When disaster strikes, being prepared can make all the difference. That's why Mark Lofgren, a researcher with the Upper Great Plains Transportation Institute at North Dakota State University is working with the Fargo-Moorhead (F-M) Metropolitan Area Planning Organization to develop transportation security plans.

Because so much of what occurs in a community depends on transportation, planning for disruptions is essential for managing security issues and for promoting safe recovery. "A robust transportation system is a fundamental part of our society. Any disruptions to the flow of transportation, whether man made or natural, can lead to inconveniences, economic loss, and life and death situations," Lofgren says.

The goal of Lofgren's study is to help the F-M area meet the U.S. Department of Transportation mandate to incorporate security into its planning documents and processes. In addition, the plan will serve as a model for smaller MPOs looking for ways to integrate and sustain security initiatives in their own transportation planning activities.

The mandate was part of the 2005 SAFETEA-LU federal highway legislation. As a result of that legislation, MPOs are paying specific attention to security elements in transportation planning. The law distinguishes safety planning and security planning as two distinct elements of planning activities.

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MPC
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(MPO continued 2)

However, in many instances security activities may be related to other planning factors such as safety, accessibility, and efficiency. Federal instructions recognize the relationships and encourage MPOs to address security in ways that are efficient and effective.

"For a long time, planning has been an integral part of transportation and the number of stakeholders involved in the planning process is continually expanding," Lofgren notes. "MPOs, government councils, local government agencies, neighborhood groups, freight carriers, and developers all play a role. While the elements of safety planning have been recognized, studied, and understood for some time, the elements of security planning have received less attention."

The mandate for increased security in the transportation system states that metropolitan transportation plans should include "…emergency relief and disaster preparedness plans and strategies and policies that support homeland security (as appropriate) of all motorized and non-motorized users."

That's easier said than done, Lofgren notes. There is a lack of security data and performance measures. Preventing disasters is difficult because transportation is easily accessible and often vulnerable. New stakeholders must be involved in transportation security planning, and sometimes those stakeholders are new to transportation planning. In addition, the need to safeguard information that is involved in security planning can slow the process.

"The security needs and standards will be different for each MPO," Lofgren notes. "Consequently, each MPO will need to develop a holistic-approach to security planning based on the area's specific assets, resources, and environment. Our work will give smaller MPOs a framework that will assist them in the planning process."

Lofgren's work with integrating security into planning activities will provide insight for interagency coordination in transportation aspects of disaster and security events. Previous work has focused on larger cities such as New York, but Lofgren's pioneering work with smaller cities will provide an example of possibilities for areas with limited resources or personnel.

One of Lofgren's goals is to point the way toward several grant programs that exist to help MPOs obtain the funding needed to meet federal mandates for transportation security planning. These programs include the Infrastructure Protection Program, the Homeland Security Grant Program, and the Emergency Management Performance Grant. Additional grant information can be accessed via the websites of the Department of Homeland Security, the Federal Emergency Management Agency, or the Transportation Security Administration.

Utah Project Seeks Optimal Traffic Monitoring Station Spacing on Freeways

Performance measures on freeways are developed from traffic monitoring stations which gather traffic volume and speed data. State departments of transportation deploy traffic monitoring stations to track traffic congestion on the road network. How those monitoring stations are spaced on the network is a critical factor in how effective they are.

The University of Utah is developing an analytical methodology to calculate travel time reliability measures to identify the optimal locations of detectors on a freeway corridor to minimize the travel time estimation error (actual travel time - free flow travel time). The researchers will evaluate the trade-off between detector spacing and accuracy of estimates such as speed, travel time and reliability.

The Utah DOT has typically installed traffic monitoring stations at one-half mile intervals. This spacing dates back to theories that the traffic monitoring stations would be used for incident detection. However, the stations have proven ineffective and perhaps unnecessary for this purpose. And as more monitoring stations are put into service, the operating and maintenance cost associated with the detector system increases.

