2004 Annual Report

Mountain - Plains Consortium Region 8

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

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The Mountain-Plains Consortium – The 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. Current 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 Business offers an MBA degree and houses the Institute of Transportation Management, which serves public and private sector organizations. A $12 million expansion of 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 11,600 students and more than 600 faculty at the central campus in Fargo. The university offers 35 doctorate and professional degree programs, 50 master's degree programs, and 100 baccalaureate degree programs. Currently, 14 graduate faculty with doctorate degrees are associated with the graduate transportation options. 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 2003, MPC produced a library of 151 research reports and 40 student theses or dissertations while attracting new faculty to the field of transportation. During 1988-2003, 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 preexisting 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.

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 Planavailable at our Web site.

Four key words help to define MPC's strategies and programs – multi-university, multi-disciplinary, multi-modal, and multinational. 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 multinational 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 flow 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 flows 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

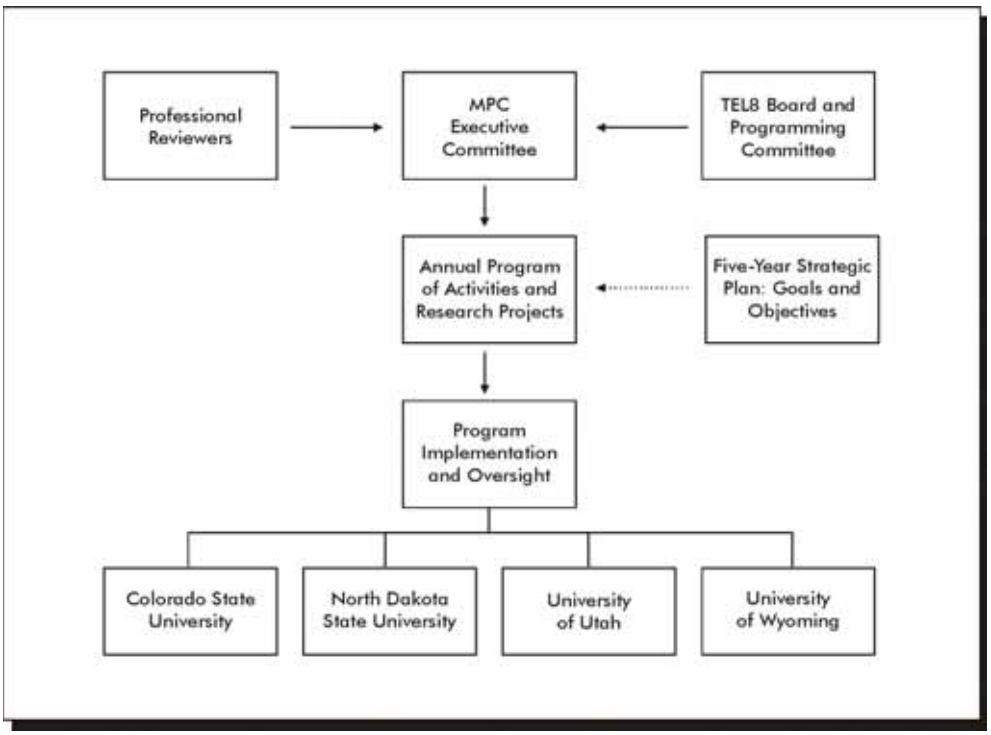
Most of the prospective research projects in this focus area fall into one of the following categories: cross-border variations in truck configurations, lengths, weights, and operational practices; cross-border variations in pavement design and management practices; application of advanced technologies 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 flowchart 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.



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 four MPC universities are members of a regional telecommunication network known as TEL8. The TEL8 network also includes five state transportation departments in Region 8: North Dakota, South Dakota, Montana, Wyoming, and Utah. The system carries interactive audio and video signal to conference and class rooms at the respective sites. TEL8 enhances and improves the cost-effectiveness of the MPC by reducing travel costs and maximizing use of scarce faculty and administrative time.

TEL8 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 TEL8 board of directors. The four university program directors are members of the TEL8 board. The MPC executive committee and TEL8 board hold an overlapping meeting each year. The TEL8 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 five state transportation departments and the MPC universities to plan a regional education and training program.

Professional Input and Review

Although TEL8 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 2002-03, 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 flow 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 teleconferences 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. At least one meeting per year is scheduled with the Intermodal Transportation Institute of the University of Denver.

Executive Committee

DR. DENVER TOLLIVER is director of the Mountain-Plains Consortium, associate director of UGPTI, and adjunct professor of agribusiness and applied economics and civil engineering 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 development of TEL8, a multi-site regional transportation telecommunications 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 and Wroclaw Technical University in Poland. 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 was an invited expert at a 1986 UNIDO workshop on timber bridge awareness in Latin American countries. He presently is cooperating with the National Institute for Amazonian Research in Manaus, Brazil, in composite wood-concrete bridge research.

He has on-going cooperation in research related to design code development with the faculty of civil engineering at the Budapest University of Technology and Economics.

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. 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.

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-TimeTransportation 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.

Key Faculty

Colorado State University

Dr. Bryan Hartnagel joined the Department of Civil Engineering at Colorado State University in 1998. He has a B.S., M.S. and Ph.D. in civil engineering from the University of Missouri-Columbia. Hartnagel's research interests are related to the design, analysis and rating of steel and concrete bridges. He is testing high performance steel bridge girders for strength and ductility characteristics.

