Mountain-Plains Consortium

2005 Annual Report

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The Mountain-Plains Consortium Universities

Colorado State University

CSU is governed by the Board of Governors of the Colorado State University System as a public land grant institution with a rural, agricultural mission. Enrollment is nearly 25,000 students. Baccalaureate degrees are offered in 55 departments in eight colleges, including agricultural sciences, applied human sciences, business, engineering, liberal arts, natural resources, natural sciences and veterinary medicine and biomedical sciences. CSU offers 40 doctoral and 62 master's degree programs. Primary transportation graduate educational and outreach activities occur in the College of Engineering, with related activities in business, applied human sciences, and natural resources. Currently, 24 faculty have capabilities and activities pertinent to transportation. 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 including world-class facilities for river mechanics and hydraulics, especially as related to major bridge construction. It also operates the Engines and Energy Conversion Laboratory. The College of Business offers an MBA degree and houses the Institute of Transportation Management, which serves public and private sector organizations. The University Libraries recently was completed, and access is provided to more than three million items in four facilities in a modern computerized setting.

North Dakota State University

NDSU is a land grant institution with an annual enrollment of approximately 12,026 students and more than 652 faculty at the central campus in Fargo. The university offers 41 doctorate and professional degree programs, 51 master's degree programs, and 107 baccalaureate degree programs. Currently, 18 graduate faculty with doctorate degrees are associated with the graduate transportation and logistics program. Collectively, these faculty members encompass a wide range of educational experience and expertise. NDSU is also part of a tri-college system, which includes Minnesota State University-Moorhead and Concordia College in Minnesota. The network promotes educational and research interchange among faculty and allows students to take courses at more than one institution for undergraduate credit.

University of Utah

The University of Utah has an annual enrollment of about 28,500 students and offers 72 undergraduate degree programs, more than 50 teaching majors and minors, and 93 graduate majors. Students are enrolled from 27 of Utah's counties, all 50 states and 108 foreign countries. There are 16 colleges. The College of Engineering is the third largest on campus of the 16 colleges. It is divided into seven academic departments – civil and environmental, mechanical, chemical and fuels, electrical and computer, bioengineering, materials science, and school of computing, with nearly 200 regular faculty and 200 adjunct, clinical and research faculty. Collectively, these departments earned $30 million in external research funding annually. The College of Engineering has several well-equipped laboratories specializing in structural, geotechnical, hydraulic, environmental, traffic, and materials engineering.

University of Wyoming

UW is a land grant institution with an annual enrollment of about 12,000 students. The university has eight colleges and offers the master's degree in 82 fields. UW's academic program features a multidisciplinary approach that expands the educational backgrounds of its MPC graduate students, and other students studying transportation areas. Supporting courses for the program are available in statistics, computer science, and management. Included, for example, are GIS training in the Department of Geography, management training in the business college, special courses and research programs that respond to the multidisciplinary needs of statewide transportation planning, analysis of recreational travel behavior and tourism, and management systems.

Milestones / 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 a subsequent re-competition during the ISTEA era, as well as the most recent competition following the passage of TEA-21.

From 1988 through 2005, MPC produced a library of 168 research reports and 40 student theses or dissertations while attracting new faculty to the field of transportation. During 1988-2005, MPC funded 68 different principal investigators and developed or adapted 20 transportation graduate courses for delivery over the TEL8 distance-learning network. 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.

The following list of milestones provides a cursory view of the accomplishments of the Mountain-Plains Consortium. This year's accomplishments add to its history of achievement and growth in transportation education, research, and technology transfer activities in Region 8.

2005

- TEL8 is reorganized as the Transportation Learning Network (TLN) with upgraded transmission and classroom technologies
- A week-long program of technical seminars and videoconferences are offered via TLN
- South Dakota State University is invited to join MPC
- A strategic reassessment identified future theme and focus areas and plans for an MPC advisory committee

2004

- RSPA site visit showcases accomplishments during the TEA-21 period
- New transportation faculty position at NDSU
- MPC partners with Northern Plains Tribal Tech Center in regional diversity initiative

2003

- Inaugural class of six students admitted to the transportation and logistics Ph.D. program
- Coordinated National Transportation Week program involves all four campuses, including TEL8 events

2002

- North Dakota Board of Higher Education approves proposal for new interdisciplinary Ph.D. in Transportation and Logistics
- Rural Transit Center established at North Dakota State University
- Colorado State University and city of Fort Collins establish new transportation planning course

2001

- First NDDOT engineer graduates from the Master of Science program after completing all courses via TEL8
- NDSU curricula committee approves program plan for minor in logistics
- MPC initiates short-course program for state DOT personnel and offers two short-courses via TEL8

2000

- MPC 5-year strategic plan approved

1999

- MPC universities deliver 18 graduate courses over TEL8 network under cooperative agreement
- MPC wins TEA-21 competition for Region 8
- University of Utah joins Consortium
- Memorandum of agreement signed with Southwest University Transportation Center for education and research exchanges

1998
- 10th year program plan approved

1997
- 9th year program plan approved
- Started North American Educational and Research Exchange with University of Manitoba

1996
- 8th year program plan approved
- TEL8 research seminar series started
- Research partnership established with AAR
- Cooperative agreement signed by MPC universities for annual exchange of graduate courses via TEL8
- Joint MPC-state DOT program planning committee established

1995
- MPC wins re-competition during ISTEA era
- TEL8 used to deliver 44 hours of TRB sessions to state transportation departments in Region 8
- 7th year program plan approved
- Partnership established with ASLRA and FRA, resulting in the establishment of a national short line railroad database
- First graduate courses exchanged among MPC universities

1994
- 6th year program plan approved
- TEL8 telecommunications network started, connecting MPC universities with state transportation departments in Region 8 and FHWA site

1993
- 5th year program plan approved
- Multi-disciplinary graduate transportation education program is started, with options in civil engineering and agricultural economics
- Non-residency graduate transportation option for NDDOT engineers initiated using Interactive Video Network

1992
- 4th year program plan approved

1991
- 3rd year program plan approved
- MPC establishes outstanding graduate student award

1990
- 2nd year program plan approved
- Reorganization of MPC to include four Region 8 universities

1989
- Regional conference and planning meetings with LTAP center directors
- 1st year program plan approved

1988
- Mountain-Plains Consortium founded and selected as Region 8 Center

Program Goals, Strategies and Focus Areas

The UTC program was established "to increase the number of Americans who are prepared to design, deploy and operate the complex transportation systems that will enhance America's economic competitiveness in the 21st century." MPC developed program goals and five-year strategies to help realize that outcome. They are detailed in the MPC Strategic Plan available at our Web site.

Four key words help to define MPC's strategies and programs – multi-university, multi-disciplinary, multi-modal, and multi-national. We are continuing our pre-existing programs while developing new multi-disciplinary educational, research, and technology transfer programs. Collectively, these programs coordinate and integrate concepts from many disciplines including engineering, planning, economics, business, geography, computer science, and operations research. Our educational programs feature resident and non-resident courses and use traditional and innovative delivery media. They also feature a mixture of undergraduate, graduate, and continuing education components. Our research encompasses the surface modes of highway, transit, and railroad, as well as intermodal freight movements.

Our focus area in international cross-border traffic addresses multi-national transportation issues, as do much of our educational and technology transfer activities. One of our major strategies is to engage universities in Canada, Mexico, and the United States in a broader partnership to foster exchange and dissemination of knowledge in the midcontinent region.

This section of the report defines our focus areas and summarizes MPC's program goals and prime strategies. These strategies are organized under the guiding UTCP goals of education, research selection and performance, technology transfer, and human resources.

Focus Areas

Rural and intermodal transportation provides a basic direction for the Center's activities. However, the theme is quite broad for guiding the research and technology transfer components of the program. Therefore, seven focus areas have been developed to further guide MPC faculty in developing research and technology transfer projects and assisting each university in concentrating its efforts in areas of excellence and specialization. The focus areas also provide common ground for universities to collaborate on joint projects.

Rural Transportation Safety

Safety is a top priority for the U.S. DOT and state transportation departments in the region. Much of MPC's research has focused on rural safety issues and potential solutions for state and local highways. Although several MPC focus areas encompass safety topics, an umbrella focus area has been created to emphasize the importance of rural transportation safety. MPC research will highlight emerging technologies such as rural road safety audits, which have the potential to significantly improve safety on low-volume rural highways, and potential applications of GIS and ITS technologies to highway safety. As noted earlier, many safety-related issues will be addressed by projects in other focus areas such as low-volume roads and bridges and rural transit.

Rural Transit

Transit may be the only travel option for households without automobiles and for elderly and handicapped residents. Critical transit planning and research issues in Region 8 include cost-effectiveness of transit systems in sparsely populated areas; transportation of economically disadvantaged and aging rural residents; access to jobs and training for people making transitions from welfare-to-work; use of ITS and other advanced technologies for rural public transit; connectivity between small towns and urban and metropolitan centers; and improved access to university campuses.

Intermodal Freight and Logistics

This focus area encompasses topics of importance to business, government, and the transportation industries. Most prospective research falls into one of the following categories: railroad track and bridge rehabilitation and engineering; heavier rail car weights and transloads; location and operation of intermodal facilities and terminals; railroad cost-of-service, market structure, and productivity; issues in regulatory economics (e.g., pricing, abandonment, and competitive access for shippers); commodity ow and truck traffic analysis; farm-to-market access and critical issues in agricultural logistics; supply chain management and critical issues in manufacturing logistics; truck economics; heavy truck factors in highway and bridge design and operation; use of ITS technologies in commercial vehicle operations and truck safety; and rural plant location criteria and infrastructure demands.

Low-Volume Roads and Bridges

About 75 percent of the nation's 3.7 million miles of roadway are rural in nature. Nearly two-thirds of rural mileage is under local control. According to the National Bridge Inventory, about 80 percent of U.S. bridges are located on secondary roads and half are local in function. Use of secondary and local roads is low, representing about 20 percent of daily traffic. However, more than half of the nation's traffic fatalities occur on rural roads and bridges.

Changes in the farm sector are impacting rural highway demands that include increased farm size, mechanization and productivity and larger trucks and farm equipment. Abandonment of light-density rail lines and longer farm-to-market trips are increasing heavy truck use. Many rural counties have hundreds of highway bridges in disrepair, but are able to address only two to three annually, as low commodity prices, declining tax bases, and reductions in the purchasing power of intergovernmental assistance limit the ability of local governments to maintain low-volume roads and bridges.