However, data from the stations can be used for other valuable purposes such as travel time estimates. This use of the monitoring stations is likely to have different requirements for detector placement than the original focus on incident detection. To accomplish this new purpose, the detectors are to be placed so as to effectively sample the traffic conditions on freeways.

Consequently, there is a need to decide where to add new detectors and which detectors should continue receiving maintenance given resource constraints. For data collected from these detectors to remain meaningful and reliable, traffic data quality should not be adversely affected in these decisions.

Study Develops Comprehensive Transportation Safety Evaluation Program in Wyoming

The University of Wyoming is conducting a safety study with funding from MPC and the Wyoming Department of Transportation. The research will result in a program that can help counties identify high-risk rural locations and develop a strategy to obtain funding to reduce crashes and fatalities on rural roads statewide. Most of Wyoming's road network is rural in nature and rural roads nationwide have a significant highway safety problem. Close to 80 percent of the nation's roadway miles are in rural areas and over 58 percent of the total fatalities occur in rural areas. The fatality rate for rural areas (per 100 million vehicles miles of travel) is more than twice that of urban areas.

Khaled Ksaibati

SAFETEA-LU requires state department of transportation agencies to address safety on local and rural roads. "It is important for state, county, and city officials to cooperate in producing a comprehensive safety plan to improve safety statewide," notes Khaled Ksaibati, MPC program director at the University of Wyoming. "This legislation provides an opportunity to implement a more cohesive and comprehensive approach to local road safety in Wyoming."

As part of this study, a Local Road Safety Advisory Group (LRSAG) has been established. This group includes representatives from WYDOT, Wyoming LTAP, Wyoming Association of County Engineers and Road Superintendents (WACERS), Wyoming Association of Municipalities (WAM), and FHWA. Three Wyoming counties, Carbon, Laramie, and Johnson, are included in the pilot phase of this study.

A five-step procedure has been developed as a result of this study. These steps are:

1. Crash data analysis based on historical crash data provided by WYDOT. This analysis will help in identifying one-mile segments in each county with high number of crashes.
2. Level I field evaluation. This evaluation is performed on sections identified as high-risk locations based on the crash data evaluation. It consists of ranking each one-mile segment in five categories on a scale of 0 to 10.
3. Combined ranking to identify potential high risk locations based on steps 1 and 2.
4. Level II field evaluation. This comprehensive evaluation is similar to conducting road safety audits. The objective of this evaluation is to identify appropriate safety countermeasures on the roadway sections which were identified

(Safety Evaluation continued on page 4)

(Safety Evaluation continued)

as high risk locations based on the crash evaluation and the level I field evaluation.

5. Benefit/cost analysis. This analysis will help identify the most cost-effective safety countermeasures. The counties can then develop a plan to fund these countermeasures from the High Risk Rural Road Program (HRRR) or any other county funding sources.

The Local Road Safety Advisory Group has approved the procedure developed in this study to improve safety on rural roads in Wyoming. The University of Wyoming will provide technical help and training to counties interested in implementing this program. This program will help Wyoming counties in identifying high risk locations and then develop a strategy for funding safety improvements. The Wyoming DOT will help in funding some of the counties safety requests from the HRRR program. This will provide an incentive for Wyoming counties to establish local safety programs.

The WYDOT safety program is now in the process of establishing guidelines and a timeline for counties to submit safety requests for funding from the HRRR program. All counties are expected to follow the five-step procedure developed in this study to submit their HRRR requests. A committee can then rank all the requests statewide and distribute the available funding.

"This program has been truly a success story, showing how Wyoming local governments can work closely with WYDOT and FHWA to improve the safety on rural roads across the state," says Ksaibati. "Other states can greatly benefit from this procedure when they are considering the distribution of their HRRR funds. Therefore, the findings of this study will be submitted for presentation and publication at the Transportation Research Board meeting in 2009."