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 flexible structural elements for energy absorption with application to transportation structures and crash barriers. He has more than 60 refereed journal articles and has been presented with several teaching awards. His research sponsors include the USDOT, National Science Foundation, NASA, USDA, the Army Research Office, AFOSR, and NIST.

Dr. Jeffrey D. Niemann joined the Department of Civil Engineering as assistant professor with a primary interest in hydrology and geomorphology. His position is made possible by gifts from the Faoro Fund. He earned his M.S. and Ph.D. from Massachusetts Institute of Technology in civil and environmental engineering and earned a B.S. in civil engineering from the University of Colorado at Boulder. He was a member of the faculty at Pennsylvania State University prior to joining Colorado State. His professional career includes serving as a consultant for the U.S. Environmental Protection Agency in Kathmandu, Nepal, and Dhaka, Bangladesh, and as a research assistant for the International Institute for Applied Systems Analysis in Austria.

He has received the Presidential Early Career Award for Scientists and Engineers, the Martin Fellowship for Sustainability and the Chancellor's Recognition Award. He is a member of the American Geophysical Union, the American Society of Civil Engineers and the American Society of Engineering Education.

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. 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.

Dr. Chih Ted Yang joined the Department of Civil Engineering as the Borland Professor of Water Resources and director of the newly formed Hydroscience and Training Center. Yang brings knowledge in the areas of sedimentation and river hydraulics to the department. He retired after 30 years of government service at the Bureau of Reclamation. He has served as an affiliate professor of Colorado State University's Department of Civil Engineering since 1993 and an adjunct professor of the civil engineering department at the University of Colorado at Denver since 1982. He received his B.S. in hydraulic engineering from National Cheng Kung University in Taiwan and his M.S. and Ph.D. in hydraulic engineering from Colorado State University. Yang has published more than 100 professional publications. His research focuses on the areas of watershed erosion and stream restoration.

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.

Since 1997, Benson has served as executive director for TEL8, a six-state videoconference network incorporating state departments of transportation and universities dedicated to transportation research.

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 is currently working on a doctorate degree in Public Policy from George Mason University.

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
Rob Arthur, Geosciences
Canan Bilen-Green, Industrial & Manufacturing Engineering
John Bitzan, College of Business Administration
Dinesh Katti, Civil Engineering
Dave Lambert, Agribusiness & Applied Economics
Jay Leitch, College of Business Administration
William Nganje, Agribusiness & Applied Economics
G. Padmanabhan, Civil Engineering
Darsono Tjokroamidjojo, Industrial & Manufacturing Engineering
Rodney Traub, Business Administration
Amiy Varma, Civil Engineering
Bill Wilson, Agribusiness & Applied Economics
Frank Yazdani, Civil Engineering

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 is building the "Utah Traffic Laboratory," which will allow 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 flow, deformation and pollutant migration in saturated and unsaturated porous media, slope stability and expansive soils. An associate professor in the College of Engineering, Edgar recently worked with soil additives for unpaved road stability and long term maintenance, investigated effects of freeze and thaw on highway soils, studied protection of wellhead areas for public water supplies and conducted research on consolidation of partially saturated soils due to applied stress, moisture and thermal gradients.

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 2003-2004 was MPC's fifth year of the TEA-21 grant. Throughout the year, we maintained the high levels of productivity established in previous years. During 2003-2004, MPC published 13 new peer-reviewed reports and offered 50 graduate-level transportation courses at the four universities. Many additional courses in civil engineering, economics, and business were offered by the participating academic departments. In addition to continuing this strong baseline effort, several new initiatives were launched during FY 2003-2004, including:

- A new diversity initiative aimed at increasing the availability of highway planning and road safety analysis tools for tribal transportation planners.
- A series of research projects in adaptive signal control which led to the procurement of a new advanced system in Salt Lake City.
- A pioneering distance learning course in Intelligent Transportation Systems that included 21 students from Wyoming, North Dakota, and Colorado, in addition to students from the University of Utah in Salt Lake City.
- A new senior and graduate elective course in "Transportation: Its Organization and Future," taught by Ray Chamberlain, former president of Colorado State University and former executive director of the Colorado Department of Transportation.
- A cooperative bridge research program involving Colorado State University and the National Institute for Amazonian Research in Manaus, Brazil.

In July of 2003, U.S. DOT made its first site visit to NDSU of the TEA-21 period. The visit provided a great opportunity for us to showcase our students, faculty, and facilities (especially our telecommunications network), and to illustrate the strong linkages that we have with state transportation departments. In May, we hosted our second annual National Transportation Week luncheon. These, and other 2003-2004 activities, are highlighted in the following pages of the report.

FY 2004 Program Highlights

Traffic Adaptive Signal Control

Three MPC-funded research projects have addressed traffic adaptive signal control. Each was matched dollar for dollar by the Utah State Department of Transportation. The earlier projects served to prove the concept. Detailed modeling showed how traffic adaptive signal systems reduce delay, travel time, and congestion. Subsequent studies showed how these advanced systems cope with unexpected traffic incidents such as accidents and blockages. Transit was shown to be favored by these systems with little impact on other road traffic.

These studies led to the procurement of an actual system. A new advanced traffic adaptive system will control about a dozen traffic intersections on Foothill Boulevard in Salt Lake City. MPC and UDOT will continue to partner in a joint-funded evaluation.

