

## Western Transportation Institute MSU-Bozeman

March 2003

Volume 7,

Issue 1

ADVANCING RURAL TRANSPORTATION THROUGH RESEARCH AND EDUCATION

### Unique Partnerships, Unique Opportunities

I am very proud of the fact that the Western Transportation Institute is building a national reputation for comprehensive, leading edge transportation research. How do we accomplish this with our rural focus and our remote location in Bozeman, Montana? The answer is: Partnerships.

By partnering with state and local governments, transportation agencies, and non-profit organizations, we can pool funding to conduct major research projects and deployments that would not otherwise be financially feasible. Through our collaborations, we can share other invaluable resources, such as equipment, information, and most importantly, expertise. The more creatively we think about partnerships, the more we can expand our research opportunities.

In this issue of the newsletter, you'll read about several projects that were made possible through unique or extensive partnerships. For example, in order to develop a transportation coordination handbook for the State of Montana, WTI worked

with a broad coalition of human service providers and organizations and the Montana Transportation Partnership. To install traveler information kiosks throughout the Greater Yellowstone region, we needed the assistance of multiple state agencies, the tourism industry, national parks and private businesses. Finally, you'll learn how we went across "international borders" to establish a partnership Dr. Tony Clevenger, supporting his research in Banff National Park and bringing his wildlife mitigation expertise to related projects at WTI.

Even our newsletter plays an important role in our ongoing quests for interesting and expanded partnerships. I hope by reading about our recent projects, you'll be motivated to contact me directly (406/994-6114 or [stevea@coe.montana.edu](mailto:stevea@coe.montana.edu)) about future opportunities to work together.

Can't wait to hear from you!

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# International Collaboration Formed to Continue Wildlife Mitigation Research in Banff National Park

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The impact of roads on the environment is well-documented and gaining attention worldwide. WTI has been at the forefront of research in this field, with projects to test technologies on roadside animal detection and innovative designs for wildlife crossing structures, and to compile comprehensive databases of mitigation research. In fact, WTI recently identified “Wildlife and Transportation Interactions” as a focus area for research.

As its first major initiative in this newly prioritized field, WTI has established a collaborative project with Dr. Anthony Clevenger (see article on page 10) to continue landmark wildlife mitigation research in Banff National Park. In 1996, Dr. Clevenger initiated an intensive five-year research program in Banff. The study focused on wildlife crossing structures and fencing on the Trans-Canada Highway, in order to address permeability for wildlife, animal-vehicle mortalities, wildlife movements, and habitat connectivity in the Bow River

Today the Banff-Bow Valley is the only location in the world where the abundance and variety of wildlife crossing structure designs, in addition to national park-supported wildlife research, provides an unrivalled environment for research on the efficacy of wildlife crossing structures and reducing wildlife-vehicle collisions. Banff mitigation research can boast of having the world’s longest, year-round monitoring program and largest dataset on passage use by wildlife.

This is not WTI’s first collaboration with Dr. Clevenger. Last fall, WTI (in conjunction with FHWA, the Center for Transportation and the Environment, and the US Forest Service) sponsored the “Wildlife Crossing Structures Fieldcourse” to showcase the Banff research project as a successful example of incorporating wildlife mitigation into transportation planning.

The new partnership with WTI will enable Dr. Clevenger to continue his research in Banff beyond the original five-year program. With WTI’s support, Dr. Clevenger is able to monitor animal movements for an additional year. More importantly, this support is allowing Dr. Clevenger to develop partnerships with Canadian and US agencies and establishing a long-term collaborative research project in Banff.

In addition, WTI plans to integrate the Banff research with a similar project in Montana. WTI is currently developing an evaluation plan for wildlife crossing structures to be installed as part of the reconstruction of US 93. This project will benefit from the research experience and methods developed by Dr. Clevenger in Banff.

WTI sees many opportunities ahead for research in wildlife mitigation, and looks forward to this and future collaborations that will allow WTI to continue to conduct innovative work and strengthen our expertise in this field.



Valley, where Banff National Park is located. The research team evaluated means of mitigating road effects on wildlife and made recommendations for future transportation planning efforts in the mountain parks.

## WTI Helps MDT Launch 511 System in Montana

In January, the Montana Department of Transportation (MDT) implemented its new 511 traveler information system. MDT successfully launched its state-of-the-art system with the help of many partners, including the Western Transportation Institute.

Until now, Montana travelers in search of road and weather information have had to access this information from a variety of sources, such as MDT's 1-800 number for road reports and the National Weather Service for weather reports. More recently, some of this information has been available on the Internet.

Now travelers can simply call the easy to remember phone number 511. The Federal Communications Commission designated 511 as the national traveler information phone number in July of 2000 in the hope that it would eventually replace the more than 300 current traveler information numbers across the nation. Each state can implement a system customized to its needs.

In Montana, the 511 system offers real-time weather and road condition to callers 24 hours a day, seven days a week. Callers answer three or four questions about their location, then receive a site specific report on road conditions, as well as a six hour weather forecast for those road segments. Thanks to the cooperation of Montana phone companies, calls to 511 are available with no surcharges to both land line and cell phone users. (Normal cell phone roaming and call charges may apply.)