NDSU Plans Transportation Input Workshops Across State

Jon Mielke

North Dakota's transportation planners want to know what the business community, elected officials, and individual citizens think about the state's existing and required transportation infrastructure and transit services. To find out, a series of eight public input workshops were held around the state in late March and early April. The workshops were partially supported by MPC funding.

"Fuel prices, economic growth and infrastructure concerns have focused public attention on our transportation systems nationwide," notes Jon Mielke, an associate research fellow with the Upper Great Plains Transportation Institute at NDSU. "We face critical transportation issues here in North Dakota and these meetings serve as an open door to anyone who wants to contribute ideas or concerns to public policy discussion."

The sessions were designed to create public awareness and to collect input concerning transportation and mobility issues faced by the state. Recognizing that the state would face important decisions related to the costs of maintaining its transportation infrastructure and demands for improved facilities and services, the Upper Great Plains Transportation Institute at NDSU is working with local, state, and federal entities to facilitate a public awareness and input process.

"The key point of the entire effort is to generate public awareness, input, and future involvement," Mielke says.

A state conference will be held May 1 to outline input that was generated and to present related recommendations. Resulting public input and recommendations will be presented to the Legislature's Interim Transportation Committee.

Utah Traffic Lab Assists in Planning for Bus Rapid Transit Project

University of Utah researchers are helping the Utah Transit Authority plan for the implementation of its first bus rapid transit line later this year.

Bus Rapid Transit (BRT) compares favorably to standard city buses, street cars and light rail systems. It is a flexible, high performance form of transit mode which combines stations, vehicles, services, running ways, and Intelligent Transportation System elements (ITS) into an integrated system. It improves speed, reliability and identity of bus transit and combines quality of rail transit with flexibility of buses.

Utah Transit Authority (UTA) is planning to implement the first regional BRT project along 3500 South Street in Salt Lake County instead of the existing bus lane No 35. The Utah Traffic Lab is to evaluate benefits of the BRT installation. They are working on establishing transit signal priority for BRT buses and facilitating bus movements through signalized intersections along the corridor. A critical focus is on implementing transit signal priority on a segment between 2700 West Street and 5600 West Street. With 13 signalized intersections along this segment, signals need to be optimized to enable regular and reliable BRT service.

Based on traffic counts and measurements, the Utah Traffic Lab is creating a microsimulation computer model of this sub-network, which should represent the real situation in the field. Using different traffic software and other engineering tools, traffic and transit operations in this sub-network will be optimized in order to establish a reliable transit system with all its advantages.

Interdisciplinary Team at SDSU Studies New Method for Predicting Bridge Scour

Francis Ting, a hydraulic engineer, and Allen Jones, a geotechnical engineer, from South Dakota State University are working together to evaluate a new method for predicting bridge scour in cohesive sediments.

The new method, called SRICOS (**S**cour **R**ate **I**n **CO**hesive **S**oils), was originally developed at Texas A&M University by an interdisciplinary team of researchers including Ting. Unlike conventional methods, which only predict the equilibrium depth of scour, SRICOS can predict the scour history over the lifetime of a structure. Many bridges in South Dakota are founded on cohesive soils consisting of silts and clays. The new method could lead to substantial saving in bridge construction costs if the expected scour is significantly less than the equilibrium scour.

Subsurface exploration was completed at three bridge sites (Big Sioux River near Flandreau, Split Rock Creek near Brandon, and White River near Presho) in South Dakota in the summer and fall of 2007 to determine the soil stratigraphy and to obtain soil samples for erosion rate and laboratory testing.

The SDSU researchers measured soil erosion rates using an erosion function apparatus at the Minnesota Department of Transportation Materials Laboratory. The results of the soil tests are presented combined with computed flow conditions at the bridge sites to predict their scour histories for comparison with measured scour data collected by the United States Geological Survey (USGS) during the floods in 1993.