The evaluation will be one of the most rigorous of its kind. It will enlighten Utah's traffic engineers and serve to guide other agencies nationwide that are contemplating the implementation of one of these complex systems.
(Contact: Dr. Peter Martin, University of Utah,
801.581.7144; martin@eng.utah.edu)

MPC Launches It's First "Blended Course"

The MPC has been pioneering distance learning since 1995 with graduate courses and short courses. In the fall of 2003, the MPC scored two "firsts." Some 21 students enrolled in the course "Intelligent Transportation Systems."

There were two features that were new. First, the course was populated by all four MPC universities. Previous graduate courses included a host site and one or two other schools. In August 2003, graduate students from Wyoming, North Dakota and Colorado joined host students from the University of Utah in Salt Lake City. Second, the course was the first truly "blended" distance course; a blend of specially prepared Web based instructional materials and a "real live" talking instructor.

The course materials were developed by 12 specialists in Intelligent Transportation Systems from across the nation. The courseware was provided by the consortium for ITS Training and Education (CITE), an organization dedicated to providing ITS training and education in a manner that is convenient for both existing practitioners and college students through Web-based distance learning. CITE, which is based at the University of Maryland, provided extensive course material complete with interactive exercises and on-line exams. The course was taught by Peter T. Martin, PhD, University of Utah.

Formal student evaluations have yet to be collected. Martin's students told him that the course was demanding and comprehensive. He plans to extend the idea with a new course offering in the fall of 2004.
(Contact Dr. Peter Martin, University of Utah,
801.581.7144; martin@eng.utah.edu)

Undergraduate Students Complete PEAKS Summer 2003 Program

Undergraduate students Charles Manu and Misty Butler participated in the 9-week PEAKS Summer Research Internship Program at Colorado State University. PEAKS is a mentoring residency for women and minority students who aspire to graduate studies. Mr. Manu conducted research on effects of time on the resistance of wood-concrete connection systems for bridges. Ms. Butler developed a test concept and physical model for the conduct of dynamic impact studies of roadway safety barriers. CSU researchers are cooperating with Safety Barriers Corporation of Colorado in an MPC project to develop an affordable, preliminary performance test for portable roadway safety and security barriers. Ms. Butler is currently a graduate student at CSU working on that project. She is supported on a Colorado PEAKS Alliance Diversity Fellowship, the Fast Track to Work Program and MPC funds.
(Contact Dr. Richard Gutkowski, CSU, 970.491.8291;
gutkowsk@engr.colostate.edu)

Researchers Cooperate with Brazilian Team in Bridge Research

Researchers Jeno Balogh and Dr. Richard Gutkowski of Colorado State University are cooperating with Dr. Ruy SaRibeiro of INPA-National Institute for Amazonian Research in Manaus, Brazil in the construction of an experimental wood-concrete bridge. This activity occurred as a result of Dr. SaRibeiro's involvement in past MPC project work on that topic during his 2-year visiting scientist stay at CSU.

INPA is planning to construct a bridge in the Bosque da Ciencia ecological park in Manaus and monitor its performance under extreme climate and extraneous environmental conditions. Laboratory load tests are also to be conducted on preliminary beam specimens. CSU researchers are advising on the laboratory work and planning of the field construction. CSU is loaning the instrumentation needed for the data collection and will independently review and assess the results. Dr. SaRibeiro will present the results in a future workshop for local and

county transportation engineers responsible for rural road bridge construction.
(Contact Dr. Richard Gutkowski, CSU, 970.491.8291; gutkowsk@engr.colostate.edu)

Colorado State University Hosts International Code Commission

Professors Richard Gutkowski of Colorado State University and Hans Blass of the Technical University of Karlsruhe-Germany co-organized the annual workshop of Working Commission W18 - Timber Structures, International Council for Research and Innovation in Building and Construction. The Council is based in Europe. CSU hosted the event in Estes Park, Colorado. Forty-two international experts in timber construction in bridges, buildings and general structures, across a range of academic institutions, public and private laboratories, government agencies, industry, and code development bodies participated. The commission exchanged recent developments in the state-of-the-art and on-going leading edge research to develop and foster changes in codes and standards worldwide. Much of the content was derived from activities and needs in North America in particular, within the overall context of worldwide advancements. Professor Gutkowski was selected as the local organizer due to his recent innovative research on wood-concrete bridges, sponsored via the MPC.
(Contact Dr. Richard Gutkowski, CSU, 970.491.8291; gutkowski@engr.colostate.edu)

International Software Firm Supports Bridge Researchers

Inter-CAD, Ltd., a software development firm based in Budapest, Hungary, with a subsidiary in Golden, Colorado is providing support to researchers at Colorado State University. Through an academic institution grant agreement, researchers have been provided the comprehensive software program Axis-VM and technical support in its use and application. Axis-VM provides leading edge structural analysis and design capability based on object-oriented programming. Mr. Jeno Balogh, a primary developer of the software, is in residence at Colorado State University for a period of three years to advise in its use and add capabilities specific to CSU research projects. Mr. Balogh has provided analytical support for many complex mechanics problems in MPC supported highway and railroad bridge projects. The software has been incorporated into several graduate courses for use by students in design projects, and a 1 credit special studies course in its use has been offered to graduate students. Upgrades and new modules are provided in advance of releases.
(Contact Dr. Richard Gutkowski, CSU, 970.491.8291; gutkowski@engr.colostate.edu)

MPC Scholarships Awarded to Undergraduate Students in Transportation

Attracting undergraduate students to the field of transportation and logistics is an important goal of the MPC program. In conjunction with the Upper Great Plains Transportation Institute and the Departments of Agribusiness and Applied Economics and Civil Engineering, MPC has initiated an undergraduate scholarship program at North Dakota State University. Each year, four outstanding undergraduate students will be awarded scholarships: two in Civil Engineering and two in Agribusiness & Applied Economics. Students in their junior and senior years are encouraged to apply. The students are selected by committees, based on their academic backgrounds and demonstrated interests in transportation. Demonstrated interests may include transportation courses completed, transportation courses planned, career goals, or other activities. Each applicant is required to author a brief essay describing his or her interests in transportation. The students are awarded the scholarships at an annual awards banquet sponsored by the Upper Great Plains Transportation Institute.