Most research for this focus area falls into the categories of financing methods and issues; cost-effective design and maintenance practices; impacts of seasonal load restrictions and extreme weather conditions on the mobility of people and goods; impacts of rail line abandonment and other railroad system changes on rural highways; and highway and bridge safety, especially in two-lane rural roads.

Environmental Impacts

Much of the research conducted under this heading is linked to projects in other MPC focus areas such as enhancing tourism through mitigation of congestion, road and bridge management projects, and the development of master plans for recreational access.

Some specific areas of environmental research that have relevance to regional planning and policy analysis are freight and hazardous materials movements; reduction of congestion-related air pollution; potential for alternate transportation modes in heavily traveled corridors; studies of high altitude, low-emissions fuels; and safe and effective dust control. Hazardous materials issues include commodity ows and volumes; monitoring and vehicle identification procedures; routing; risk assessment and management; emergency response; and classification of new materials. Clearly, hazardous materials research has safety as well as environmental implications.

Tourism and Recreational Travel

Several of the most visited national parks and ski areas in America are located in Region 8. Many rural tourist areas are characterized by large seasonal variations in demand and congestion during peak periods. In general, the seasonal and daily traffic impacts of tourism and recreational travel must be better understood and documented. Specific research needs include travel demand characteristics, behavioral modeling, marketing effectiveness, potential roles for new technologies, and measurement of tourism output and traffic generation factors. It is also important to understand the complex relationship between tourism/recreational travel and the preservation of natural resources in the region, and the potential impacts of tourism on "edge communities." Finally, an aging populace will demand more local transit options and alternative modes of access along corridors.

International Cross-Border Traffic

Most of the prospective research projects in this focus area fall into one of the following categories: cross-border variations in truck configurations, lengths, weights, and operational practices; cross-border variations in pavement design and management practices; application of advanced technologies such as automatic vehicle identification, electronic tolls and vehicle clearance, and advanced traveler information systems to improve efficiency of cross-border truck movements; merger and consolidation of North American railroads and interchange of cross-border freight movements; variations in rail car ownership and use among nations; international interline information systems and intermodal hubs; international tourism and cross-border recreational travel; and supporting infrastructure investments.

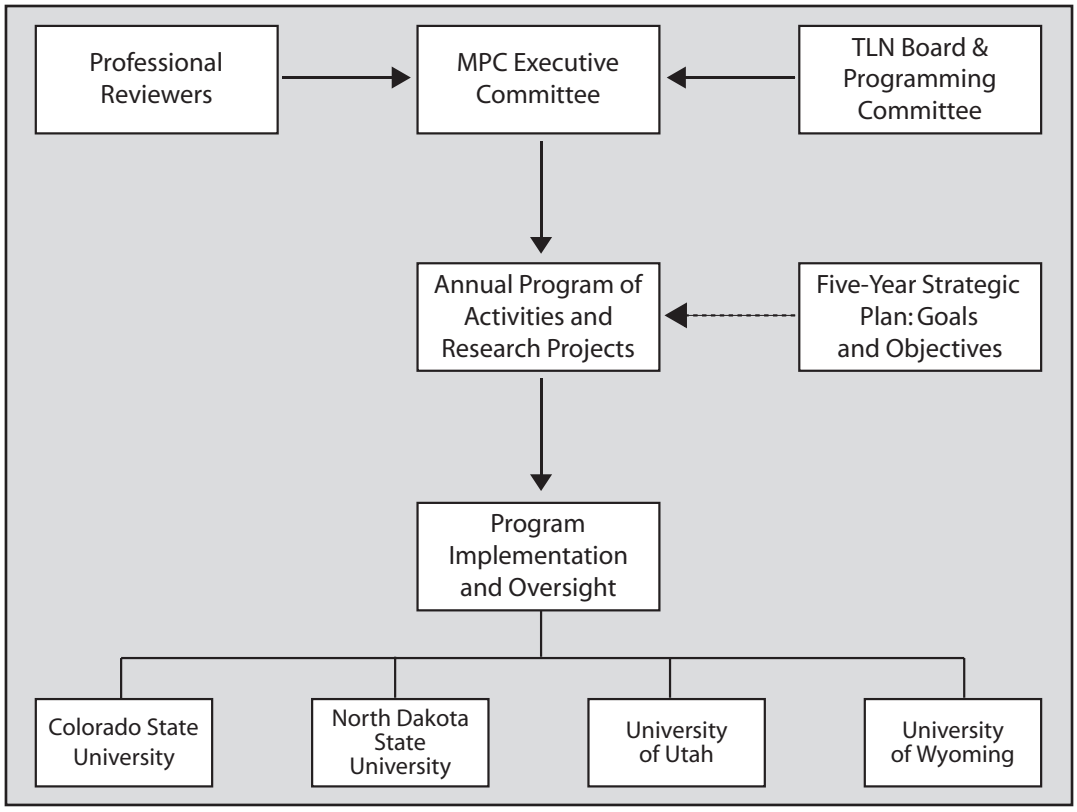
Management Structure

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 TEL8 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. The MPC Program Planning owchart illustrates the main sources of input and process used to develop an annual program of activities and research projects.

Center Director

The Mountain-Plains Consortium is located at the Upper Great Plains Transportation Institute at North Dakota State University. 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 produce the greatest impact for the consortium. Kathy McCarthy of NDSU is the assistant administrator for the center. Beverly Trittin of NDSU provides technical 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.

Management Structure of the Mountain-Plains Consortium



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 and 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. Ayman Smadi, North Dakota State University; Dr. Peter Martin, University of Utah; and Dr. Khaled Ksaibati, University of Wyoming.

Executive Committee

The center director, the four university program directors, and a USDOT liaison form a committee to oversee program planning and administrative functions for the grant period. The six-member executive committee meets several times 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.

Telecommunication Support Network

The TEL8 interactive telecommunications network changed its name and is evolving to become the Transportation Learning Network. It will continue to use technology to help people work together on transportation issues in the region. Each partner will provide transportation programming, training and technology transfer to the network. Efforts will include technical training, transportation short courses, peer sessions, graduate-level classes, professional management and leadership courses and seminars. The four 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 and class rooms 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.

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 and program director attend part of the MPC executive committee meeting and the center director attends part of the TEL8 board meeting. The TEL8 programming committee, which meets several times each year, 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

Although TLN is a primary source of state transportation department input each year, professionals from federal, state, and local transportation departments and private industry review MPC research problem statements. In 2004-05, 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.

Accountability for Decisions

Many key decisions and actions ow from committee meetings and other deliberations. However, the MPC executive committee retains decision-making responsibilities. All UTCP-funded activities conducted on the four campuses are approved first by the executive committee. The center director ultimately is held 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

DR. DENVER TOLLIVER is director of the Mountain-Plains Consortium, associate director of UGPTI, and director of the Transportation & Logistics graduate educational program at North Dakota State University. He has been involved in the University Transportation Centers program, and in the administration of the MPC since 1992. In addition, he has served as coordinator of the NDSU graduate transportation program since 1994 and is director of the new Ph.D. program in transportation & logistics. He holds a doctorate degree in environmental design & planning and a master's degree in urban and regional planning from the Virginia Polytechnic Institute.

During his career, Tolliver has served as principal investigator for more than 30 USDOT, USDA, and state research grants and testified before the Interstate Commerce Commission or Surface Transportation Board on 22 occasions. He has published more than 50 technical reports and journal articles, and authored a book on highway impact assessment techniques. He has developed and taught courses in Transportation Economics, Industrial Traffic Management, Rural & Non-Metropolitan Transportation Systems, Administration of Transportation Agencies, Statewide Transportation Planning, and Rural Public Transportation Systems.

Tolliver's primary research interests are freight transportation, highway planning, and environmental impact analysis. His current projects include: development of a statewide freight traffic database, development of integrated highway and land-use models for analyzing the traffic effects of large agribusiness facilities, and the benefits of increased investment in county and city roads. He serves on the Local & Regional Railroad Freight Committee of the Transportation Research Board and is past president of the Agricultural and Rural Transportation Chapter of the Transportation Research Forum.

DR. RICHARD GUTKOWSKI, P.E., is a professor of civil engineering at Colorado State University. 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 was active in the development a multi-site regional transportation learning network for research and graduate education, and manages CSU's site.

Gutkowski has been an invited professor at the Swiss Federal Institute of Technology (SFIT), Lausanne, Switzerland; and arranged formal university cooperation programs with the SFIT. In 1990, Gutkowski presented a workshop on design of timber bridges in Akitashi, Japan, for the Ministry of Forestry and the Japanese Society of Civil Engineers. He directed a 1994 NATO research workshop on improving a deteriorated transportation infrastructure within Poland and its neighboring countries and was a participant in a NATO symposium on the role of NATO in scientific cooperation in central Europe. He presently is cooperating with the National Institute for Amazonian Research in Manaus, Brazil; and researchers at the University of Coimbra, Portugal; and the University of Canterbury, New Zealand, in composite wood-concrete bridge research. He was a sole recipient of a grant from the Foundation for Portuguese American Development-Lusitania for a professional development/cooperation visit to the University of Coimbra in 2004.

He has ongoing cooperation in research related to design code development with the faculty of civil engineering at the Budapest University of Technology and Economics. In 2003 he co-organized and hosted the annual workshop of Working Commission W-18-Timber Structures, International Council for Research and Innovation in Building and Construction in Golden, Colorado.

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. He has co-edited proceedings for the above NATO workshops.

DR. KHALED KSAIBATI received a B.S. degree (1984) in civil engineering from Wayne State University. He later completed his M.S. degree (1986) and Ph.D. (1990) from Purdue University. While completing his doctorate, Ksaibati worked full time for the Indiana Department of Transportation as a pavement structural engineer.

Ksaibati has been a member of the civil engineering faculty at the University of Wyoming (UW) 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. In 1998, Ksaibati took a one-year sabbatical leave from UW and joined the staff of the Florida Department of Transportation where he provided training, consulting, and technical support. Several research papers, reports, and presentations resulted from the research work done in cooperation with FDOT.