In addition to evaluating the SRICOS method for South Dakota bridges, the researchers will also conduct a sensitivity analysis to identify the critical input parameters and to develop guidelines on the use of the method for small watersheds and ungaged streams. This project is co-sponsored by

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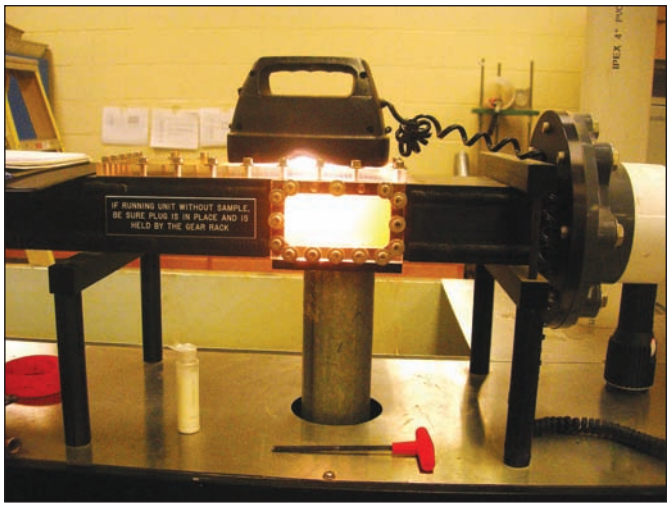
the Mountain-Plains Consortium (MPC) and South Dakota Department of Transportation (SDDOT). Ryan Larsen, a native from Elk Point, SD, is a student research assistant on the project.



Measurement of Soil Erosion Rates using the Erosion Function Apparatus

CSU Studies Shredded, Used Tires as Roadbed Filler

A Colorado State University professor is researching whether some of Colorado's 40 million stockpiled rubber tires - the largest batch in the nation - can be reused to bolster residential foundations and road bases to mitigate the effects of expansive soils.

Antonio Carraro

Antonio Carraro, assistant professor of civil and environmental engineering, is leading an experiment with the city of Loveland to test a mixture of expansive soil and scrap tire rubber just below the pavement on a 200-foot, low-volume stretch of road near I-25. Lime and fly ash are the traditional materials typically used to mitigate the shrink-swell potential of roadbed soils.

"We're always looking for opportunities to improve our roads and do a better job with making our products more environmentally friendly," said Keith Reester, director of Public Works for the city of Loveland. "Hopefully we have a product that works and that will allow us to take some of those tires out of the waste stream."

Carraro also recently received a $128,913 grant from the Colorado Commission on Higher Education to test his expansive soil-rubber mixtures in residential foundations.

The road test section in Loveland will use only about 20 percent rubber by weight when combined with soil. But there are lots of scrap tires stockpiled in the state – With 40 million tires, Colorado leads the seven states that host 84 percent of all stockpiled tires in the United States, according to 2005 figures from the Rubber Manufacturers Association. New York ranks second with 37 million tires. Carraro has worked with Front Range Tire Recycle in Sedalia and Jai Tire Industries in Denver for tire samples.

"Only about 2 percent of scrap tire rubber products are reused in civil engineering applications in EPA Region VIII (which includes Colorado and five other western states) while other regions, such as the midwestern United States, reuse more than 25 percent," Carraro said. "It's a major solid waste problem, particularly in the West where the population is spread out and there is less demand and no established civil engineering markets for reusing the tires."

"We are trying to come up with a sustainable way of mitigating the expansive soils problem in Colorado that takes into account the beneficial use of a waste material that has great recycling

potential," Carraro said. "Soil-rubber mixtures have been studied and used since the late 1980s, but the transfer of this technology to civil engineering applications that involve expansive soil mitigation is innovative. This is a new technology for expansive soils. These projects will allow us to understand in a more fundamental way the many interesting technical aspects associated with the design, construction and performance of expansive soil-rubber mixtures."

Carraro and his students will monitor the effects of the expansive soil-rubber mixture on the road in Loveland. They will assess cracks, ruts, permanent deformation, potholes and overall quality of the pavement.