Recipients of the Paul E. R. Abrahamson Transportation Scholarship for 2003 are Justin Sorby and Justin Goettle. Recipients of the Transportation Engineering Scholarship are Nathan Pederson and Robert Klein.

Each scholarship recipient receives $1,500 for the academic year, with a certificate and letter noting that: *Funding for this scholarship is provided by the Mountain-Plains Consortium through a grant from the U.S. Department of Transportation under the University Transportation Centers Program*.
(Contact Dr. Denver Tolliver, NDSU, 701.231.7190; denver.tolliver@ndsu.nodak.edu)

MPC Partners with Northern Plains Tribal Technology Center in Highway Planning and Safety Initiative

MPC is partnering with the Northern Plains Tribal Technology Center located at the United Tribes Technical College in Bismarck, North Dakota to make highway planning and safety tools available to tribal transportation planners in the region. Denver Tolliver and Jill Hough of North Dakota State University made presentations at the Tribal Transportation Planning Conference in Bismarck, North Dakota on September 3, 2003. Their presentations addressed highway and transit planning methods. In addition, Tolliver presented an overview of the MPC program and its technology transfer capabilities.

On December 11, Tolliver made an invited presentation at the Tribal Workforce and Transportation Conference in Las Vegas, NV on techniques for evaluating

highway performance and the benefits of highway investments. In his presentation, Tolliver illustrated how the Highway Economic Requirements System is used to analyze investment options for state highways passing through reservations. As a result of the presentation, a follow-up workshop was being held in Billings, MT to discuss the development of similar highway planning tools for tribal transportation planners. In April 2004, Tolliver presented an overview of potential planning models to tribal transportation planning and Bureau of Indian Affairs officials at a regional conference in Aberdeen, SD.

In addition, MPC sponsored a very successful half-day workshop on low-volume road safety at the Tribal Workforce and Transportation Conference in Las Vegas. Eugene Wilson, formerly of the University of Wyoming, covered a broad range of road safety issues, including procedures for performing safety audits of reservation roads. As result of enthusiastic feedback from the conference, follow-up workshops and presentations are being planned. The road safety audit is a low-cost, practical method of improving safety on reservation roads and saving lives. Several studies have shown that accident and fatality rates are higher on reservation roads than other rural highways. Therefore, this cooperative effort is expected to yield substantial safety benefits in the near future.
(Contact Dr. Denver Tolliver, NDSU, 701.231.7190; denver.tolliver@ndsu.nodak.edu)

MPC Hosts Site Visit by RSPA

On July 15 MPC hosted a site visit by U.S. DOT, the first such visit of the TEA-21 period. The site visit team included three representatives from RSPA and a representative from Federal Transit Administration. In addition, the national LTAP manager was present for the entire site visit, which was conducted on the NDSU campus.

All four MPC universities were represented. The program included participation by key stakeholders such as the director of the North Dakota Department of Transportation, and representatives from Utah DOT and Wyoming Transportation Department. The program featured an interactive teleconference in which the USDOT team was able to interact with student interns and program participants at several locations.
(Contact Dr. Denver Tolliver, NDSU, 701.231.7190; denver.tolliver@ndsu.nodak.edu)

CSU Offers New Course

CSU offered a new senior and graduate elective course for the spring semester of 2004. The three-credit course, "Transportation: Its Organization and Future" was taught by Ray Chamberlain, former CSU president and former executive director of CDOT. Chamberlain is currently vice president of Parsons Brinkerhoff Quade & Douglas, Inc., of Denver, a transportation consulting and engineering firm.
(Contact Dr. Richard Gutkowski, CSU, 970.491.8291; gutkowski@engr.colostate.edu)

NDSU Doctoral Program Completes Second Year

In 2002, North Dakota State University began offering an interdisciplinary Ph.D. in Transportation & Logistics (TL). Agribusiness & Applied Economics, Civil Engineering & Construction, Industrial & Manufacturing Engineering, and Management, Marketing & Finance are participating in the program.

Six new students enrolled in August of 2003, increasing the total enrollment to 11. Three additional students have been accepted for the Fall of 2004. A new faculty position was created in Civil Engineering – in Transportation Infrastructure and Materials Science – to increase the infrastructure emphasis within the program. The position is expected to be filled in August of 2004.
(Contact Dr. Denver Tolliver, NDSU, 701.231.7190; denver.tolliver@ndsu.nodak.edu)

UGPTI Hosts Transportation Week Luncheon

Nearly 40 people attended the National Transportation Week Luncheon sponsored by the Mountain-Plains Consortium at NDSU on May 20.

The annual luncheon, held during National Transportation Week, is an opportunity for researchers across campus and transportation professionals across the area to celebrate transportation advances and share ideas, says Denver Tolliver, MPC director.