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.

Ksaibati is a member of five Transportation Research Board committees dealing with various aspects of pavements. He also is a member of two ASTM committees related to pavement smoothness. Ksaibati also served on various ITE committees and is the faculty advisor of the student chapter of ITE at UW. In addition, he served on several NCHRP research panels.

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. His research has been supported by the Wyoming Department of Transportation, Federal Highway Administration, PacifiCorp, and other DOTs.

Ksaibati is also involved in consulting work on several projects for the SBIR, Florida DOT, and the Wyoming Contractor Association.

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 earned membership in the UK Institution of Civil Engineers (professional registration) in 1978.

Currently, Martin supports the development of an Advanced Traffic Management System associated with the I-15 Reconstruction project of the Salt Lake Valley, Utah. He has built the "Utah Traffic Laboratory," which allows real-time connection to the Utah DOT ITS Traffic Operations Center.

DR. AYMAN SMADI is director of the Advanced Traffic Analysis Center (ATAC) at the UGPTI. The ATAC enhances transportation systems in small-medium size communities through the use of advanced traffic analysis and ITS solutions to safety and mobility problems. Four major programs encompass ATAC activities: traffic operations, Intelligent Transportation Systems; transportation planning and travel demand; and training. ATAC's Traffic Laboratory supports state-of-the-art traffic analysis, including traffic simulation, traffic signal control, and traffic data collection systems. ATAC is the official provider for training on the VISSIM traffic simulation model. Training on other traffic simulation and analysis models is also provided on-demand to various partner agencies.

Smadi is also involved in NDSU's graduate transportation program. As an adjunct professor in civil engineering, Smadi teaches transportation planning, advanced transportation systems, and ITS graduate courses.

Smadi's research interests include traffic operations, transportation planning, ITS, and safety. He has developed and worked on federal- and state-funded projects in those areas.

Smadi, an advanced research fellow, began his work at the UGPTI in 1993. In 1996 he became NDSU's program director for MPC and in 1998 became ATAC director. He has a doctorate degree in civil engineering from Iowa State University, Ames; a master of science degree from the University of Oklahoma, Norman; and a bachelor of science degree in civil engineering from Yarmouk University, Irbid, Jordan.

Key Faculty

Colorado State University

Dr. Wayne A. Charlie is a professor of civil engineering at Colorado State University. He received his Ph.D. in civil engineering at Michigan State University and is a registered professional engineer in Colorado and Maine. His current research interests are related to shallow and deep foundations, the stability of earth slopes, and the behavior of structures subjected to earthquake, explosive and impact loads. He has more than 75 refereed publications and numerous conference papers and reports. Currently, experimental tests are being conducted on a model timber railway bridge supported on timber piles and the impact resistance of structures subjected to tornado generated debris.

Dr. Marvin Criswell is professor of civil engineering and the Associate Department Head for Academic Affairs in the Department of Civil 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 of the TEL8 network.

Dr. Paul Heyliger has been on the faculty of the Department of Civil Engineering for 15 years. He was awarded his Ph.D. in engineering mechanics from Virginia Tech in 1986, 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 exible 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. Thomas G. Sanders is an associate professor of civil engineering. He received his master's and Ph.D. in civil engineering at the University of Massachusetts. Sanders has over 125 publications and has presented 69 short-courses on hazardous waste, water quality monitoring, and activated sludge process control.

Dr. John W. van de Lindt is an associate progressor 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 1995 and 1999 respectively, 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.

Dr. Sandra Woods is professor and department head of the Department of Civil Engineering. Woods received a B.S. degree in civil engineering from Michigan State University in 1976. She received M.S. and Ph.D. degrees in civil engineering from the University of Washington.

While on the Oregon State University civil engineering faculty for 16 years, Woods developed a program for under-represented engineering students, led the development of an environmental engineering degree program, established a residence hall for women engineering students and helped establish an EPA Hazardous Substance Research Center. Woods served as faculty associate to the provost and interim dean of Distance and Continuing Education. Her research focuses on the bioremediation of contaminated groundwater. She was a Presidential Young Investigator and a member of the Governor's Task Force on the state of Oregon's Environment.

North Dakota State University

Doug Benson has specialized in the analysis of railroad operations and the development of computer systems used for transportation analysis. He is project director of the American Short Line and Regional Railroad Association's national database system.

Benson served as executive director for TEL8 from 1997-2004.

Benson received an M.S.degree in computer science from NDSU. He also holds B.S. degrees in computer science, education, history, and psychology.

Mark Berwick has been involved in research with UGPTI since 1995, specializing in the areas of logistics and transportation management. Specifically, he has worked in areas of business logistics and motor carrier economics.

Since 1999, Berwick has been the director of the Biennial North Dakota Strategic Freight Analysis Program, which examines the transportation and logistics of different sectors of the economy every two years.

Berwick received M.S. and B.S. degrees in agricultural economics at NDSU.

Jill Hough serves as the director of the Small Urban & Rural Transit Center, which focuses on research, education, and training for the public transportation industry. In addition to working in the area of public transportation, Hough has published numerous reports and articles in the areas of low-volume roads, logistics, and economic development. She has worked on several projects in cooperation with the U.S. Department of Transportation. She spent four months as interim director for the Federal Transit Administration's Transit Intelligent Vehicle Initiative in Washington, D.C.

She currently is working on a doctorate degree in transportation technology and policy from the University of California-Davis. She received M.S. and B.S. degrees in agricultural economics at NDSU.

Kimberly Vachal has extensive background in grain production and market intelligence. Her work focuses on identifying trends in the activities of grain producers, elevators, agricultural processors and railroads. In addition to completing many research studies on grain and oilseed transportation issues, she has worked on a number of projects in cooperation with the USDA.

Vachal received M.S. and B.S.degrees in agricultural economics at NDSU. She received her doctorate degree in Public Policy from George Mason University in 2004.

Tamara VanWechel's work focuses on agricultural transportation. She has interests in rural freight logistics and infrastructure, bulk grain and oilseed logistics, and railroad pricing and

service. As a native of rural North Dakota, she understands the fundamental relationship between economics and agriculture. She earned her B.S. and M.S. degrees from NDSU in natural resources management. Her M.S. degree has an emphasis in agribusiness and applied economics.

Affiliated Faculty – NDSU

Don Andersen, Civil Engineering
Amiy Varma, Civil Engineering
Magdy Abdelrahman, Civil Engineering
G. Padmanabhan, Civil Engineering
Gary Smith, Civil Engineering
Canan Bilen-Green, Industrial & Manufacturing Engineering
Darsono Tjokroamidjojo, Industrial & Manufacturing Engineering
Reza Maleki, Industrial & Manufacturing Engineering
Peter Odour, Geosciences
John Bitzan, College of Business Administration
Rodney Traub, College of Business Administration
Joseph Szmerekovsky, College of Business Administration
Dave Lambert, Agribusiness & Applied Economics
Robert Hearne, Agribusiness & Applied Economics
Won Koo, Agribusiness & Applied Economics
Bill Wilson, Agribusiness & Applied Economics

University of Utah

Dr. Peter T. Martin earned a B.S. degree in civil engineering from the University of Wales in 1975, a master of science 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 earned membership of the UK Institution of Civil Engineers (professional registration) in 1978.

Currently, Martin is supporting the development of an Advanced Traffic Management System associated with the I-15 Reconstruction project of the Salt Lake Valley, Utah. He has built the "Utah Traffic Laboratory," which allows real-time connection to the Utah DOT ITS Traffic Operations Center.

University of Wyoming

Dr. Eugene M. Wilson is professor emeritus of civil engineering. He was the university's 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. Charles M. Dolan is professor and head of the Department of Civil Engineering. His research focuses on high-performance materials such as glass, Kevlar and carbon fibers for reinforcing new and existing structures. He was the principal investigator for research of fiber-reinforced plastics for highway structures sponsored by the Federal Highway Administration. Among his other recent work is development of anchor systems for fiber-reinforced plastic tendons; time behavior of non-metallic pressuring tendons; investigating long-term performance of non-metallic materials in concrete and evaluating bridge joint sealant materials.

His civil engineering degrees are a B.S. from the University of Massachusetts and an M.S. and Ph.D. from Cornell University. He is a registered professional engineer in Wyoming, Washington, and Ontario.

Dr. Larry O. Pochop, professor of civil engineering, specializes in hydrology, microclimatology, agricultural and municipal water conservation, and management.

He earned his B.S. degree from South Dakota State University, and his M.S. degree and Ph.D. from the University of Missouri, Columbia. His degrees are in agricultural engineering. He is a professional engineer in Wyoming.

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.

Donald E. Polson, a lecturer in the College of Engineering, specializes in structural engineering with an emphasis in the design and use of temperate and tropical woods. In addition to teaching, he is a private consulting structural engineer and facilities consultant.

A Fulbright Scholar in 2000, Polson holds a B.S. in civil engineering with the architectural option and an M.S. with the structural concentration. Both degrees are from the University of Wyoming. Polson has also been honored with teaching awards.

Dr. John P. Turner is a professor in the College of Engineering who specializes in soil and rock mechanics, foundation engineering, earth retaining structures, slope stability and innovative materials for waste containment. He has also been a field geologist for geotechnical site investigations and an exploration geologist.

He was a visiting professor at the University of Sydney, Australia, and the University of Canterbury, New Zealand, for the 1993-94 academic year. He holds a B.S. degree in geology from James Madison University, and a B.S. and M.S. in civil engineering from the University of Wyoming and a Ph.D. in civil engineering (geotechnical) from Cornell University.

Dr. Thomas V. Edgar works with ow, 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.

Edgar has received teaching awards. 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. Gregory V. Wilkerson is an assistant professor in the College of Engineering. He researches water resource problems, stream restoration, river mechanics, sedimentation and erosion, environmental hydraulics, engineering hydrology and statistics.

His B.S. is from Georgia Institute of Technology and his M.S. and Ph.D. are from Colorado State University. His degrees are all in civil engineering.

Dr. Cenk Yavuzturk is an assistant professor of architectural engineering. His research interests are in HVAC-R equipment and systems, thermal systems modeling and simulation, ground source heat pumps, building energy analysis and energy management and building thermodynamics.

He holds a Ph.D. in mechanical engineering from Oklahoma State University and a Diplom Ingeniuer in energy and processing engineering from the Technical University of Berlin, Germany.