In Colorado, shredded tires are largely in demand for landfill construction, said Rick Welle, general manager of Front Range Tire Recycle in Sedalia. The tire "shreds" are also used as floor material for horse arenas and children's playgrounds, but tire recyclers are always looking for other markets. The Loveland project is using about 25 tons of shredded tires equal to 2,225 passenger vehicle and light truck tires, Welle said.

"What we're hoping with this study is to show that tire shreds are beneficial for road base and that over time it will be a cost-effective product," Welle said. "It would be a huge market to really help Colorado get back with the rest of the country as far as managing scrap tires."

Carraro is also experimenting with the amount and size of scrap tire rubber products in his projects. Larger ones, called tire chips (containing particles up to 2 inches in diameter) can cost roughly $30 per ton, while smaller rubber products, called granulated rubber (containing particles less than 0.5 inches in diameter) can cost up to $450 per ton.

(by Emily Wilmsen, Senior Media and Community Relations Coordinator, Colorado State University)

Utah Traffic Lab Models Traffic to Aid in Express Lane Pricing

Innovative lane management offers the opportunity to levy fees for premium road space. One option being used in Salt Lake City, express lanes, offers road users reduced journey time for a fee.

The Utah Department of Transportation recently converted the high occupancy vehicle (HOV) lanes on Interstate 15 (I-15) from 600 North Street in Salt Lake City, Salt Lake County, to University Parkway (SR-265) in Orem, Utah County to express lanes. Subscribers (single occupant vehicles) who pay a monthly fee and high occupancy vehicles now share the express lane. This concept will be further advanced through the application of an electronic toll-collecting system.

Consequently, UDOT management would like to learn how to best implement future High Occupancy Toll (HOT) pricing. The Utah Traffic Lab at the University of Utah will use an I-15 VISSIM (transportation modeling software) model for that purpose. The Utah Traffic Lab has already built and calibrated a microsimulation model of I-15 from 600 N in Salt Lake City to University Parkway in Provo, UT. The Traffic Lab has extended the original UDOT model and constructed two sub models for a.m. and p.m. traffic conditions.

The models have been calibrated and validated based on field data collected through numerous GPS travel time runs and other data collection methods. However, current HOT operations in the model, which were inherited from the original UDOT model, do not reflect the fact that HOT users can access HOT lanes only at certain points along the freeway. The VISSIM model has no access restrictions in the VISSIM model.

The existing model will be modified to properly model HOT operations. Once those modifications are made the model will be able to simulate current HOT operations and integrate a future dynamic toll pricing to enable real-time variable congestion pricing.

WORKSHOPS & PRESENTATIONS

Spring Engineering Career Fair at Colorado State University

Students interested in the North Front Range Transportation Research Internship Program (NFR-TRIP) at Colorado State University had an opportunity to meet potential employers during the Spring Engineering Career Fair.

NFR-TRIP, an MPC supported program at CSU, is an activity co-sponsored with the Metropolitan Planning Organization for northern Colorado. The College of Engineering hosted more than 150 companies at the Spring Career Fair Feb. 13-14 and more than 1,000 Colorado State engineering students visited with prospective employers across all career fields.

The fair offered students a great setting in which to interview the companies, see what career choices they offer, and find out what they seek in applicants. The North Front Range-MPO shared a booth with the Northern Colorado Branch of ASCE and informed interested students about the internship program and other job opportunities in transportation-related fields. Many of the employers at the event emphasized internship experience and a strong resume as key factors for strong job applicants. The employers noted that applicants that are friendly and outgoing also have an advantage.

CSU Professor Reflects on Year in Iraq

Steve Abt, professor of civil and environmental engineering at Colorado State University, will present "Reflections – A Year's Experience with the U.S. Embassy in Iraq" to the CSU campus community April 17 at 4 p.m. in the Lory Student Center.