The site specific information on road conditions and weather forecasts are new features not previously available on MDT's 1-800 number. Callers can also now access road conditions in the adjacent states of North Dakota and South Dakota. Many of these upgrades were made possible

through the partnership with Meridian Environmental Technology, Inc., and the Western Transportation Institute. WTI also worked closely with the Federal Highways Administration and Senator Conrad Burns to obtain federal funding for this project. WTI's ongoing role in this project will include conducting an evaluation, providing a deployment plan for future enhancements, and creating a follow-up marketing campaign.

"WTI has been instrumental in the implementation of our new system," said Brandi Tesch, Traveler Information Specialist at MDT. "In particular, WTI played a key role in developing the marketing plan and securing adequate funding."

Montana joins an elite group of only seven other states that have implemented the 511 system statewide. Several other metropolitan areas have deployed 511, and the majority of states plan to have the service by 2005.

MDT's 511 service got off to a promising start in January. The system logged 12,000 calls in its first week, and by the end of the month had logged more than 36,000 calls. This call volume is a significant increase over use of the old system during the same month last year.

For more information about MDT traveler information, try out the 511 system (1-800-226-7623 if you're outside the state) or log on to [www.mdt.mt.us/travinfo](http://www.mdt.mt.us/travinfo).



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Partners in the 511 system launch include (L-R) Mark Owens, (Meridian Environmental Technology, Inc.), Brandi Tesch (MDT) and Jaime Helmuth (WTI).

# Performance and Costs of Pavement Markings Reviewed for MDT

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Like many states, Montana spends a significant amount of money on pavement markings. The purpose of the markings is to facilitate safe, efficient and comfortable traffic flow on state highways. State Departments of Transportation want to use a marking system that offers the best possible performance at the lowest possible cost. The Montana Department of Transportation (MDT) is currently re-examining the cost-effectiveness of various methods and technologies, in particular the use of thermo-plastic pavement markings.

WTI has just completed an evaluation of pavement marking systems sponsored by MDT. The purpose of this project was to provide MDT with information that will be useful in selecting cost-effective systems. The final report includes a description of available pavement marking technologies, a review of pertinent studies completed by other states, and recommendations for MDT.

Selection of the most cost effective pavement marking system in a given situation depends on three main factors: 1) visibility (expressed in terms of "retroreflectivity"), 2) durability and 3) cost. Several subordinate factors stem from these three, such as type of road surface, volume of traffic, orientation with respect to traffic,

quality control at the time of installation, winter sanding and snow removal practices, schedule of pavement maintenance activities, and inconvenience experienced by the traveling public during marking installation.

This study focused on the more common pavement marking systems, which consist of latex and alkyd paints (classified as "conventional products"), as well as epoxy paints, thermoplastics, and preformed tapes (classified as "durable products"). Selecting the most efficient and effective pavement marking system is difficult due to the variety of factors involved. At the inception of this project

WTI believed it would be necessary to collect cost and performance data for various pavement marking systems and conduct life cycle cost analyses. However, a review of the literature available on this subject revealed that several states have recently studied their pavement marking programs.

In reviewing the information available from various states, WTI researchers documented several trends with regard to determining the most cost effective marking systems:

- Conventional paints are the most cost effective system for low-volume roads (below approximately 5,000 AADT) and/or under conditions where only a short service life is needed.

- In areas where conventional paints are unable to provide adequate retroreflectivity for at least one year, more durable products, such as epoxy paints or thermoplastics, should be considered. Epoxy paints are more cost effective in low volume applications (AADT between 5,000 and 10,000); inlaid thermoplastics become cost effective in high volume applications (AADT greater than 10,000).

- While the life cycle costs of conventional and epoxy paints are lower than those of thermoplastics in many applications, they may have to be renewed at more frequent intervals, thereby increasing exposure of maintenance crews to construction zone hazards and potentially increasing delays to traveling public.

- Thermoplastic pavement markings are heavily used in intersections and other transverse marking applications due to their high resistance to surface wear.

- “Large” contracts offer significant savings on the unit costs of markings relative to “small” contracts.

Currently, the practice of MDT is generally consistent with practices developed by other states. While the guidelines in other states indicate that conventional paints may be an appropriate alternative, epoxy paints may be justified due to the specific conditions in Montana and the low contract price for this product. MDT and other states are also investigating mid-durable paints, which may offer better life cycle costs than either epoxy or conventional paints. MDT is actively moving toward improving the cost effectiveness of its pavement marking program. Efforts underway in this regard include collecting and storing retroreflectivity data, developing contracts that include warranty specifications, and investigating ways to develop a pavement marking management system.

The evaluation completed by WTI will help MDT make informed decisions regarding its pavement marking program, and may serve as a valuable information resource to other rural states with similar road and weather conditions as Montana.