David Huft, director of the South Dakota Department of Transportation's Office of Research, was keynote speaker. Huft outlined SDOT's research program and highlighted the department's approach and philosophy toward research. He said future transportation in South Dakota will focus on reducing travel times, improving the capacity of the transportation system and safety. "All of those areas will need to be balanced with environmental concerns," he said.

Registered guests included faculty from five academic departments representing three colleges at NDSU. There were also representatives from the South Dakota Department of Transportation, the North Dakota Department of Transportation, the Fargo-Moorhead Council of Governments and three out-of-state universities.
(Contact Dr. Denver Tolliver, NDSU, 701.231.7190; denver.tolliver@ndsu.nodak.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 reflect priorities of major client groups, USDOT strategic goals and the Transportation, Science & Technology strategy. These efforts are outlined in this section of the report.

Completed Research Reports

176, 197, 217 Road Dust Suppression: Effect on Maintenance, Stability, Safety, and the Environment (Phases 1-3) • T. Sanders; CSU (MPC 04-156)
202 Truck Costing Model for Transportation Managers • M. Berwick; NDSU (MPC 03-152)
203 Containerized Grain & Oilseed Exports Industry Survey • K. Vachal; NDSU (MPC 03-151)
211 Evaluating and Improving Pedestrian Safety in Utah • W. Cottrell; UofU (MPC 04-157)
213 Survey of Implementation Strategies by Rural Paratransit Agencies Using Low Cost Software • P. Martin; UofU (MPC 04-161)
223 Evaluating the Effectiveness of QC/QA Programs in Region 8 States • K. Ksaibati; UWY (MPC 04-160)
225 Evaluation of the Effectiveness of High Occupancy Vehicle Lanes • P. Martin; UofU (MPC 04-158)
231 Automated Data Collection, Analysis and Archival • P. Martin; UofU (MPC 03-153)
232 Detector Technology Evaluation • P. Martin; UofU (MPC 04-154)
233 Evaluation of Advance Warning Signals on High Speed Signalized Intersections • P. Martin; UofU (MPC 03-155)
235 Highly Flexible Crash Barriers • P. Heyliger; CSU (MPC 04-162)
236 Evaluation of Bottom Ash Asphalt Mixes • K. Ksaibati; UWY (MPC 04-159)

Ongoing Research Reports

175 An Evaluation of ITS/CVO Application Technology in Logistics and Supply Chain Management • B. Lantz; NDSU
177 Moment-Rotation Tests of High Performance Steel (HPS) I-Girders • B. Hartnagel; CSU
178 Experimental Wood-Concrete Railroad Bridge • R. Gutkowski; CSU
179 Full-Scale Laboratory Testing of a Timber Railroad Bridge • R. Gutkowski; CSU
190 Grain Highway Network Analysis: Use of Satellite Imagery and USDA Data to Forecast Heavy Truck Trips Generated from Rural Land Use Zones • D. Tolliver; NDSU
193 Rigorous Computer Modeling of Timber Trestle Railroad Bridges • R. Gutkowski; CSU
194 Effects of Environmental Exposure on Timber Bridge/Track Members and Connectors • R. Gutkowski; CSU
201 Updating the Uniform Rail Costing System Regressions • J. Bitzan; NDSU
206 Attitudinal Analysis of Bus Rapid Transit Alternative • J. Hough; NDSU
207 An Evaluation of Region 8 State Departments of Transportation and Metropolitan Planning Organizations' GIS Technology Application • D. Benson; NDSU
214 Pultruded Composite Shear Spike for Repair of Large Timber Members • D. Radford, B. Hartnagel, R. Gutkowski; CSU
215 Structural Modeling of Substructure Resistance for Timber Trestle Railroad Bridges • R. Gutkowski; CSU
215 Structural Modeling of Substructure Resistance for Timber Trestle Railroad Bridges • W. Charlie; CSU
216 Experimental Thick-Deck Wood-Concrete Highway Bridge Construction, Year 2 • R. Gutkowski, J. Balogh; CSU
219 Bus Rapid Transit: An Examination of Political Feasibility Using Case Studies • J. Hough; NDSU
221 Trip Generation Rates for Grain Elevators: A Tool for State and Local Highway Planners • D. Tolliver, K. Vachal; NDSU
227 Small Urban University Transit: A Case Study • J. Hough; NDSU
228 Trucking Industry Churn and Its Impact on Communities and ITS Adoption • J. Rodriguez; NDSU
230 Economics of Ride Quality on Low Volume Roads • D. Jacobson; NDSU
234 Impact Performance Testing of Roadway Safety and Security Barriers - Year 2 • R. Gutkowski, CSU
237 Affordable Trip Feasibility Scheduling for Rural Paratransit Systems • W. Grenney; UofU
238 Evaluation of Strategic Logistics of Rural Firms • M. Berwick; NDSU
239 Investment in Rural Roads: Willingness to Pay for Improved Gravel Road Services in Freight Transportation • T. VanWechel; NDSU

Ongoing Research Reports (continued)

240 Evaluation of Moisture Susceptibility of Aphalt Mixtures Containing Bottom Ash • K. Ksaibati; UWY
241 Evaluation of Pavement Crack Filling Materials • K. Ksaibati; UWY
242 Wyoming Freight Movement and Wind Vulnerability • R. Young; UWY
243 Assessment of Thermal Stresses in Asphalt Pavements Due to Environmental Conditions Including Freeze and Thaw Cycles • C. Yavuzturk; UWY
244 Adaptive Signal Control III • P. Martin; UofU
245 Video Imaging System Evaluation • P. Martin; UofU
246 High Occupancy Vehicle Evaluation II • P. Martin; UofU