In May 2006, Abt was mobilized by the U.S. Army and deployed to Iraq to serve as the Director of Operations, Iraq Reconstruction Management Office within the U.S. Embassy in Baghdad, Iraq. His responsibilities encompassed the project selection, approval, allocation and accountability of nearly $3.5 billion of reconstruction funds and $1.5 billion of security and capacity building funds. These project funds supported over 1,200 projects to build/rebuild Iraqi infrastructure in the areas of electrical generation and distribution; oil production and distribution; rail, roadway and air travel systems; hospitals and health clinics; water and waster water treatment plants; and fire, police and postal stations. Abt supervised nearly 100 civilian subject matter experts and technical staff. During his tour, he routinely worked with Iraqi national ministers and director generals, and the leadership of the U.S. Embassy and Multi-National Force-Iraq. He traveled to over 140 project sites throughout the country and left the Green Zone visiting the Iraqi leadership over 150 times during his tour.

Abt will discuss the events leading to his deployment, provide insights in the unity of effort between U.S. Embassy and Coalition Military leaders, and present a brief overview of some the projects in which he was directly linked.

TLN Hosts Airport Planning Course

Hesham Mahgoub

SDSU assistant professor of civil and environmental engineering Hesham Mahgoub is teaching a course on airport planning and design via the Transportation Learning Network. The network uses interactive technology to offer the graduate-level course to students across the nation. Topics covered in the course include history of airport engineering; aircraft technology; traffic control systems; airport master planning; airport configuration design; airport airside capacity analysis; geometric design of airport facilities; terminal configurations; environmental factors; pavement design; lighting and marking.

FACULTY ACTIVITIES

Wehbe Appointed as Chair of ACI-ASCE Joint Committee 441

Nadim Wehbe

Nadim Wehbe, MPC program director at South Dakota State University, accepted the invitation by the Technical Activities Committee (TAC) of the American Concrete Institute (ACI) to chair ACI-ASCE Joint Committee 441: Reinforced Concrete Columns. Wehbe will serve as the committee chair for a two-year term starting in April 2008. The two-year term is renewable twice for a maximum of six years.

Paper Accepted for Publication

"SCOOT and Coordinated Actuated Traffic Control Evaluated through Microsimulation" was recommended for publication in Transportation Research Record, Journal of the Transportation Research Board. Authors are Aleksandar Stevanovic and Peter Martin of the Utah Traffic Lab. The paper has been designated as number 08-1479. The paper presents the construction of a comparison between the best offline tools and Adaptive Signal Control.

MPC is Active at Annual TRB Meeting

Several researchers from the Mountain-Plains Consortium participated in the Transportation Research Board's (TRB) 87th Annual Meeting Jan. 13-17 in Washington, D.C.

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.

Colorado State University

Suren Chen

MPC faculty member **Suren Chen** was an author of "Control of Long-Span Bridge and Moving Trucks Under Wind Using Tuned Mass Dampers." The paper outlines research designed to better take into account the dynamic impacts of moving vehicles and wind on long-span bridges. Jun Wu of CSU was also an author.

North Dakota State University

Kimberly Vachal

Kimberly Vachal presided over a panel discussion addressing concerns about transportation and energy. Specifically, the panel discussed the implications of bio-energy in transportation and the demand for ethanol. Vachal also chaired a meeting of the Agricultural Transportation Committee. The meeting featured a presentation on the importance of a reliable waterway system to agriculture, and committee members worked through logistics of the Food Aid Workshop, participated in a roundtable discussion, and generated research topics among other items on the agenda.

Jill Hough

Jill Hough gave a presentation on exploring travel behavior of elderly women in rural and small urban North Dakota using an ecological modeling approach. Her presentation was part of a panel discussion on the reality of travel behavior implications for an aging population.

Dave Ripplinger

Dave Ripplinger facilitated a panel discussion titled "New Approaches to Improving Paratransit Services." Panel topics addressed transit schedules, demand-response and fixed-route transit, agency-dedicated vehicle transportation, and coordinated transportation.