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). Rhonda's general interests in this area focus on methods to increase the efficiency of agency spending towards 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, masters 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.

The Year in Review
Director's Summary

Fiscal year 2004-2005 was MPC's sixth year of the TEA-21 grant. Despite uncertainty over funding because of the expiration of TEA-21 and the delay in passing a new federal highway bill, MPC's faculty, staff and students maintained high levels of productivity.

MPC published 10 new peer reviewed reports and offered 74 graduate-level transportation courses at the four universities. Many additional courses in civil engineering, economics, and business were offered by the participating academic departments. On-going research projects focus on topics ranging from freight movement studies and materials testing to new applications of technology such as GIS, computer modeling and adaptive signal control. In addition to continuing this strong baseline effort, several new initiatives were launched during FY 2004-2005. New research projects focused on traffic operations in small urban and rural areas, the relationship between vehicle-wildlife crashes and roadway improvements, reinforcing wood-concrete highway bridges and other topics. Other highlights from the past year include:

- New technology at the Utah Traffic Lab allows desk-top to desk-top communication via Internet video streaming. The initial uses were a traffic signal systems monthly meeting for participants across the nation and a Professional Engineer review short course were initial uses.

- Colorado State University researchers developed a low-cost facility for testing the effectiveness of portable safety/security barriers.

- The University of Wyoming hosted a workshop on updates to the Manual of Uniform Traffic Control Devices via the TEL8 interactive video network, allowing more than 200 participants from five states to participate with minimal travel expense.

- Students were integrated in real-world learning opportunities. University of Utah students began working as interns in the state's advanced traffic operations center. The student chapter of the Institute of Traffic Engineers at NDSU toured the MnDOT Regional Transportation Management Center, the new Hiawatha Light Rail system, the Minneapolis/St. Paul International Airport and other sites during a field trip.

- The MPC hosted 17 educational and research sessions during National Transportation Week. The sessions were broadcast via the Transportation Learning Network and featured topics ranging from a discussion of rural school bus logistics to a presentation by Eric Peterson, deputy administrator of the USDOT's Research and Innovation Technology Administration.

- NDSU continued to expand their relationship with tribal transportation planners to improve transportation planning capacity and safety on tribal roads.

More details on these and other MPC activities are presented in the Program Highlights section of this report.

FY 2005 Program Highlights

Utah Traffic Lab Implements Technology for Training and Research Collaboration

The Utah Traffic Lab at the University of Utah has subscribed to the Macromedia Breeze Video Streaming system. The system enables desk-top to desk-top communication via video streaming. Two initiatives: a traffic signal systems monthly meeting called Adaptive Signal Control Talk Shop began with its first meeting Feb. 2. Twenty-four participants from across the nation participated in a session on system procurement. The Professional Engineer Review short course had its video-streaming debut Feb. 11 with 50 engineers from eight western states participating.

(Contact Dr. Peter Martin, University of Utah, 801.581-7144 or martin@eng.utah.edu)

Intern Program Launched in Utah Advanced Traffic Operations Center

The Utah Department of Transportation has funded a revolving intern program for graduate students to work in the state's advanced traffic operations center. The unique arrangement enables students to earn a modest wage and attract a full tuition waiver.

(Contact Dr. Peter Martin, University of Utah, 801.581-7144 or martin@eng.utah.edu)

University of Utah Selected to Showcase New Traffic Assignment Modeling Tool

PTV America is the software developer of the leading transportation modeling and simulation tools VISSzIM, a micro simulation tool, and VISUM, a trip assignment model. A new product, VISUM-online, takes real-time ow data to generate dynamic traffic assignment modeling. PTV America chose the University of Utah as the first North American installation to showcase the tool's capabilities. The University of Utah was selected because of its high-integrity connection between the traffic lab and the state system. PTV staff were impressed by the expertise of MPC-funded students and the stability they enjoy through USDOT support.

(Contact Dr. Peter Martin, University of Utah, 801.581-7144 or martin@eng.utah.edu)

CSU Develops Test Facility for Portable Barriers

Colorado State University researchers developed a low-cost facility for testing the effectiveness of portable safety/security barriers. Successful performance in the test would be a likely indicator of success in official federal testing as outlined by the National Cooperative Highway Research Program. Firms have developed various portable barrier systems to provide secure public locations such as stadiums and courthouses against access as well as to direct traffic. The CSU facility will help small firms conduct preliminary tests on the effectiveness of their designs. Initial tests at the facility indicate it may also provide preliminary indication of a barriers' performance in new standardized performance tests developed by the U.S. State Department.

(Contact Dr. Richard Gutkowski, Colorado State University, 970.491.8291 or gutkowski@engr.colostate.edu)

MPC Scholarships Awarded

Leo Schaefers of Monticello, MN, and Dustin Kinnischtzke of Washburn, ND, were awarded 2004-2005 University Transportation Center Engineering Scholarships at North Dakota State University. The scholarships recognize outstanding scholarship and promote the education of transportation engineering students at NDSU. Funding for the two $1,500 scholarships is provided by the Mountain-Plains Consortium through the University Transportation Centers Program of the U.S. Department of Transportation. Awarding the scholarships is consistent with the MPC goal of attracting undergraduate students to the field of transportation and logistics.

(Contact Dr. Denver Tolliver, North Dakota State University, 701.231.7190 or denver.tolliver@ndsu.edu)

University of Wyoming Hosts MUT CD Workshop

The University of Wyoming hosted a workshop on updates to the Manual of Uniform Traffic Control Devices (MUTCD) via TLN. More than 200 people from five states participated. The workshop detailed the changes in the manual as they relate to departments of transportation and local governments. The University of Wyoming conducted a survey to evaluate the impact of the training. A follow-up survey showed a large number of participants changed their procedures to be in compliance with the new standards. In addition, most of the participants ranked the workshop very highly.
(Contact Khaled Ksaibati, University of Wyoming, 307.766.6230 or Khaled@uwyo.edu)

Videoconferences, Luncheon Highlight Transportation Week

The Mountain-Plains Consortium at NDSU was the center of regional activities celebrating National Transportation Week, May 16 -20, hosting transportation-focused videoconference sessions and a luncheon designed to bring researchers and practitioners together.

At the center of the week's activities was the MPC's interactive videoconferencing network, the Transportation Learning Network. The network connects NDSU and its MPC partners, Colorado State University, the University of Utah and the University of Wyoming, with state departments of transportation in the region to share information and technology.

The network hosted 17 educational and research sessions during the week ranging from a discussion of rural school bus logistics to a presentation by Eric Peterson, deputy administrator of the U.S. Department of Transportation's Research and Innovative Technology Administration. Peterson and several state DOT administrators spoke during the introductory session Monday, May 16.

"While it is 890 miles between Fargo, N.D., and Helena, Mont., and another 1,250 miles between Fargo and Salt Lake City, the MPC universities and state transportation departments have used technology to overcome these distances. They are able to communicate daily through the Transportation Learning Network. This allows professionals and students to spread knowledge and exchange ideas over those great distances without risks or, more important to today's overburdened taxpayer and especially parents, travel costs," Peterson noted.

Peterson highlighted several collaborative research, outreach and education programs of the Mountain-Plains Consortium. "All of these programs exemplify the best of what the University Transportation Centers hopes to nourish with its funding," he said.

Dave Sprynczynatyk, director of the North Dakota DOT, also praised the Transportation Learning Network and its reach to 66 locations in the state. "The TLN is an effective and cost-effective way of providing training. Logistically, we just couldn't do it any other way. The network saves us a great amount of money and a great amount of time."

Jim Lynch, director of the Montana DOT, also praised the TLN. "A system like this is not available to this extent in the private sector. We're excited to have Montana be a part of this."

"TLN has been very, very successful for us," noted Jim O'Connor, Support Systems Administrator for the Wyoming DOT. "Because of TLN, we're able to provide more training, retain more people and attract more people."

Sprynczynatyk also endorsed the University Transportation Centers program overall. "It's important for us to have the necessary research to support what we do on a day-to-day basis."

On Wednesday, about 40 attendees, including transportation professionals from North Dakota and Minnesota and NDSU faculty and staff from about six departments, gathered for the annual Transportation Week luncheon hosted by the Upper Great Plains Transportation Institute. Featured speaker at the luncheon was Grant Levi, deputy director for engineering with the North Dakota DOT.

Levi highlighted key goals in the department's strategic plan:

- Enhance customer satisfaction,
- Increase safety on the system and within the department,
- Improve the quality and efficiency of the transportation system and services,
- Enhance employee satisfaction, and
- Strengthen stakeholder relationships.

He also emphasized that the DOT's strategic plan was focused on all modes of transportation. "For this state to grow, we're challenged to meet the economic needs of the state. To do that will take all modes of transportation," Levi said. *(Contact Dr. Denver Tolliver, North Dakota State University, 701.231.7190 or denver.tolliver@ndsu.edu)*

ITE Student Chapter at NDSU Field Trip

The Institute of Traffic Engineers student chapter at North Dakota State University organized a 2-day field trip for 16 of its members to Minneapolis and St. Paul. The students visited the following locations:

- MnDOT Regional Transportation Management Center
- Hiawatha Light Rail
- Minneapolis/St. Paul International Airport
- Benshoof and Associates
- Army Corps of Engineers Locks and Dams
- North Central Section of Institute of Transportation Engineers

The students experienced technical demonstrations, rode in light rail trains, observed the lock and dam system on the Mississippi River, and had a lunch discussion with consulting engineering firms about issues in the transportation field. Funding for the trip was provided in part by the Advanced Traffic Analysis Center at NDSU.
(Contact Dr. Ayman Smadi, North Dakota State University, 701.231.8101 or ayman.smadi@ndsu.edu)

NDSU ITE student chapter visits Minneapolis-St.Paul, MN.

Students rode Metro Transit's Hiawatha Line, a new light rail transit system. (Minneapolis, MN)

University of Wyoming Student Honored

Steven D. Carter is the 2004-05 MPC recipient of the University Transportation Center Outstanding Student of the Year Award.