New Research Reports 2004-05 (Year 17)

234 Impact Performance Testing of Roadway Safety and Security Barriers - Phase 2 • D.Radford, CSU
247 Utilizing Recycled Glass in Roadways • K. Ksaibati, UWY
248 Wyoming Freight Movement System Vulnerabilities and ITS • R. Young, UWY
249 Pultruded Composite Shear Spike for Repair of Timber Bridge Members • R. Gutkowski, CSU
250 Interactive Effects of Traffic- and Environmental-Related Pavement Deterioration • D. Tolliver/K. Ksaibati, NDSU/UWY
251 Detector Technology Evaluation III • P. Martin, UofU
252 Adaptive Traffic Signal System Evaluation - Phase III • P. Martin, UofU
253 Design/Build vs Traditional Construction User Delay Modeling: An Evaluation of the Cost Effectiveness of Innovative Construction Methods for New Construction • P. Martin, UofU

Human Resource Development

The MPC's goal is to increase the number of students, faculty and staff interested and involved in the undergraduate, graduate and professional programs of the Center. As outlined in our strategic plan, it is the Center's intent to increase faculty involvement in transportation, increase student participation in transportation programs, and increase participation by transportation professionals. This section highlights the Center's student and faculty activities and professional development during the past year. It also includes short biographies of our current graduate students.

Graduate Students

Colorado State University

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.in Engineering degree from Dordt College in Iowa. At CSU he has been a Graduate Teaching Assistant and is presently a Graduate Research Asssistant. 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-Conferecne 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 professor in higher education. She chose to continue into 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.

Ryan Fast began as a graduate research assistant in Fall 2001. He is conducting experimental work in the area of composite wood-concrete floors and bridge decks. Prior to entering graduate school, he was a highway engineer trainee for the Federal Highway Administration, including a period of work at the Turner-Fairbank Laboratory in Virginia.

Ryan received a Special Act Award from the FHWA for work performed on Job Shadow Day during National Engineers Week. He completed an internship with Structural Reliability Technology (Boulder, Colo.) writing fatigue and crack analysis software.

He has a BS Applied Sciences degree from George Fox University and a BS Engineering – Civil Specialty degree from the Colorado School of Mines.

John Kienholz is presently a graduate student at CSU in the department of Civil Engineering. He has worked as a teaching assistant facilitating the laboratory sections of the introductory course for Civil, Agricultural and Bioresource 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.

TJ Schilling received his BS degree in civil engineering in Fall 2001. He is presently a graduate teaching assistant, teaching in the geotechnical engineering laboratory. He has a work background as an auto mechanic (Extraditions International, Inc.) and a draftsman (Glorso Murray Surveys, LLC).

TJ is proficient in AutoCad and pursuing research studies on the use of pultruded composite shear spikes for strengthening and repairing timber bridge members. In Fall 2002, he began as a graduate research assistant and conducts thesis work on that topic.

He is a member of ASCE and two national honor societies, Chi Epsilon and Tau Beta. He participated in the steel bridge student design team during CSU's winning of the regional competition in Fall 2002.

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. Currently a Ph.D. candidate at CSU, 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."

Heather Gibb is a graduate research assistant with the Upper Great Plains Transportation Institute at NDSU. Her research focuses on the North American Mid-Continent Trade Corridor, specifically E-commerce implementation status in trucking companies throughout the trade corridor.

Heather received her BSC in Agriculture from the University of Manitoba.

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.

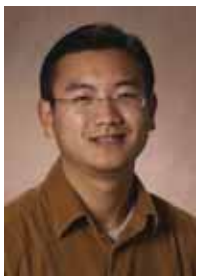
Sang Young Moon earned his M.S. in agribusiness and applied economics from NDSU in 2002. He received his B.S. in agriculture economics from Korea University. The focus of his research is in international transportation and global supply chain management. Sang published a study on the "Effects of Panama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

Khaled Shouman is presently 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.

MASTERS STUDENTS:

Mariya Burdina received both her masters and bachelors degree from Kiev National Economic University. Her research focus is on estimating the impact of transportation on business location decisions.

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 flour 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.

University of Utah

Daniel Adams is a research assistant and network administrator in the Traffic Lab. He is also involved in equipment management and data collection. He holds a bachelor's degree in economics from the University of Utah with a minor in computer science.

Pratapsingh Bhansle is conducting research on traffic management and simulation software. He earned his bachelor's degree in civil engineering from the Government College of Engineering in Pune, India.

Yali Chen earned her M.S. degree in civil and environmental engineering at Northern Jiaotong University, Beijing, China. As an undergraduate, she earned student first level scholarship, excellent Undergraduate Thesis Award. Yali is enrolled in the Ph.D. program of civil and environmental engineering. She is a Traffic Lab research assistant studying fixed timing signal control aging.

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.

Abhro Mitra earned a bachelor's of planning degree from the School of Planning and Architecture in New Delhi, India. He earned his M.S. degree from the University of Cincinnati. He is analyzing the travel impact of State Transportation Improvement Program projects in the Salt Lake Valley.

Aleksandar Stevanovich graduated from the University of Belgrade, Yugoslavia, with 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 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 fly 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 flows 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 designing 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 form 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

An Vinh Tran Named Region 8 Student of the Year

Dr. An Vinh Tran was named the 2003 Mountain-Plains Consortium Student of the Year by the University Transportation Centers Program of the U.S. DOT.