Subhro Mitra

Subhro Mitra presented the paper, "Development of Statewide Freight Transportation Model to Assess Impact of Highway Spring Load Restrictions." The paper details his development of a model to estimate freight transportation cost savings that would be realized by removing spring load restrictions from North Dakota roads.

University of Utah

Ivana Vladisavljevic

Ivana Vladisavljevic presented "High-Occupancy-Toll Lane Experiment on I-15 in Salt Lake City Metropolitan Region: Traffic Flow Evaluation." The paper details a two-year experiment that is an assessment of the traffic impacts of expanding the scope of the HOV lanes on the corridor. Additional authors were Peter T. Martin, Dejan Jovanovic, and Aleksandar Stevanovic.

Aleksandar Stevanovic

Aleksandar Stevanovic presented "SCOOT and Coordinated Actuated Traffic Control Evaluated Through Microsimulation." This paper presents a construction of a comparison between the best offline tools and adaptive signal control. Peter T. Martin was also an author.

Ivana Vladisavljevic also presented "Drivers' Lane-Changing Behavior While Conversing on Cell Phone in Variable-Density Simulated Highway Environment." This research examined the effect of naturalistic, hands-free, cell phone conversation on driver's lane-changing behavior. Additional authors were Joel M. Cooper, David L. Strayer, and Peter T. Martin.

South Dakota State University

Nadim Wehbe, MPC program director at SDSU presented "Laboratory Evaluation of Self-Consolidating Concrete Mixtures for Highway Structures in South Dakota." The paper details part of a comprehensive study to evaluate the feasibility and performance of self-consolidating concrete (SCC) made with South Dakota local aggregates, and to develop SCC draft specifications, acceptance criteria, mix qualifications, and guidelines that the South Dakota Department of Transportation (SDDOT) can use for the construction of precast and cast-in-place non-prestressed structural applications. Additional authors are Arden Sigl, Amanda Boushek (former research assistant), and Zachary Gutzmer (research assistant).

Ali Selim presided at a session showcasing the best papers from TRB 9th International Conference on Low-Volume Roads.

Hesham Mahgoub was an author of "Commercial Vehicle Remotely Operated Compliance Stations in Florida." The paper reported on research aimed at design and deployment of the first Florida Remotely Operated Compliance Station (aka Virtual Weigh Station). The paper describes the design and installation of the Sneads ROCSTM in July 2006, and the software for capture and display, which has been developed by the researchers. Additional authors included Amr Oloufa, University of Central Florida, and Sami Spahi, University of Central Florida.

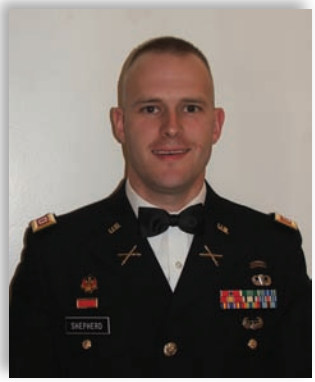
University of Wyoming

Rhonda Young

Rhonda Young was an author of "Relating Vehicle-Wildlife Crashes to Road Reconstruction." The research focused on determining the effect of road reconstruction on the number of reported wild animal crashes using changes in the animal-vehicle crash rates along those segments of roadway. Christopher Vokurka, Drexel, Barrell & Co., was also an author. Young also moderated a session on innovations in statewide planning.

STUDENT ACTIVITIES

Shepherd Named UTC 2008 Student of the Year for Region VIII



Benjamin Shepherd

Benjamin Shepherd, originally from Reidsville, North Carolina, was named the University Transportation Centers Student of the Year for 2008 at the Jan. 12 Transportation Research Board meeting in Washington, D.C.

Shepherd is enrolled at the University of Utah under the Army's Advance Civil Schooling program. He is currently 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 2001.

Shepherd 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.