# Unique Partnership Produces Coordinated Transportation Handbook and Launches Pilot Project

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The Developmental Disabilities Planning and Advisory Council (DDPAC) is working with WTI to increase services to the transportation disadvantaged. This successful collaboration has yielded a newly released Coordinated Transportation Handbook. The Handbook project also contains a review committee made up of the Montana State Legislature, representatives from the Montana Transportation Partnership, Montana Department of Transportation, and persons who are transportation disadvantaged, including persons with disabilities.

The Handbook, which is planning to be released in March, provides guidance to social service agencies, transportation providers, and community members throughout Montana who are working to improve the transportation services available to the developmentally disabled and other transportation disadvantaged groups. The document outlines a step-by-step plan for coordinating transportation services, including recommended tasks, checklists, sample forms and sources of financial support. The process is applicable not only to locally coordinated transportation, but also to coordinating transportation between different parts of the state.

As part of this project, a website was created that includes a web-based version of the handbook, a search engine, links to related references, and a database of collected information from Montana agencies and other states. The Montana Coordinated Transportation Website is available at [www.coe.montana.edu/wti/TrCoordn/index.html](http://www.coe.montana.edu/wti/TrCoordn/index.html). The website will also be available on the Developmental Disabilities Planning and Advisory Council website at [www.ddpac.org](http://www.ddpac.org), and

through links to other state departments.

Montana Transportation Partnership, of which the Developmental Disabilities Planning and Advisory Council (DDPAC) is a founding member, has been working towards statewide transportation systems change since 1999. The mission of the Partnership is “to ensure Montanans, in their community of choice, have accessible, safe, affordable, and reliable transportation services through the development of coordinated systems.” Other members of this diverse coalition include persons who are transportation disadvantaged, the Centers for Independent Living, Statewide Independent Living Council, representatives of the Department of Public Health and Human Services, human service providers, Montana Advocacy Program, transportation service providers, representatives of the State Insurance Commissioner, Western Transportation Institute, Tribal representation, Montana Center on Disabilities, University Center on Excellence/ Rural Institute on Disabilities, Office of Public Instruction, Veterans Administration, MDT, Montana Transit Association, and the Job Training Partnership.

Thanks to the efforts of the Montana Transportation Partnership, the Department of Public Health and Human Services has received federal funding for the Real Choice Systems Change Grant. The grant, which will run for three years, will bring a total of more than one-half million dollars for coordinated transportation projects to Montana. The DDPAC Coordination Handbook will be instrumental in implementation of the demonstration projects of the Real Choice Systems Change grant. Successes from these demonstration projects can then be replicated statewide.



The federal funding will be used by the Montana Transportation Partnership to initiate the Montana Shared Ride Pilot Project, which will consist of two components. In the first, MTP and WTI will assist two pilot communities in conducting a coordinated planning process. The project will provide the communities with funding and technical support to design and implement a coordinated transportation system and identify technology tools for local implementation. Some of the coordination tools to be presented to the communities for consideration include a shared ride computer system, "smart card" development, private vehicle system, and virtual transit mall.

This component of the project is underway. Helena, Montana, has been selected as one pilot community, with the other site in final negotiations. These models will serve as examples for other Montana communities.

In the second component of the project, MTP, MDT and WTI will develop the requirements for a statewide reporting system that facilitates sharing of data on transportation services. One factor that hampers coordinated transportation planning is the lack of comprehensive data. Currently, data on needs, clients, and services is collected according to individual funding sources spread across various state departments. For this part of the project, WTI plans to develop a computer-based system that allows service providers to enter client and service data once, which would then be forwarded electronically to all applicable departments.

Across Montana and the United States, the increasing need for public and human service transportation continues to outstrip the funding available for these

programs. The Montana Rural Passenger Needs Study, conducted for the Montana Department of Transportation (MDT) in 2001, estimated that only 17 percent of the statewide demand for transportation was being met. Those hardest hit by this transportation shortfall are the senior citizens, people with disabilities, people with limited economic resources, and others who are not physically or financially capable of owning and operating their own automobiles. For this population, lack of transportation is a fundamental barrier to both independence and employment.

The DDPAC Coordination Handbook and the Montana Transportation Partnership systems change projects, while are directly aimed at Montana, will likely provide models for other rural states seeking to improve transportation services for the persons with disabilities, senior citizens, and other populations with transportation challenges.



# WTI Creates Webpages to Showcase ITS in Oregon

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The Oregon Department of Transportation (ODOT) has implemented many intelligent transportation system (ITS) projects and services, and plans to expand the use of ITS as a key tool in managing Oregon's transportation systems in the future. In order to ensure support for ongoing ITS investment, ODOT is working to educate the public about how ITS enhances transportation safety, mobility, efficiency and productivity, thereby enhancing Oregon's economic prosperity and quality of life.

As part of this effort, WTI has begun to develop a series of web pages that document some of the primary benefits of ODOT's ITS deployments. The goal of this project is to make information on the performance and benefits of Oregon ITS systems readily available to the public.