Carter is a native of Merritt Island, Fla., and spent 11 years in the U.S. Air Force before enrolling in the University of Wyoming in 2000. He earned a B.S. degree in civil engineering in 2003 and an M.S. degree in civil engineering in 2004. As a graduate assistant, he conducted research on asphalt pavement preservation, specifically the sealing of asphaltic cracks with specially formulated materials. His research was accepted for a presentation as well as publication by the Transportation Research Board.

His selection as Outstanding Student of the Year recognizes his research, a graduate grade point average of 3.889, professionalism in the presentation of the research findings to federal and state officials, and leadership in the direction of activities and accomplishment of objectives led to this achievement. In addition, Carter was an active member of the American Society of Civil Engineers and the Institute of Transportation Engineers. He is currently working for a consulting firm in New Mexico.
(Contact Khaled Ksaibati, University of Wyoming, 307.766.6230 or Khaled@uwyo.edu)

Undergraduate Students Complete Summer Research Programs

Antonio Marquez completed a 5-week Summer CIT Program at CSU, which provides minority and women students an opportunity to conduct mentored research activity. Then an undergraduate sophomore at the University of Puerto Rico-Mayaguez, he did a laboratory load test study on the use of solid wood construction as an alternative to light frame wood construction. The project was developed by professor Richard Gutkowski and mentored by Jennifer Regel, a recent graduate of the civil engineering program at CSU.

Charles Manu participated in the 9-week 2004 McNair/PEAKS Summer Research Internship Program, his second summer in the program. Charles was a senior at Bowie State University and conducted studies on the effect of moisture/humidity exposure on the effectiveness of pultruded composite shear spikes used in strengthening deteriorated railroad ties.

Both students developed work proposals, written reports and a poster presentation as part of their research experience.
(Contact Dr. Richard Gutkowski, Colorado State University, 970.491.8291 or gutkowski@engr.colostate.edu)

Transportation Week Session Focuses on Tribal Transportation Planning

Transportation experts from Colorado, Minnesota, Montana, North Dakota, Washington and Wyoming met via videoconference during National Transportation Week in May to share ideas for improving transportation on Indian reservations through cooperation with tribal officials.

"It was a great session. I think we all learned a great deal and we look forward to doing it again," noted Denver Tolliver, director of the Mountain-Plains Consortium, the university transportation center that hosted the video conference on the Transportation Learning Network. The videoconference was jointly sponsored by MPC and the Northern Plains and Colorado Tribal Technical Assistance Programs.

The video conference, "Interfaces Between Tribal and State Transportation Planning," focused on three key topics for state and tribal transportation planners:

- Recent changes to the Indian Reservation Road Inventory and the need to represent state and local highways in the inventory.
- Issues and new approaches to accident reporting on reservation roads.
- Case studies of cooperative state and tribal planning.

Dennis Trusty, director of the Northern Plains Tribal Technical Assistance Program opened the conference with a presentation on accident reporting issues on reservation roads. He highlighted recent efforts on South Dakota's Rosebud Reservation to better document accidents. That reservation covers an area measuring about 50 miles by 30 miles and is home to about 35,600 residents.

Trusty said data from 2004 indicated that the death rate on reservation roads was 3.83 deaths per 100 million miles. That's more than 2 ½ times the national rate of 1.46 deaths per 100 million miles driven and significantly higher than the death rate of 2.42 per 100 million miles on South Dakota rural roads statewide.

"If we could reduce the death rate on the reservation roads there to the South Dakota average, six more people would be alive today. If we could reduce it to the national rate, nine more would be alive," Trusty noted.

Trusty noted that there were 577 motor vehicle crashes on Rosebud Reservation roads in 2004. Of those, 331 were property damage accidents, 246 resulted in injuries to 522 people. The reservation had nine accidents that resulted in 15 fatalities. Of those victims, 13 weren't wearing seatbelts and 13 were under the in uence of alcohol. Six of the fatal accidents were single-vehicle crashes. Based on calculations from the national safety council, the total cost of accidents on the Rosebud Reservation in 2004 was nearly $42.6 million.

The number of accidents and, consequently, their cost and societal impact is likely underreported on most reservations, notes Craig Genzlinger, with the Federal Highway Administration in Montana. Genzlinger has been involved in efforts to improve crash reporting on Montana's seven Reservations for nearly 10 years. He said Federal programs directed at construction and highway improvements require data collection to document improvements in road safety. Similarly, safety management plans for the Bureau of Indian Affairs Indian Reservation Roads program also call for improved data collection.

"From 1975 to 2002 we've seen fatal crash rates on Indian reservations increase by 52 percent while the national rate has dropped by 2.2 percent," Genzlinger said. In Montana, 70 percent of fatal accidents on reservations involve alcohol while the rate is half that at the statewide level. Conversely, seatbelt use on reservations is only 6 percent while the rate is 35 percent statewide.

"But the fatalities are just the tip of the iceberg," he says. "We have huge gaps in our data collection locally. Just getting tribes to submit accident reports to the highway patrol gets us into the issue of sovereignty very quickly. The Highway Patrol would not accept them unless there was a full report. The tribes were not interested in submitting reports with personal identifiers like Social Security numbers."

That situation is improving in Montana, Genzlinger says, but many tribes need to more fully develop their own tribal crash reporting systems. “It takes data to identify locations for safety improvements.” He said tribal officials can often point out problem areas based on anecdotal information, but frequently have difficulty showing accident data to document their concerns. The kind of information now being collected in South Dakota at the Rosebud Reservation could serve as a prototype for other tribes, he predicted.

Genzlinger also noted that transportation planners need to be exible in dealing with tribes. “What works for one tribe isn’t necessarily going to work for another.”

Data collection on crashes dovetails with other efforts to collect data on reservation roads, notes Ron Hall director of the Tribal Technical Assistance Program at Colorado State University. He outlined details of the Bureau of Indian Affairs’ Road Inventory effort to document the extent and condition of roads that are on reservations or provide access to them.

He noted that there are more than 57,000 miles of roads on Indian reservations and 66 percent of those are unimproved roads. Reservations contain about 3 percent of the nation’s highways, but receive only 1 percent of highway funds.

Reservation roads fall under the ownership of tribes, the Bureau of Indian Affairs, state government, counties, townships and others. “Ownership-wise, it’s a complicated scene out there,” Hall said.

The first inventory of tribal roads was conducted in 1974 and has not been comprehensively updated since then. It has been used as a general guide for road policy within the Bureau of Indian Affairs. In 1992, the inventory began being used for highway fund distribution. The formula for distributing the funds was adjusted in 1998 under the transportation bill enacted that year. The formula was adjusted again under new rules for Indian reservation road funding established last year.

“The inventory drives funding allocations, so updates are essential to represent funding needs,” Hall noted. “There is new money dedicated to the Indian reservation roads so there is no competition between tribes and states. They have every incentive to cooperate.”

The updated inventory includes a physical description of roads and affiliated structures, their condition; costs for improvement; who owns them; and their status in the inventory. “Sometime in August, the database will be frozen for funding purposes – to give us a snapshot of the inventory,” Hall said. Information from the Bureau of Indian Affairs will be returned to the tribes for updating by March 15.

“It’s in everybody’s best interest to get these inventories as complete as possible. So that as much funding can be directed to tribal roads as possible,” Hall said.

Jim Garrigan, a Minnesota transportation consultant, noted that based on an improved road inventory, the White Earth Indian Reservation in northwestern Minnesota increased construction funding from $1 million to $5 million. “It’s very important that tribes and the states and the counties get involved with the process,” he said.

Garrigan participated in the conference with Linda Aitken, Tribal Liaison with the Minnesota Department of Transportation. She outlined efforts that her agency has taken to improve cooperation among tribal, county and state transportation planning efforts.

Each of MNDOT’s eight districts meet with tribal officials to share plans and seek input. They also participate in Area Transportation Partnerships with tribes and other agencies to allocate funds based on regional priorities.

As a result of the Area Transportation Partnership, the Red Lake Reservation developed its own transit system and the White Earth Reservation is participating in the development of a regional welcome and cultural center.

In 2002, MNDOT planned a "Tribes in Transportation" conference organized around major transportation concerns identified by the tribes. That conference and a second conference focused on transportation planning, right-of-way issues, environment impacts and employment. A third conference in 2004 focused on transportation planning and included representatives from counties and cities.

"We're laying the groundwork for future transportation planning partnerships," Aitkin explained.

Lee Burget, MNDOT District Engineer in west central Minnesota described how recent partnerships with tribal officials are generating results in his area. He also described a change in planning efforts that would integrate the now separate transportation improvement plans generated through MNDOT and through the Bureau of Indian Affairs for the Federal Highway Administration. "In this way, we can bring a coordinated document to the Federal Highway Administration," he explained.

Colleen Jollie, director of the Tribal Liaison Office in the Washington Department of Transportation, noted some similarities between the efforts in Washington and Minnesota. She said her office promotes tribal transportation planning, intergovernmental cooperation and coordination and advances the professional skills and education of tribal transportation planners.

Washington has about 29 tribes with land in the state. Most of that is clustered around the Puget Sound area. Larger reservations are present in the eastern part of the state.

The Washington DOT recently completed a statewide survey to assess tribal transportation needs linked to the state's on-going transportation plan. It worked with the County Roads Advisory Board to improve data collection and inventories of reservation roads. It is proposing a tribal transportation planning initiative that would support individual tribal planning offices.

Within the agency, administration is strengthening tribal liaisons including regional tribal coordinators and the cultural resources office. It has renewed its commitment to training on tribal relations, with 590 staff participating since 2002.

"Consult early and consult often, is our recommendation for dealing with the tribes," Jollie says. "This kind of government to government consultation is much different than gathering public input," she says.
(Contact Dr. Denver Tolliver, North Dakota State University, 701.231.7190 or denver.tolliver@ndsu.edu)

Research Program

To address the Center's theme and vision, the research program seeks to identify topics important to the region by incorporating input from clients and peer reviewers. The MPC is working toward its goal of balancing its research program in rural and intermodal transportation to re ect priorities of major client groups, U.S. DOT strategic goals and the Transportation, Science & Technology strategy. These efforts are outlined in this section of the report.