Dr. An Vinh Tran and Dr. Bryan Hartnagel

Tran earned his Ph.D. in civil engineering from Colorado State University in December 2002, M.S. degree in May 1999, and B.S. in May 1998 (Summa Cum Laude). He is a member of Chi Epsilon, Tau Beta PI and Golden Key national honor societies.

He completed a computer-based study of load sharing with open-deck, timber trestle railroad bridges based on results of full-scale field load tests. The work was part of a joint project with the Transportation Technology Center of the Association of American Railroads to examine the capacity of bridges that are 40 or more years old for contemporary train loads.

Tran's doctoral dissertation was titled "Pier Moment Rotation Behavior of High Performance Steel HPS70W I-Girders." The results will assist the American Association of State Highway and Transportation Officials (AASHTO) to lift code restrictions on use of such girders in bridge construction. This will optimize the use of materials and save scarce highway dollars. He completed a senior project on feasibility of a major truck bypass in Larimer County, Colorado.

He was also a teaching assistant, continuing as an instructor since his doctoral degree. He has taught undergraduate courses in mechanics, earning excellent teaching evaluations.

Tran became a U.S. citizen after emigrating to the U.S. from Viet Nam following the conflict. He exhibits outstanding citizenship, participating in the Denver Rescue Mission, Open Door Mission of Fort Collins, Secret Santa, Thanksgiving Food Drive and teaching Tai Chi for senior citizens.

Colorado State University Awards

Undergraduate Paul A. Espinoza received a Student Leaders in Engineering Assistantship from Colorado State University in spring 2004. This provided funding to participate in research studies in the MPC program. Paul is a minority student pursuing a civil engineering major with a minor in construction management.

Misty Butler received a Colorado PEAKS Alliance Diversity Fellowship for the 2003-2004 academic year. This provided $6,000 from within the National Science Foundation Alliance for Graduate Education and the Professoriate toward her educational costs in pursuing a M.S. degree in civil engineering at CSU. Previously, she was awarded $9,000 for participation in the summer 2003 Research Experience for Undergraduate Students program, supported within the same grant program at CSU.

CSU graduate student Fernando Ramirez received the Chi Epsilon Award for Teaching Excellence for spring 2004. He also received a CSU College of Engineering Teaching Fellowship for 2004. Ramirez is a Ph.D. student. His research focuses on computational structural mechanics.

Kimberly Fentress, a graduate student at Colorado State University was selected as the recipient of the Jim Murray Scholarship awarded by the American Public Works Association. Kim received $2,500 toward her first year of studies in transportation engineering. (Contact Dr. Richard Gutkowski, Colorado State University - 970.491.8291 or e-mail gutkowski@engr.colostate.edu)

University of Utah Awards

Dhruvahyoti Lahon won first prize in the 2004 Utah Chapter ITE Student Paper Contest for her paper, "An Evaluation of the High Occupancy Vehicle Lanes on the I-15 in the Salt Lake Valley." As part of her master's program at the University of Utah, she is using video detection to evaluate traffic volume and speed on HOV lanes. She also conducted a public opinion survey on HOV lanes.

North Dakota State University Awards

The Fargo-Moorhead Transportation Club, a local organization that provides a network for individuals in all areas of the transportation field, recently awarded five scholarships. Peter Cluever, an undergraduate student in civil engineering and a student employee with the UGPTI Advanced Traffic Analysis Center (ATAC), was one of the recipients of a $500 scholarship. Scholarship applicants were chosen based on their GPA, goals and accomplishments, and community involvement. The applicants were also required to write an essay describing why they would be a worthy recipient of the scholarship, and how they would contribute to the field of transportation. Peter was accompanied by Shawn Birst, ATAC research assistant, on behalf of Ayman Smadi, ATAC Director.

Paul E.R. Abrahamson Transportation Scholarship

- Justin Goettle, Agribusiness and Applied Economics - $1,500
- Justin Sorby, Agribusiness and Applied Economics - $1,500

Transportation Engineering Scholarship

- Robert Klein, Civil Engineering - $1,500
- Nathan Pederson, 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

Subhro Mitra and Alan Dybing, North Dakota State University, attended Geospatial Information Systems for Transportation symposium, March 29-31, 2004 in Rapid City, SD.

Faculty Activities

Journal Articles / Conference Presentations

2004

Professor Richard Gutkowski, CSU, presented an Invited Lecture on "Rural Timber Bridge Development in the USA" at Coimbra University, in Coimbra, Portugal. The visit included discussions of an anticipated experimental wood-concrete highway bridge construction in Portugal and was sponsored by the American Portuguese Foundation based on interest in fostering international cooperation in research and development.

2003

Heyliger, Paul and F. Ramirez. "Strength of Fibrous Flexible Networks." Presented at Johns-Manville Corporation. June 2003. Denver, Colo.

Motlagh, A.R., and Sanders, T.G., Deicing Effectiveness under Varying Conditions, submitted to ASCE Transportation Division 12/03.

Tolliver, Denver. "Benefits of Investment in Low Volume Roads." Presented at the Tribal Workforce Protection and Transportation 2003 Conference, Dec. 10-12, 2003. Las Vegas, Nev.

Wilson, Eugene. "Road Safety Audits – Technical Training Workshop." Presented at the Tribal Workforce Protection and Transportation 2003 Conference, Dec. 10-12, 2003. Las Vegas, Nev.