The web pages will contain a comprehensive list of projects in Oregon, grouped by purpose of the project. The categories include:

- Traveler Information
- Traffic and Incident Management
- Safety
- Operations and Maintenance
- Transportation Security
- Public Transportation
- Commercial Vehicle Operations and Safety

The introductory page would have links to detailed information on specific systems, including documented benefits with supporting numbers, performance data, and further links to web sites on similar systems

in other parts of the country.

For example, if Oregon residents were concerned about a dangerous road, they could use the webpages to look for safety projects that might be under development in their area. If they found a project that had already been implemented, they could view performance statistics to see if the ITS deployment had actually reduced the number of accidents or had resulted in other safety benefits.

The web pages are scheduled to be ready by this summer. When completed, they will be incorporated into the ODOT website at [www.odot.state.or.us/its](http://www.odot.state.or.us/its).





# Touch Screen Traveler Information Kiosks: Using Synergistic Partnerships to Implement Useful Technologies

WTI began the Greater Yellowstone Rural Intelligent Transportation System (GYRITS) Project in 1997, with the goal of moving rural ITS forward by demonstrating and evaluating it in a region with many transportation challenges and opportunities. Following the completion of a strategic plan, individual deployments were selected for implementation. One of these projects was the development of interactive information kiosks placed at key locations where Yellowstone travelers stop.

In recent months, six kiosks have been successfully deployed in Montana. Through the use of a touch screen and interactively designed formats, travelers can get information such as:

- Listings of tourism and recreational facilities in the region
- Local weather and road condition information
- Real time images from roadside cameras
- Interpretative information about Yellowstone National Park
- Local events and activities
- Maps and area information

Creating and deploying the kiosks would not have been possible without the participation and support of many partners. While WTI staff coordinated the project, they relied on substantial assistance from the University of Montana for kiosk development and deployment, the Montana Department of Labor and Montana Travel for equipment and database information, and the Montana Department of Transportation for Road Conditions and many others.

In addition, the proprietors who have agreed to house kiosks in their fa-

cilities play a key role by providing power, space and in some cases, special enclosures for the kiosks, all on an ongoing basis. Currently, kiosks are operating at the following locations:

- Bozeman Rest Area (a Montana Department of Transportation facility)
- Montana City Bar and Grill (Helena)
- Butte Airport
- Wheat Montana (Three Forks)
- Fairmont Hot Springs (Anaconda)
- Livingston Chamber of Commerce

Additional deployments are planned for sites within Yellowstone National Park. The capabilities of the kiosks also have tremendous potential expansion. The units could be upgraded to integrate data from surrounding states, or to provide a reservation system for campgrounds and other accommodations. In a related project, the University of Montana and WTI are developing and evaluating kiosks and other technologies to provide travelers with information about the Lewis and Clark Historical Trail.

At this time, the kiosks are being tested on a pilot basis. With ongoing support from current and future partners, the kiosks could become an integral part of the transportation and tourism infrastructure of Montana.

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## New Research Staff

### **Dr. Anthony Clevenger: Research Scientist**

WTI is pleased to welcome Dr. Anthony Clevenger to our staff as a Research Scientist.

Tony's primary focus at WTI will be to continue and expand on the wildlife mitigation program he began at Banff National Park five years ago (see page 2). His research is considered to be the most extensive effort ever to evaluate the effectiveness of wildlife crossings and fencing installed to reduce animal collisions with vehicles. He will also provide guidance on other wildlife projects, such as the study to evaluate the effectiveness of wildlife crossing structures and fencing to be incorporated into reconstruction of U.S. 93 in Montana. Tony joins WTI's growing staff of researchers who specialize in studying the interactions between transportation and wildlife.

With more than 20 years experience, Tony has worked in wildlife research and conservation around the world. Prior to his research program in Canada, he served as a wildlife consultant to the World Wide Fund for Nature in Switzerland, as a Wildlife Biologist for the Ministry of the Envi-

ronment in France, and as a Wildlife Research Biologist for both the US Forest Service and US Park Service.

Tony also has extensive experience in higher education, and serves as an Adjunct Assistant Professor at both the University of Calgary and the University of Tennessee, Knoxville. He earned his Ph.D. in Zoology at the University de Leon, Spain, following a Master's Degree in Wildlife Ecology from the University of Tennessee, Knoxville, and a Bachelor's Degree in Conservation of Natural Resources from the University of California, Berkeley.

Since 1986 he has published 40 articles in peer-reviewed scientific journals and is a co-author of the recently published book *Road ecology: science and solutions* (Island Press). He is currently a member of the U.S. National Academy of Sciences and National Research Council committee to study the effects of highways on natural communities and ecosystems.

While working for WTI, Tony will continue to be based in Canmore, Alberta, Canada.

*He can be reached at:*

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### **Greg Cross: Senior Research Associate**

Gregory Cross has joined the WTI team as a Senior Research Associate. Greg has a strong background in Intelligent Transportation Systems (ITS), particularly in the areas of Incident Management and Public Mobility. His current projects at WTI include CANAMEX, the Rural Public Safety and Communications Model Deployment Initiative, and devel-

oping the Redding Incident Management Enhancement Project.