Completed Research Projects

178 Experimental Wood-Concrete Railroad Bridge – R. Gutkowski; CSU (MPC 04-165)
194 Effects of Environmental Exposure on Timber Bridge/Track Members and Connectors – R. Gutkowski; CSU (MPC 04-167)
214 Pultruded Composite Shear Spike for Repair of Large Timber Members – D. Radford, B. Hartnagel, R. Gutkowski; CSU (MPC 04-163)
216 Experimental Thick-Deck Wood-Concrete Highway Bridge Construction, Year 2 – R. Gutkowski, J. Balogh; CSU (MPC 04-165)
227 Small Urban University Transit: A Case Study – J. Hough; NDSU (MPC 05-169)
237 Affordable Trip Feasibility Scheduling for Rural Paratransit Systems – W. Grenney; U of U (MPC 05-171)
239 Investment in Rural Roads: Willingness-to-Pay for Improved Gravel Road Services in Freight Transportation – T. VanWechel; NDSU (MPC 04-168)
242 Wyoming Freight Movement and Wind Vulnerability – R. Young; U of WY (MPC 05-170)
245 Video Imaging System Evaluation – P. Martin; U of U (MPC 04-166)
246 High Occupancy Vehicle Evaluation II – P. Martin; U of U (MPC 04-164)

Ongoing Research Projects

175 An Evaluation of ITS/CVO Application Technology in Logistics and Supply Chain Management – B. Lantz; NDSU
179 Full-Scale Laboratory Testing of a Timber Railroad Bridge – R. Gutkowski; CSU
193 Rigorous Computer Modeling of Timber Trestle Railroad Bridges – R. Gutkowski; CSU
201 Updating the Uniform Rail Costing System Regressions – J. Bitzan; NDSU
207 An Evaluation of Region 8 State Departments of Transportation and Metropolitan Planning Organizations' GIS technology Application – D. Benson; NDSU
215 Structural Modeling of Substructure Resistance for Timber Trestle Railroad Bridges – R. Gutkowski; CSU
221 Trip Generation Rates for Grain Elevators: A Tool for State and Local Highway Planners – D. Tolliver, K. Vachal; NDSU
228 Trucking Industry Churn and Its Impact on Communities and ITS Adoption – J. Rodriguez; NDSU
234 Impact Performance Testing of Roadway Safety and Security Barriers, Year 2 – R. Gutkowski; CSU
238 Evaluation of Strategic Logistics of Rural Firms – M. Berwick; NDSU
240 Evaluation of Moisture Susceptibility of Asphalt Mixtures Containing Bottom Ash – K. Ksaibati; U of WY
241 Evaluation of Pavement Crack Filling Materials – K. Ksaibati; U of WY
244 Adaptive Signal Control III – P. Martin; U of U
247 Utilizing Recycled Glass in Roadway – K. Ksaibati; U of WY
248 Wyoming Freight Movement System Vulnerabilities and ITS – R. Young; U of WY
249 Pultruded Composite Shear Spike for Repair of Timber Bridge Members – R. Gutkowski; CSU
250 Interactive Effects of Traffic- and Environmental-Related Pavement Deteriorations – D. Tolliver; NDSU and K. Ksaibati; U of WY
251 Adaptive Signal Control III – P. Martin; U of U
252 High Occupancy Vehicle Lanes Evaluation III – P. Martin; U of U

253 Effectiveness of Traveler Information – P. Martin; U of U
254 Utah Intersection Safety: Issues, Contributing Factors and Mitigations – W. Cottrell; U of U
255 Network Planning Model for Local and Regional Railroad Systems – D. Tolliver; NDSU
256 Legal Establishment of County Roads in Wyoming – K. Ksaibati, U of WY

New Research Projects, 2005-06 (Year 18)

257 Legal Establishment of County Roads – K. Ksaibati; U of WY
258 Utilizing Recycled Glass in Roadways – K. Ksaibati; U of WY
259 Relating Vehicle-Wildlife Crash Rates to Roadway Improvements – R. Young; U of WY
260 Impact Performance Testing of Roadway Safety & Security Barriers, Phase 3 – R. Gutkowski; CSU
261 Time-Dependent Loading of Repaired Timber Railroad Bridge Members – R. Gutkowski; CSU
262 Cambering of Wood-Concrete Highway Bridges – R. Gutkowski; CSU
263 Traffic Operations in Small Urban and Rural Areas – A. Smadi; NDSU
264 Evaluation, Definition, and Identification of the Criteria for Establishing Freight Corridors – M. Berwick; NDSU
265 Design/Build vs. Traditional Construction User Delay Modeling – P. Martin; U of U

Human Resource Development

Colorado State University – Graduate Students

Steve Babcock is a presently a graduate research assistant in Civil Engineering. In Spring 2003, he earned a B.S. degree in Civil Engineering at CSU. During his undergraduate studies, he was lead designer for the steel bridge team that twice qualified for the National ASCE Steel Bridge Competition, after winning regional competitions. In Summers 2000 and 2001 he was an Engineering Co-op Student with Central Federal Lands Highway Division of the FHWA, and was involved in highway and bridge construction. Presently, he is active on an MPC project studying sub-structure performance of timber trestle railroad bridges.

Travis Burgers is pursuing a M.S. degree in Civil Engineering at CSU. He earned a B.S. degree in Engineering from Dordt College in Iowa. At CSU he has been a graduate teaching assistant and is presently a graduate research assistant. He has received numerous academic awards, among them the All-American Scholar Award, Dordt College Presidential Scholarship, and Pella Corporation Engineering Scholarship. He was a Co-Captain and 1st Team All Conference in Men's Soccer at Dordt College. He worked as a Test Lab Assistant at Behr Heat Transfer in Canton, South Dakota and Surveying Assistant at Wilsey & Associates in Sioux Falls. Iowa. Presently, he is working on an MPC supported research project on effects of environmental exposure on connections in timber railroad bridge systems.

Misty Butler earned a B.S. degree in Civil Engineering from New Mexico State University, in Spring 2003. She participated in the 2003 Undergraduate Summer Research Experience of the Colorado Peaks Alliance at CSU, a program fostering women and minority students to enter graduate studies and pursue careers as a professor in higher education. She chose to continue graduate studies at CSU. She has summer internship experience in housing and land development with Conklin Associates Engineering in New Jersey. Misty is completing thesis studies on wood-concrete bridge deck systems and is supervising construction of a ramp facility for testing roadway safety and security barriers.

John Kienholz is presently a graduate student at CSU in the department of Civil Engineer-ing. He has worked as a teaching assistant facilitating the laboratory sections of the introductory course for Civil, Agricultural and Bio-resource Engineering students. His research is modeling the frequencies and acoustic modes of layered pyramids as applied to quantum dots. In the summer of 2003 he conducted research on modeling long, slender wooden members for use in destructible crash barriers. He received his B.S. degree in Civil Engineering from CSU in Spring 2002. He was a recipient of the Robert D. Wilson Memorial Scholarship as an undergraduate and is a member of the Chi Epsilon Honor Society. He has held internships with Sear Brown (recently purchased by Stantec) and Shear Engineering, both of Fort Collins. He also has experience in construction of residential homes steel buildings. He is looking to begin his career in Structural Engineering.

Mark Miller is a registered professional engineer in the states of Wyoming and Nebraska, and has more than 13 years of experience in the structural design of government administrative, production, aircraft repair and maintenance, space craft launch and assembly, and military housing facilities.

Miller currently is the director of Operations, 302D Civil Engineer Squadron, Peterson AFB and has held positions as the Regional Officer in Charge of Construction, U.S. Forces Korea; Lead Structural Engineer, Dept. of Civil Engineer, U.S. Air Force Academy, Colo.; and the Structural Engineer in Charge of Launch Facilities, Cape Canaveral AFS, Fla., where he was responsible for the structural renovation and upgrade of launch complex's 17 and 41 in support of the Delta GPS and Titan IV launch programs.

Miller is a 1986 graduate of the University of Wyoming, 1999 graduate of Squadron Officer's School, Maxwell AFB, Ala.; and is a graduate student in structural engineering at Colorado State University. He is conducting master of science thesis work on the three dimensional, space frame modeling of open deck, timber trestle railroad bridges. This work is in conjunction with an MPC-sponsored project to examine load paths in such bridges via laboratory and field testing.

Cole Rogers is presently a graduate research assistant at CSU in the department of civil engineering. His research is on theoretical modeling of partially composite wood-concrete structural systems, including bridges. He received his BS degree in civil engineering at CSU in Spring 2001.

As an undergraduate student he worked as a research aide in the Structural Engineering Laboratory for two years. He is a member of the Tau Beta Pi and Chi Epsilon national honor societies.

He has work experience in construction of reinforced concrete foundations and residential home construction.

He was the recipient of the 2001 AISC/Rocky Mountain Steel Construction Association Fellowship, given to the top student in the Rocky Mountain region.

Fernando Ramirez is a Ph.D. student and graduate research assistant at CSU. He earned a bachelor degree in Civil Engineering from the School of Engineering of Antioquia (Colombia), and has a master of science in Civil Engineering from Colorado State University. After receiving his bachelor's degree, Ramirez worked as a structural design engineer for almost ten years. His research interests are focused on the area of computational structural mechanics. Some of his current projects include low-density fibrous composites, smart materials and adaptive structures, and the mechanics of inorganic nanotubes. He was the recipient of the 2004 Chi Epsilon Gold Key Award for Excellence in Teaching.

North Dakota State University – Ph.D. Students

Junwook Chi is currently conducting and supporting a project on the North Dakota Strategic Freight Analysis. The project will provide information and analysis necessary for decision makers to evaluate the viability of an intermodal facility. Future research will include intermodal transportation, Shippers' Association, and transportation economics.

Junwook received his M.Sc in Agricultural Economics and Business at the University of Guelph (Canada) in 2001. He received his B.Sc in Forestry Resource in 1998 at Konkuk University, South Korea. He received the 2002 Outstanding Masters Thesis Award (honorable mention) by the Canadian Agricultural Economics Society (CAES) Committee. He also received the Toronto Milk Producer's Scholarship and a graduate scholarship for excellent grades in 2001.

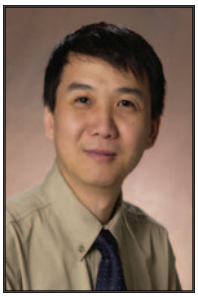
Xianzhe Chen earned two bachelors degrees from the Wuhan University of Technology in China in 2003. The degrees are in automation and management. He is conducting supply chain operations research related to inventory management and routing.