He has past work experience as headquarters and headquarters battery commander from 2004 to 2007. He was responsible for morale, welfare, and training of a 75-person artillery battery deployed to Tikrit, Iraq. As brigade fire control officer, Shepherd controlled all artillery and rocket fires for a field artillery brigade consisting of 54 155mm howitzer cannons and 18 multiple-launch rocket systems. He also managed hazardous and explosive brigade ammunition assets. From 2002 to 2004, he was battalion fire direction officer where he planned, coordinated and controlled all fires for an 18-gun artillery battalion and prepared operations orders for battalion-level training events and real-world deployments. He also held the positions of battery fire direction officer, platoon leader, and executive officer.

Shepherd has received numerous awards and decorations including two Bronze Star Medals, Army Commendation Medal, Army Achievement Medal, Global War on Terrorism Service Medal, Iraqi Campaign Medal, Army Service Ribbon, and National Defense Service Ribbon.

NEW STUDENT PROFILES

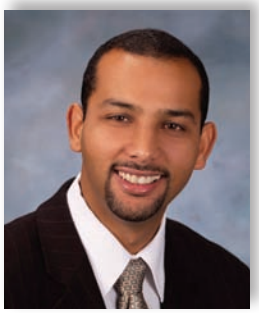
Colorado State University

Chris Turnbull-Grimes

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.

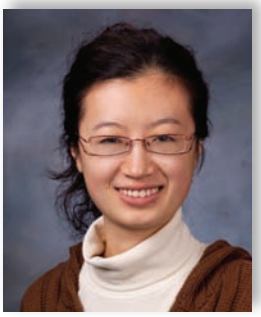
Nathan Miller received his B.S. degree in engineering from Dordt College in Iowa. He is presently a graduate teaching assistant in the Department of Civil and Environmental Engineering. He is conducting MPC supported research on shear spiking to stiffen and strengthen 50-75 year old timber railroad bridge 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

North Dakota State University



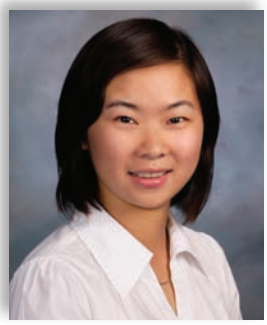
Khalid Bachkar

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.



Qing Liu

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.



Yinan Hu

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.

Yolanda Carson

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.

South Dakota State University

Chad Stripling

Chad Stripling, a native of Minneota, MN, is a graduate student at South Dakota State University. He 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 he is expected to complete his M.S. degree in civil engineering in May 2008. His research work entails experimental and analytical evaluation of prestressed bridge girders made with self-consolidating concrete. In November, Stripling completed the experimental part of his research which involved load testing until failure of three full-scale prestressed bridge girders. The testing was done at the J. Lohr Structures Laboratory at SDSU. The project is co-sponsored by MPC, the South Dakota Department of Transportation, and Cretex West of Rapid City, SD. Following graduation, Stripling plans to work in the field of structural design.

Zachary Gutzmer

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 prestressed 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 is expected to complete his M.S. degree in May 2008. Following graduation, he plans to work as a structural engineer.

Ryan Larsen

Ryan Larsen is a civil engineering undergraduate student at South Dakota State University (SDSU). He is a native of Elk Point, SD. Larsen entered SDSU in August 2004 and became a civil engineering student in December 2004. Larsen has been working as a research assistant with Francis Ting and Allen Jones on the scour project since its start date in January 2007. He has carried out literature survey on bridge scour in cohesive soils, conducted field work at three bridge sites in relation to the subsurface exploration, measured soil erosion rates using the erosion function apparatus (EFA) as well as conducting other laboratory soil tests, used AutoCAD to prepare boring logs, conducted bridge hydraulics analyses using the Hydraulic Engineering Center River Analysis System (HEC-RAS), and performed SRICOS scour simulations. Larsen is expected to graduate in May 2008. Following graduation, he plans to attend graduate school at SDSU and continue to work on the scour project as his research thesis for a M.S. degree in civil engineering.

University of Utah

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 model.

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 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 fall of 2008, he intends to pursue a Ph.D. in English with an emphasis in British and American Literature.

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