After graduating with a BA in Economics from the University of Southern Maine in 1984, Greg founded his own business, DataTrends, and served as its Research Economist for ten years. Since that time he has also served as the ITS Project Manager for the Lord Fairfax Planning District Commission in Virginia, and as the Rural ITS Consultant for the Virginia Department of Transportation.

Greg lives with his wife, Deborah, and his two children, Sam, 11, and Laura, 13 in Edinburg, Virginia. He spends most of his free time helping his kids with their hobbies, which include sheep-raising and sports for Sam, and dressage riding for Laura. Greg's unique experience and sense of humor are a wel-

come addition to WTI's far-reaching family. Welcome aboard, Greg!

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**Dr. Marcel Huijser:  
Research Ecologist**

WTI is pleased to welcome Dr. Marcel P. Huijser, a new Research Ecologist.

Marcel comes to WTI from the Netherlands, where he has completed extensive research in the fields of animal ecology, landscape ecology, and vegetation science, with a particular emphasis on infrastructure-nature issues. While he has studied several animal groups ranging from butterflies and dragonflies to birds, he is considered an expert on mammals, and hedgehogs in particular. He has considerable fieldwork experience and his research skills include designing ecological field studies, database management, statistical analysis, capture-mark-recapture techniques and radio-telemetry.

Marcel received his PhD from Wageningen University in the Netherlands in 2000. His thesis was entitled, "Life on the edge. Hedgehog traffic victims and mitigation strategies in an anthropogenic landscape." During his Masters program, he wrote two additional Master theses on animal ecology topics and completed a field course on ungulate ecology at the University of Wyoming.

As for professional experience, Marcel most recently served as a Research

Ecologist at the Research Institute for Animal Husbandry (in the Netherlands). He has also worked as a Mammal/Landscape Researcher for the Dutch-Belgian Mammal Society, and as a Vegetation and Herbivore Researcher for the Dutch Ministry of Transport, Public Works and Water Management. In addition to his many publications, he has given presentations on his research at international conferences throughout Europe and in the United States.

At WTI, Marcel will continue his work in the field of interactions between nature and infrastructure. His initial project assignments will include Animal Vehicle Crash Mitigation Using Advanced Technology, the Roadside Animal Detection Systems Test-bed, and the US 93 Wildlife Crossing Structure Evaluation.

Marcel lives and works in Missoula, Montana. When not at WTI, he enjoys the outdoors, as he is into hiking, cycling, kayaking and nature photography.

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### **David Kack: Research Associate**

WTI is pleased to announce that David Kack has been promoted from a temporary position to a permanent position as a Research Associate. David arrived at WTI in September of 2001, bringing his strong expertise in Transportation Coordination, Transit, Aerospace and Aviation, and Cost/Benefit analysis. His project assignments reflect his transportation-related research specialties as well as his business-based educational background. He is currently working on an analysis of the Big Sky Transit District's Snow Express, the Montana Systems Change Grant, the Galavan Five-year Service Improvement Plan, a Needs Assessment and Cost/Benefit Analysis of the RoadView™ Snowplow System, and Statewide Coordinated Transportation Planning.

Born in Arlington Heights, Illinois,



David grew up in Boulder, Colorado and Bozeman, Montana. Prior to his move back to Bozeman he lived in North Dakota, where he earned a BBA in Business Management and Aviation Administration and an MBA in Business Administration at the University of North Dakota in Grand Forks. David then spent several years working for the Fargo Transportation Management Association and the City of Fargo Transit Department.

David and his wife, Jennifer, have three children, Riley, Emily, and Olivia. Active in the outdoors, David and his family enjoy scuba diving, water and snow skiing. David is also an enthusiastic and accomplished pilot, having earned his commercial pilot's certificate with an instrument rating in 1985. Welcome back home to Montana, David, and to the WTI team as well.

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### **Dr. Ali Kamyab: Senior Research Scientist**

Ali Kamyab's arrival as a Senior Research Scientist provides WTI with an invaluable connection to the California Department of Transportation (Caltrans): not only does Ali work in the CalTrans offices, he also serves as an official liaison between the two organizations.

Specializing in Traffic Engineering and Safety, ITS Technology Evaluation, Work Zone Traffic Safety, and Traffic and Simulation Modeling, Ali offers a wealth of knowledge pertinent to research priorities of WTI. His project

responsibilities so far at WTI have included "RWIS Sensors Evaluation in Rural Areas-Showcase Evaluation 4," "Communication and Power Improvements for Rural ITS Field Devices-Showcase Evaluation 10," "ITS Technology Evaluation in Rural Work Zones-Showcase Evaluation 12," and "Rural Passenger Transportation and ITS Integration Program," a potential project sponsored by the Federal Transit Administration (FTA) and the California, Oregon and Nevada Departments of Transportation.

Originally born in Tehran, the capital city of Iran, Ali came to the United States in 1978 at the age of 22. He persistently pursued his education attaining first a BS in Mathematics, then a BS in



Civil Engineering, an MS in Civil Engineering, and finally a Ph.D. in Transportation Engineering in 1995 from Iowa State University. He has spent the majority of his professional career working in research and teaching classes for the Civil and Construction Engineering Department, Center for Transportation Research and Education, and the Center for Advanced Technological Development at his alma mater. Ali's work has been extensively published, particularly

in the fields of work zone safety and speed reduction technologies.