Diomo Motuba earned his B.S. degree in botany from the University of Buea in Camaroon and his M.S. in agricultural economics from NDSU. He is interested in studying travel demand models and intermodal freight transportation. He plans to develop a career in travel demand modeling.

Alan Dybing is studying Transportation and Logistics with an emphasis in Transportation Economics and Regulation. His research includes issues dealing with transportation economics and regulation specifically in the railroad industry.

Alan received his M.S. in Agribusiness and Applied Economics in December 2002, his B.S. in Ag Education in December 1999.

Alan received an honorable mention in the CTRF paper contest at the annual convention in Ottawa, Canada. His paper was titled "Estimation of the Demand for Grain Transportation in North Dakota."



Weijun Huang is working toward a Ph.D. degree in transportation & logistics. Weijun received his B.E in grain machinery at Zhengzhou Grain University, China, and his M.S. in agricultural economics at NDSU. His research focuses on optimizing supply chain management and logistics systems. Weijun would like to get a job in the agriculture or transportation field in the U.S. or Canada.

Subhro Mitra is conducting network capacity analysis and studying pavement deterioriation. He earned his B.S. in civil engineering in 1993 from North Bengal University in India. He received his MBA in 1997 from Calcutta University in India. Subhro has experience working for Trafalgar House Construction and for the Department of Transportation in India. He was involved in highway design and pavement calculation and construction.

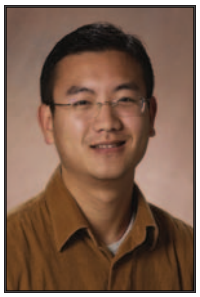
Sang Young Moon earned his M.S. in agribusiness and applied economics from NDSU in 2002. He received his B.S. in agriculture economics from Korea University. The focus of his research is in international transportation and global supply chain management. Sang published a study on the "Effects of Panama Canal on U.S. Grains and Oilseeds Exports."

Khaled Shouman a graduate research assistant at NDSU with the Upper Great Plains Transportation Institute, Advanced Traffic Analysis Center (ATAC). His research focuses on a case study of optimum detectors layout for intersections with high to moderate turning movements.

Khaled received his BS degree in civil engineering from the University of Jordan in 1999. Upon completion of his Masters degree, he plans to pursue a Ph.D. degree in transportation safety issues.

Meera Singh is working toward her Ph.D. degree in transportation and logistics. Singh received her masters degree in statistics from NDSU in 2003 with a 4.0 grade point average and was invited to join the Phi Kappa Phi Honor Society. She also holds a bachelor's degree in English and economics from CCS University in Ghaziabad, India, and a master's in economics from CCS University in Meerut India. She also earned a bachelor's degree in economics from Banaras Hindu University in Varanasi, India.

Napoleon Tiapo is pursuing a degree in transportation and logistics, concentrating on transportation economics with emphasis on transportation and the environment. He received his MS degree in agribusiness and applied economics from NDSU in 2002, graduating Phi Kappa Phi. He earned the degree "Ingénieur Agronome" from the University of Dschang, Cameroon. Napoleon worked with the Ministry of Agriculture in Cameroon. He also served as a regional supervisor in a World Bank-sponsored extension program in Cameroon. He plans to pursue a career in research at a university, research institute or international organization.



Hai Zeng received his B.E. from Guilin University of Electronic Technology in China in 2003. He is studying supply chain management related to electronic manufacturing automation.

Thomas Flanagan

NDSU – MS Students

Nicholas Osowski is from Grafton, North Dakota, where he grew up working on the family farm. He completed his undergraduate degree at the University of Minnesota-Crookston, Crookston, Minn., majoring in Ag Industries, Sales and Management. As an undergraduate, he achieved the Dean's List all four years.

In the summer of 2001, Nicholas worked for ConAgra Flour Milling to complete his internship. He used his extensive computer knowledge and organizational skills to redesign the our mill's warehouse inventory management program, which resulted in significant cost savings for the company. Nicholas is currently a graduate student in the M.S. program in Agribusiness and Applied Economics at North Dakota State University. He is working with Dr. William Wilson on research for his thesis.

Sarah Pianka is working on her masters in agricultural economics with an emphasis in transportation. She is analyzing North Dakota deer-vehicle crashes and preferred prevention measures. Sarah earned her B.A. in mathematics with a minor in computer science from Minnesota State University-Moorhead in 2003. She also completed chef training at

the Minnesota State Community and Technical College in Moorhead. She expects to complete her M.S. studies in December.

Scott Schram

Ensu Lee

University of Utah

Gayathri Dharmavaram earned a bachelor's of engineering in 2003 from Osmania University in India. As part of her master's program she is evaluating various video detection technology systems to determine how they perform under various test conditions. She is a member of the Institute of Traffic Engineers.

Dhruvajyoti Lahon earned her bachelor's of engineering degree from the Regional Engineering College in Trichy, India. She is studying the use of high-occupancy vehicle lanes, using video detection to evaluate traffic volume and speed. She also conducted a public opinion survey on HOV lanes. She earned first prize in the Utah Institute of Traffic Engineers student paper competition.

Aleksandar Stevanovich 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 Spring 2003. He is enrolled in the Ph.D. program for civil engineering. Aleksandar is a Traffic Lab research assistant studying the deterioration of adaptive traffic control systems.

Lisa VanOrman attended Brigham Young University in Hawaii and earned her B.A. in English from the University of Utah. She is working toward her master of fine arts degree in creative writing. She is an editor for the Traffic Lab.

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 a 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 performance 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.

Vinod Kumar Sunchu Keshava received his B.E. degree in chemistry from the Regional Engineering College in Tiruchirappalli, India. He ranked first in his class in the chemistry curriculum. He worked as a research student at the University of North Carolina in Charlotte on the Duke Power Project studying the leachability of y ash. He came to the University of Wyoming in January where he is working as a graduate researcher studying Wyoming freight movement and wind vulnerability. Vinod plans to pursue a career that will use his knowledge and skills in the fields of design, planning and transportation.

Joel S. Liesman is investigating freight movement and commodity ows in Wyoming while pursuing his M.S. degree in civil engineering. He will also analyze accidents involving trucks and will identify infrastructure critical to freight movement. He earned his B.S. in civil engineering from Colorado State University in 2003, graduating cum laude. He is a member of the Tau Beta Pi and Chi Epsilon Honor Societies. He received the CSU Civil Engineering Achievement Award in 2003. He is planning a career in design and planning improvements to the transportation infrastructure.

Shiva Rama Krishna Sayiri is studying moisture susceptibility of bottom ash asphalt mixes using bottom ash from power plants. He earned his B.E degree from Muffakham Jah College of Engineering and Technology near Hyderabad, India, in 2002.

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.

Student Program Activities

Awards • Honors • Scholarships

Region 8 Student of the Year

Steven D. Carter was born and raised in Merritt Island, Fla. As a young adult he left for a new beginning with the United States Air Force. Soon after he met his wife, Tamra and started a family.

He served 11 years in the Air Force before making a career change. He moved his family to Laramie, Wyo., where he entered the University of Wyoming in 2000. Carter received a Bachelor of Science degree in civil engineering in 2003, and a Masters of Science in civil engineering in 2004. As a graduate research assistant, he conducted research on asphalt pavement preservation, specifically the sealing of asphaltic cracks with specially formulated materials. In agreement with his advisor, Professor Khaled Ksaibati, they submitted a research-based article to the Transportation Research Board (TRB), and were selected to present the article at the TRB 84th Annual Meeting.

These accomplishments prompted his selection as the 2004 Mountain-Plains Consortium "Outstanding Student of the Year." His submittal and selection of the research paper; a graduate grade point average of 3.889; professionalism in the presentation of the research findings to federal and state officials; and leadership in the direction of activities and accomplishment of objectives led to this achievement. In addition, Carter was an active member of the American Society of Civil Engineers and Institute of Transportation Engineers.

With these achievements, Carter brings to the transportation engineering profession enthusiasm and dedication. His knowledge and experience will significantly contribute to the many aspects of transportation engineering.

Steven Carter (front row, second from left)

North Dakota State University Awards

Transportation Engineering Scholarship

• Leo Schaefers, Civil Engineering - $1,500
• Dustin Kinnischtzke, Civil Engineering - $1,500

Funding for the scholarships is provided by the Mountain-Plains Consortium through a grant from the United States Department of Transportation University Transportation Centers Program. The scholarships were presented at the UGPTI Annual Awards Banquet.

Presentations • Workshops • Conferences

CSU Student Attends International Bridge Workshop

Colorado State University M.S. student Misty Butler attended the ATHENS program, a bridge workshop for international students held at Budapest University of Technology and Economics in Budapest, Hungary, under an agreement with CSU. Butler was the only U.S. student enrolled in the program which included 41 other students from European Union countries. The program was March 10-19.

CSU graduate student Misty Butler (front row, second from right) is pictured with other students in front of the Parliament Building in Budapest, Hungary, during an international student bridge workshop.

Faculty Activities

Journal Articles • Conference Presentations

Richard Gutkowski

- "Preliminary Impact Testing of Portable Safety/Security Barriers," First International Conference on Safety and Security Engineering, Rome, Italy, June 13-15, 2005.

Khaled Ksaibati

- "Field and Laboratory Evaluations of Hot-Poured Thermoelastic Bituminous Crack Sealing of Asphalt Pavements," Transportation Research Board, Washington, D.C., Jan. 9-13, 2005.
- "Wyoming Coal Bottom Ash in Hot-Mix Asphalt," Transportation Research Board, Washington, D.C., Jan. 9-13, 2005.