Professor Richard Gutkowski, CSU, presented several Invited Lectures at the Swiss Federal Institute of Technology in Lausanne, Switzerland. Topics included State of and Developments in U.S. Timber Bridge Technology; Case Studies in Modern Timber Bridges; Laboratory and Field Load Testing of Timber Trestle Railroad Bridges; Composite Repair of Timber Bridges; and Laboratory Studies of Wood-Concrete Floor, Deck and Bridge Systems. The lectures were part of a post-graduate course in Timber Engineering within the Institute of Wood Construction which sponsored the visit.

Balogh, J., M. Ivanyi, and R. Gutkowski. "Object Oriented Implementation of a Modified Hstrosis Plate Element." Presented at, and published in, Proceesings of the Ninth International Conference on Civil and Structural Engineering Computing, Engmondam, The Netherlands.

Workshops / Short Courses

Hazardous Materials/Wastes Short Course
June 15-17, 2004. Participants: 23 – CSU
Dr. Tom Sanders

Water Quality Short Course
June 7-11, 2004. Participants: 7 – CSU
Dr. Tom Sanders

Transportation: Its Organization and Future – CSU
Ray Chamberlain

Denver Tolliver, North Dakota State University, presented a series of seminars to tribal transportation planners on highway planning using the Highway Economic Requirements System (HERS), including presentations at: the Tribal Transportation & Workforce Planning Conference in Las Vegas, NV on December 11, 2003; the Northern Plains Tribal Transportation Planning Workshop in Billings, MT on Feb. 11, 2004; and the Tribal Transportation Workshop and Expo in Aberdeen, SD on April 22, 2004. In these seminars, Tolliver described highway planning applications for local and tribal governments, incuding a detailed analysis of state highways on reservations in MT and ND. The technology transfer initiative is continuing during FY 2005. A possible outcome of the initiative is the adaptation of BIA reservation road data into a format that can be used by the HERS planning software.

Eugene Wlson, University of Wyoming, presented a half-day workshop on low-volume highway safety, with specific applications of road safety audit techniques to reservation roads. The workshop is described under Program Highlights.

Professor Presents Invited Lectures in Switzerland

In the fall of 2003 Professor Richard Gutkowski of Colorado State University presented several invited lectures at the Swiss Federal Institute of Technology in Lausanne, Switzerland. Topics included state of and developments in U.S. timber bridge technology; case studies in modern timber bridges; laboratory and field load testing of timber trestle railroad bridges; composite repair of timber bridges; and laboratory studies of wood-concrete floor, deck and bridge systems. The lectures were part of a postgraduate course in timber engineering within the Institute of Wood Construction. (Contact Dr. Richard Gutkowski, Colorado State University - 970.491.8291 or e-mail gutkowski@engr.colostate.edu)

Achievements

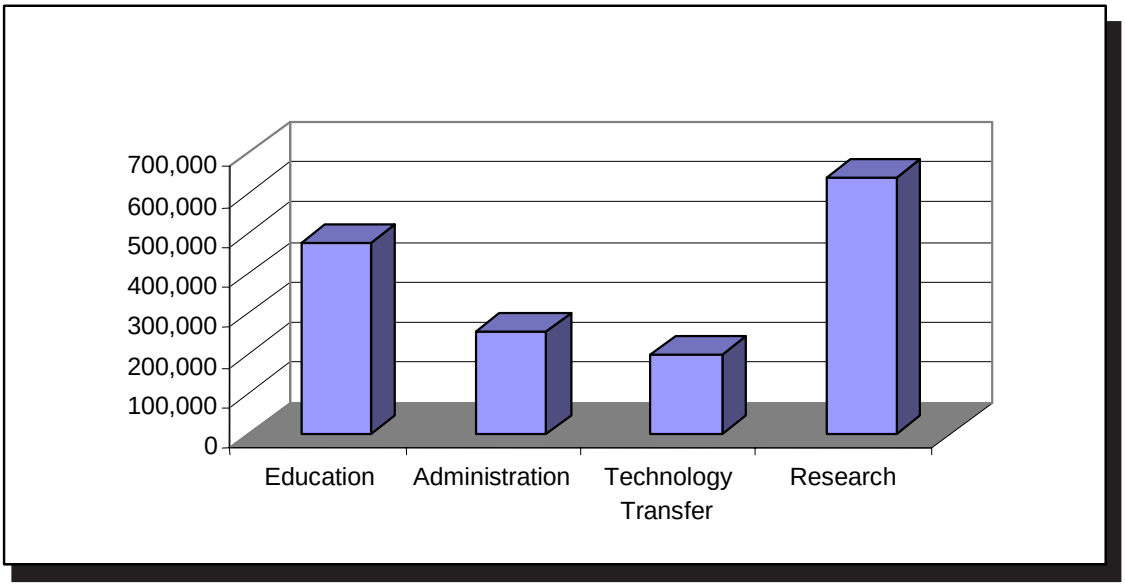
Paul Heyliger, CSU professor of civil engineering, received the Outstanding Faculty Performance Award from the Department of Civil Engineering in the spring of 2004.

Thomas Sanders, associate professor of civil engineering at Colorado State University, was awarded the 2004 Faculty Award for Excellence in Service by the Department of Civil Engineering.

Resources and Funding

July 1, 2003 - June 30, 2004

Distribution of Funds



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
TEL8 Telecommunications Network (includes the NDDOT, SDDOT, MTDOT, UDOT, WYDOT)