Ali has been married to his wife, Kay, for twenty-five years and has three children. Quickly acclimating to life in sunny California after his lengthy stay in Iowa, Ali enjoys long walks and hikes, a good book, and his favorite TV shows. Welcome, Ali!

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**Manjunathan Kumar:  
Research Associate**

New Research Associate Manju Kumar started with WTI last summer, and already his work here has a definite "west coast" focus. Three of his four current assignments are part of the California-Oregon Advanced Transportation Systems (COATS) Showcase project: an evaluation of automated wind warning systems, documentation of case studies on maintaining rural ITS devices, and the creation of a website to define and promote the benefits of ITS technologies used in Oregon. He will also be evaluating various speed control ITS technologies in rural highway construction areas (work zones).

Manju's research at WTI is well suited to his background. He has extensive experience in the design, deployment and evaluation of Traffic Signal Priority Systems (TSPS), as well as using National ITS Architecture, simulation analysis, land use modeling, and advanced computing methods in his transportation projects.

Originally from India, Manju graduated with a Bachelor of Science degree in Civil Engineering from the prestigious Indian Institute of Technology, Madras (IIT M) in 2000. He then received a Master's Degree in Civil Engineering (Transportation Systems Engineering Emphasis) from Virginia Tech in 2002. During his graduate studies, he worked as a Research Assistant at both the Center of Urban Transportation Research at the University of South Florida, and the Virginia Tech Transportation Institute.

Manju is settling into life here in Bozeman, Montana. When not at WTI, he enjoys long workouts at the gym, reading books, solving puzzles and watching movies. He is looking forward to putting his soccer skills to use this season in Bozeman.

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## Is Engineering in Her Future?

WTI has been a long-time supporter of the efforts of Professor Anders Larsson (Civil Engineering) to educate elementary school-age children across Montana through the Bridges and Dams program. The program provides children with a hands-on exploration of bridges and dams in order to excite them about applied math and science.

This year, WTI received funding from the Engineering Information Foundation to embark on an outreach program, which utilizes the Bridges and Dams curriculum to specifically target groups underrepresented in the engineering profession. The program trains female undergraduate and graduate engineering students to conduct Bridges and

and Dams curriculum. Workshops for young girls are scheduled to begin this spring with trips to reservation schools planned for early this summer.

## WTI Receives NSF Funding to Host Undergraduate Researchers during Summer 2003

This summer, eight undergraduate students from various colleges and universities nationwide will travel to Montana to participate in a ten-week program at WTI in rural transportation research. The newly established Research Experience for Undergraduates (REU) program is funded by the National Science Foundation (NSF)/Department of Defense (DOD), with the goal of increasing interest on the part of undergraduates in research and academic careers.

Students selected for the program will conduct research on a specific topic related to a rural transportation issue. In addition to their research, they will have the opportunity to explore the transportation field through seminars, workshops, and fieldtrips. Program participants will see animal-vehicle detection systems at work in Yellowstone National Park, a Traffic Management Center in Salt Lake City, and a variety of other Intelligent Transportation Systems functioning in a rural context.

By the end of the ten-week program, undergraduate participants will gain hands-on experience in the field of transportation research and will have a better idea of what academic, research, and professional careers are available to them in this growing field.



*MSU Engineering Students learn how to conduct Bridges and Dams workshops*

Dams workshops for local girls clubs and at elementary schools in tribal regions across Montana. The program is designed to interest girls and Native American children in science, to provide positive role models, and to broaden the appeal of engineering as a profession.

Eight MSU engineering students have already been trained in the Bridges

### **Danielle Reagor Receives UTC Student of the Year Award**

Each year at the Transportation Research Board annual meeting in Washington, DC, the U.S. Department of Transportation Research and Special Programs Administration honors the most outstanding student from each University Transportation Center (UTC). The UTC Students of the Year are selected based on their accomplishments in research, academics, professionalism, and leadership. The Western Transportation Institute selected Danielle Reagor as its 2002 Outstanding Student.

Ms. Reagor completed her Masters of Science degree in Civil Engineering at Montana State University in December 2002. Supported by a Graduate Fellowship from the Western Transportation Institute, she conducted her thesis work on *Montana's State Truck Activities Reporting System (STARS)*. The STARS program consists of weigh-in-motion (WIM) and automatic vehicle classification (AVC) systems deployed across Montana's highway system. The objectives of the program are to improve the efficiency of MDT's commercial vehicle enforcement program and to improve the quality and quantity of truck weight and classification data.

While in school, Danielle gained extensive experience in the fields of roadway design and traffic planning and engineering through her internships. As an undergraduate, she worked for the Montana Department of Transportation in the Road Design Unit at MSU, and during the summer of 2001, she was an intern at Kaku Associates in Santa Monica, California. Ms. Reagor is a member of Chi Epsilon, the National

Civil Engineering Honor Society, and the Institute of Transportation Engineers (ITE). She also served as President of MSU's nationally-recognized ITE Student Chapter.