Brenda Lantz

- Presentation on Driver Safety History Indicator and the Roadside Inspection Selection System project at the Traffic Records Forum, Nashville, TN, July 25-28, 2004.
- Presentation on Driver Safety History Indicator and the Roadside Inspection Selection System project at FMCSA headquarters in Washington, D.C., August 17-19, 2004.
- Presentation on Driver Safety History Indicator and the Roadside Inspection Selection System project at the Commercial Vehicle Safety Alliance meeting in Sparks, NV, Oct. 24-28, 2004.
- Presentation on Driver Safety History Indicator and the Roadside Inspection Selection System project at the Transportation Engineering & Safety Conference, Penn State University, State College, PA, Dec. 7-9, 2004.
- Presentation regarding Driver Safety History Indicator and the Roadside Inspection Selection System project at the TRB meeting, Washington, D.C., Jan. 9-13, 2005.
- Presentation on Analysis and Use of Commercial Vehicle Driver Data at the TRB Conference on Future Truck and Bus Safety Research Opportunities, Washington, D.C., March 22-24, 2005.
- Presentation on Driver Safety History Indicator and the Roadside Inspection Selection System project at the Commercial Vehicle Safety Alliance meeting, Albuquerque, NM., April 17-20, 2005.
- Presentation on Commercial Vehicle Inspection Safety Enforcement Systems and the Development of the Inspection Selection System, Lakewood, CO, Transportation Learning Network National Transportation Week Teleconference and for Colorado state and federal offices, May 20, 2005.

Del Peterson

- "ITS Applications to Enhance Rural Passenger Mobility," National Rural ITS Conference, Duluth, MN, August 22-25, 2004.
- "Meeting Small Urban Transit Needs in North Dakota," TRF Annual Forum, Washington, D.C., March 6-8, 2005.

David Ripplinger

- "ITS Architecture in Rural Transit Systems," National Rural ITS Conference, Duluth, MN, August 22-25, 2004.
- "The Rural School Vehicle Routing Problem," Transportation Research Board, Washington, D.C., Jan. 9-13, 2005.
- "The Stochastic School Transportation Problem," TRF Annual Forum, Washington, D.C., March 6-8, 2005.

Denver Tolliver

- "Using HERS-ST to Analyze the Benefits of Investments in Low-Volume Roads" HERS-ST National Conference, Chicago, Ill. August 19-20, 2004.\
- "Modeling Cross-Modal Benefits from Local Rail Service: State of the Art and Future Needs," Transportation Research Board, Washington, D.C., Jan. 9-13, 2005.
- Presentation at Tribal Transportation Planning conference.
- "Highway Planning with HERS-ST" and "Cross-Modal Impact Assessment," TLN National Transportation Week videoconference, May 16-20, 2005.

Kim Vachal

- Developed/organized sessions at the annual meeting at Transportation Research Board in January, 2005, as chair of the Agricultural Transportation Committee:
    - "Impact of China on U.S. Grain Industry" including presentations by Grain Elevator and Processing Society (National Grain And Feed Association), BNSF Railway, University of Texas and the U.S. Department of Transportation).
    - "Agricultural Truck Transportation Security Practices" including presentations by the American Trucking Association, USDA, and University of Texas.
    - "Transportation Quality Indices for Economic Analysis of Non-Metropolitan Cities," Network on European Communication and Transportation Research (NECTAR) conference, June 2005.

Tamara VanWechel

- "Developing an Estimate for Total Number of Commercial Motor Vehicle Drivers," TLN National Transportation Week videoconference, May 16-20, 2005.

Workshops • Short Courses

Khaled Ksaibati

- "Aggregate Training Workshop," presented three times to transportation professionals as part of the Wyoming Certification Program.
- "Asphalt Training Workshop," presented three times to transportation professionals as part of the Wyoming Certification Program.

Kim Vachal

- U.S. and North Dakota Grain Transportation presentation to:
    - Japan Trade Team, August 2004.
    - America Soybean Association, Sept. 2004.
    - ND Association of Cooperative Managers, Sept. 2004 (Fertilizer, Grain Industry Trends)
    - China Trade Team, June 2005.

Tamara VanWechel

- "Trends: U.S. and North Dakota Feed Grain Transportation and Logistics," Northern Crops Institute Chinese Grain Marketing Course, Fargo, N.D., June 17.

Achievements

Ray Chamberlain, Emeritus faculty member of the Department of Civil Engineering at Colorado State University was awarded the Transportation Research Board's W.N. Carey, Jr., Distinguished Service Award for 2004. The award recognizes Chamberlain's outstanding leadership and service to transportation research. It is the highest award the TRB can bestow.

Neil Grigg, CSU civil engineering professor, was selected to be on the Public Works magazine's 2004 Trendsetters list. The list recognizes leaders in the public works community, and includes those who have defined policy, brought their community or issue into the spotlight or set standards for industry.

Marvin Criswell, CSU civil engineer and associate department head was elected a Fellow of the American Society for Engineering Education. The honor is conferred in recognition of outstanding contributions to engineering or engineering technology education.

Chih Ted Yang of CSU was awarded the Meritorious Service Award from the Department of the Interior for his outstanding contributions to the field of hydraulics and sedimentation for reclamation.

Pierre Julien, CSU civil engineering professor, received the Hans Albert Einstein Award from the American Society of Civil Engineers. This annual national award recognizes individuals who have made significant contributions to engineering in the areas of erosion control, sedimentation and waterway development in teaching, research, planning, design and management.

Dr. Paul Heyliger, at CSU, who conducted past pilot MPC research on highly exible safety barriers, is pursuing innovative research in creating smart structures with nanotubes. Collaborating with chemistry professor Tony Rappe, nanotubes are being examined as alternatives to carbon fibers now commonly used in composite structures. NSF is funding further work on application to turbine blades, where nanotubes help sense the electrical fields and move accordingly, resulting in improved engine efficiency. Through a Research Experience for Undergraduates program (funded by the NSF and the Army Research Office), students are examining application in controlling sound and vibration.

Other Faculty Activities

Johnson participates in tribal roadside safety audit

Kurt Johnson, director of the Upper Great Plains Transportation Institute's Department of Transportation Support Center, participated in a roadside safety audit in May on the Standing Rock Indian Reservation which straddles the North Dakota-South Dakota border near the Missouri River.

Johnson notes that many Indian reservations, particularly those in the Upper Great Plains region are sparsely populated, have many miles of roads with low traffic levels. Those reservations have high rates of traffic accidents and fatalities. With four reservations in North Dakota and a number of others in the Upper Great Plains states, traffic safety is a key issue for tribes, state DOTs and the Federal Highway Adminstration.

"It was an opportunity for me to view first-hand some of the issues and challenges facing tribal authorities related to road safety planning and improvement," Johnson said. He noted that the Standing Rock Reservation covers 2.5 million acres and roads ranging from paved state and federal roads to unimproved dirt county and tribal roads. Routine matters such as accident investigation and reporting are made complex by a web of overlapping agencies including tribal, county and state agencies as well as the Bureau of Indian Affairs and the Federal Bureau of Investigation.

The Upper Great Plains Transportation Institute was selected to participate in the project because of its work with Upper Great Plains region tribes on traffic and safety issues. Johnson, in particular, was selected to participate because of his expertise in pavement and pavement engineering. The Mountain-Plains Consortium provided financial support for Johnson to participate.

He was part of a team that included tribal authorities and representatives from the Federal Highway Administration, the North Dakota and South Dakota departments of transportation, the Federal Highway Administration's Tribal Technical Assistance Program and the Bureau of Indian Affairs. The team also included representatives from Hamilton Associates, a British Columbia-based transportation consulting firm contracted by the Federal Highway Administration to oversee an audit of roadside safety on reservations in several states.

The team visited more than a dozen locations, observing traffic and inventorying safety-related equipment and road features. The locations ranged from busy intersections to remote locations.

"I was able to offer my expertise, but I was also able to observe where we might be able to work more closely with the tribes," Johnson said. "There are training opportunities as well as some opportunities to implement some pavement preservation programs. The remoteness of the reservations and the distances involved make this an opportunity to employ the Transportation Learning Network to bring the parties together electronically."

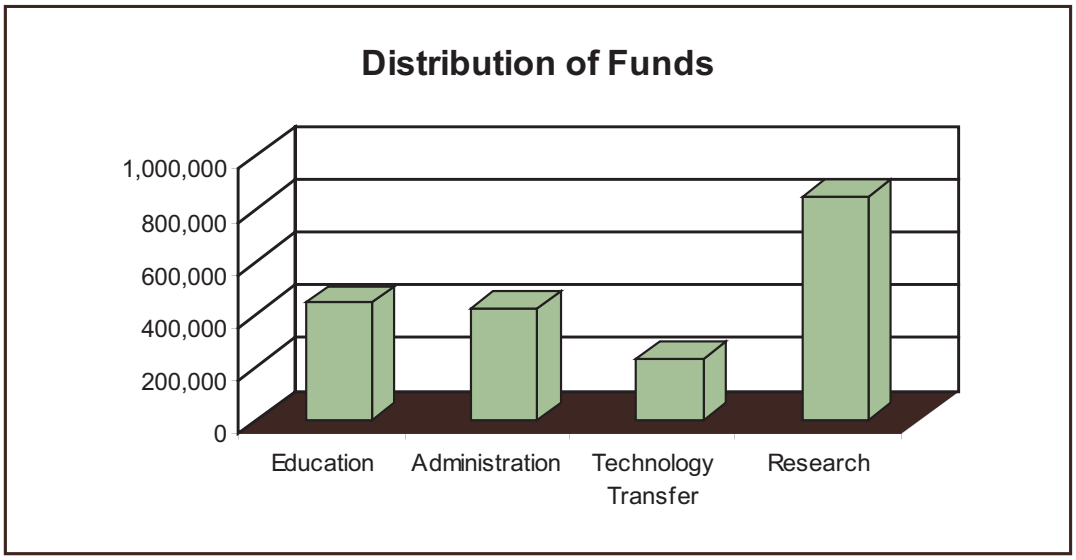
"The tribes are genuinely interested in improving safety," Johnson said. "They recognize they have a problem."

CSU Faculty Organize International Colloquium

CSU faculty members **Richard Gutkowski**, **Wade Troxell** and visiting research associate **Jeno Balogh** organized the "Colloquium on Advancing the Colorado-Hungary Investment and Trade Development" at CSU in March 2005. The Hungarian Consul Generals for Denver and Los Angeles and the Economic Affairs Trade Commissioner discussed ways to facilitate cooperation between Colorado and Hungarian engineering businesses.

Resources and Funding

July 1, 2004 – June 30, 2005



Funding Sources

North Dakota Department of Transportation
Utah Department of Transportation
Wyoming Department of Transportation
Colorado State University
North Dakota State University
University of Utah
University of Wyoming
TLN Telecommunications Network (includes the NDDOT, SDDOT, MTDOT)