Upon completion of her Master's degree, Danielle went on to work for the Transportation Group, a division of En-



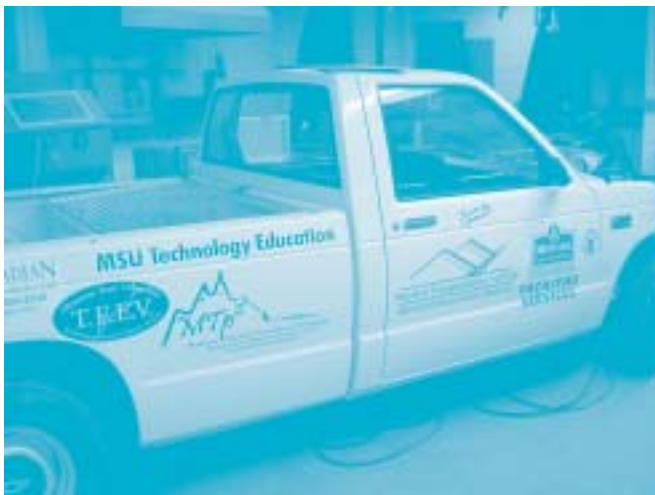
*Danielle Reagor (center) receives her Student of the Year Award from J. Richard Capka (Deputy Administrator, FHWA) and Ellen Engleman (Administrator, Research and Special Programs Administration).*

gineering, Inc., in Billings, Montana. She is currently working on several projects, including various Traffic Accessibility Studies, the Billings-area Bike and Pedestrian Plan Update, Bike Trail – Street Crossing Design Guidelines, and a design of the Shiloh Road Corridor in Billings, Montana.

Congratulations, Danielle! We'll miss you at WTI but are proud of your accomplishments.

**Students to Convert and Test Electric Vehicle for Campus Use**

An MSU class project will soon result in a revitalized vehicle for Facilities Services, thanks to the support of many partners, including WTI. The MSU Technology Education class is getting first hand experience in converting a gasoline truck to electric power. Students are participating in all aspects of the project, from yanking out the old engine to installing and testing the new engine, electric batteries, and related equipment. The truck, which had a failing engine and 120,000 miles on it, was donated by MSU Facilities Services. When the project is complete, the class will give the truck back to Facilities Services to use on campus. WTI and the MSU Extension Service Pollution Prevention Program provided major support for this project by contributing toward the cost of parts, which totaled more than



\$14,000. WTI funding went toward the purchase of the vehicle conversion kit. Additional donations were received from numerous Bozeman parts manufacturers and auto supply stores.

**“Making Connections”:  
Theme of Upcoming  
ICOET Conference**

The International Conference on Ecology and Transportation has been scheduled for August 24-29 in Lake



Placid, New York. The theme of this year's conference will be “Making Connections,” with the goal of helping participants better understand the relationship between ecology and transportation. Activities will revolve around focus areas such as restoring habitat connectivity, reducing animal-vehicle collisions, and establishing strong partnerships. WTI is sponsoring production of the proceedings. For more information on the conference, go to [www.itre.ncsu.edu/cte/icoet/downloads/ICOET\\_Info.pdf](http://www.itre.ncsu.edu/cte/icoet/downloads/ICOET_Info.pdf)



### **Field Course Information Available On-line**

Our last newsletter (September 2002) detailed the field course co-sponsored by WTI in Banff National Park. The course offered transportation officials a first-hand look at the extensive wildlife crossing structures and fencing installed along the Trans-Canada Highway, as well as the opportunity to hear presentations from the experts who developed the mitigation program. Course proceedings are now available on-line at [www.itre.ncsu.edu/cte/gateway/home.html](http://www.itre.ncsu.edu/cte/gateway/home.html). From the home page, scroll down to "Education and Training" and click on the "September 2002 Wildlife Structures" link.

### **WTI Researcher Elected President of ITS Pennsylvania**

Congratulations to Senior Research Associate Pat Wright. He was recently elected President of the Pennsylvania Chapter of the Intelligent Transportation Society of America for 2003. Pat is a longtime member of ITS, and has previously served in many other committee and leadership positions.

### **WTI Research Scientist Co-Authors Book on "Road Ecology"**

Island Press has released a new book entitled [Road Ecology: Science and Solutions](#). WTI is pleased to announce that one of the book's co-authors is Research Scientist Dr. Tony Clevenger of our staff. For ordering information about the book, go to [www.islandpress.org](http://www.islandpress.org).

Here is brief description from the Island Press website: A central goal of transportation is the delivery of safe and efficient services with minimal environmental impact. In practice, though, human mobility has flourished while nature has suffered. Awareness of the environmental impacts of roads is increasing, yet information remains scarce for those interested in studying, understanding, or minimizing the ecological effects of roads and vehicles. **Road Ecology** addresses that shortcoming by elevating previously localized and fragmented knowledge into a broad and inclusive framework for understanding and developing solutions. The book brings together fourteen leading ecologists and transportation experts to articulate state-of-the-science road ecology principles, and presents specific examples that demonstrate the application of those principles. Diverse theories, concepts, and models in the new field of road ecology are integrated to establish a coherent framework for transportation policy, planning, and projects. Topics examined include: foundations of road ecology; roads, vehicles, and transportation planning; vegetation and roadsides; wildlife populations and mitigation; water, sediment, and chemical flows; aquatic ecosystems; wind, noise, and atmospheric effects and road networks and landscape fragmentation.

**Road Ecology** links ecological theories and concepts with transportation planning, engineering, and travel behavior. With more than 100 illustrations and examples from around the world, it is an indispensable and pioneering work for anyone involved with transportation, including practitioners and planners in state and province transportation departments, federal agencies, and nongovernmental organizations.

## WTI is all over the World (Wide Web)

As a Technology Transfer tool, the Internet is very effective at making information about WTI's research readily available to interested parties across the country. WTI's website ([www.coe.montana.edu/wti](http://www.coe.montana.edu/wti)) not only contains background information about our mission and staff, it also contains descriptions of every one of our research projects.

If you haven't visited our website recently, you may not know that it has been expanded to include an additional website for one of WTI's largest projects, the California-Oregon Advanced Transportation Systems (COATS) Showcase. By clicking on the COATS link on our home page, you'll have access to information on each of the 15 current and planned evaluations that make up the Showcase project.

WTI's presence on the Internet, however, is beginning to extend well beyond our own website. Many of our projects now involve developing websites or material on behalf of other organizations, or collaborations to combine and organize research information into one website. For example, this newsletter contains an article ("Unique Partnership Produces Coordinated Transportation Handbook ...") that describes how WTI created a website for the Montana Developmental Disabilities Planning and Advisory Council to provide easy access to a new handbook on transportation coordination. The Montana Coordinated Transportation Website is available at [www.coe.montana.edu/wti/TrCoordn/index.html](http://www.coe.montana.edu/wti/TrCoordn/index.html). The website will also be available on the Developmental Disabilities Planning and Advisory Council

website at [www.ddpac.org](http://www.ddpac.org), and through links to other state departments.

Another WTI project resulted in a weather station website. WTI installed a remote weather station near Saco, Montana to provide weather data for a bridge instrumentation project nearby. The weather station includes sensors for wind speed and direction, temperature, humidity, and barometric pressure. The new



website is linked to the database so real-time weather data is displayed as it is collected. Since the weather station is physically located at Saco High School, the website is of particular interest and use to students, who use the information for science classes and other school projects. The Saco website is available at [http://wtigis.coe.montana.edu/saco/Saco\\_Current.htm](http://wtigis.coe.montana.edu/saco/Saco_Current.htm).

As a final example, WTI has entered into a partnership with the USDA Forest Service and Utah State to develop a joint database called The Wildlife Crossing Structures Toolkit. Located at [www.wildlifecrossings.info](http://www.wildlifecrossings.info), the database will incorporate research findings on wildlife mitigation from WTI's ARTEMIS Clearinghouse Project. (The original

# Administration

ARTEMIS database also remains available at <http://wtigis.coe.montana.edu/projects/animal/index.php>

We will keep you updated on our continued efforts to make WTI's research widely and easily available on the Internet, and through other effective forums.

## **New Faces, New Challenges for Administrative Staff**

Jessica Byerly, a Montana native and 2001 Montana State University graduate in English Literature, joined the WTI team in November 2002 as the new Administrative Associate in the Main Office. Her duties include answering phones and greeting visitors; arranging and managing travel, schedules, and documentation; and providing general administrative support to WTI staff. She comes to us following a year-long com-



mitment to the AmeriCorps as a Team Leader via the MSU Office for Community Involvement, where she helped in managing and assisting a sizable staff of part-time AmeriCorps members and their six distinct programs. She offers WTI strong communication skills, multi-tasking expertise, and a quick-wit-

ted sense of humor. Jessica takes over the position held by Robbi Colvin, who takes on new responsibilities in the business office.

Congratulations on the promotion, Robbi! Gracing our paychecks with her expertise and sense of humor, Robbi Colvin is enjoying her new position as a WTI Accounting Technician. Robbi worked as the Administrative Associate in the Main Office from July 1999 until September 2002, and after a little over three years she is excited to have the opportunity to try something new. Her favorite aspects of her new position are the "constant learning experience" payroll affords and the opportunity to be in contact with the continuously growing mass of students and staff at WTI. Robbi, with her ever-present dish of sweets and smiling face, is a welcome addition to the business office that keeps WTI running smoothly.





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Non-Profit Org.  
U.S. Postage  
PAID  
Permit No. 69  
Bozeman, MT 59715

**Issue 1, Volume 7, March 2003**

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This newsletter is published semi-annually by the Western Transportation Institute at Montana State University-Bozeman to inform readers about our research and outreach activities. Readers are encouraged to contact the Principal Investigator for project specific information. Contact the editor for reprint permission or other editorial concerns.

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