



January 2010 Newsletter

Message from the Director:

As the first decade of the 21st century comes to a close, there has been much discussion of its highlights and significance. Many see it as a great digital decade, with explosive growth in the development and availability of information and communication technologies. However, the other trend that has moved to center stage in the last few years is the collective desire to "go green." The yearning for sustainability has grown well beyond the advocacy efforts of traditional environmental interests to become a global concern and movement for change.

Transportation is adopting a greener approach to its growth and development. In fact, WTI has long recognized that today's transportation infrastructure, while allowing for increasingly efficient, convenient and safer movement of people and commodities, contributes to water, soil, and air pollution, and disrupts plants, wildlife, waterways, and landforms. The good news is that technologies exist to alleviate these effects but, to date, these promising practices are just beginning to be identified, disseminated, and implemented.

One of WTI's major initiatives is to be a leader in the development of more environmentally sensitive or "green" highways. In fact, understanding that the nation's surface transportation network consists of more than just highways, WTI has a plan to promote Green Transportation Systems (GTS). Building on our successful record of interdisciplinary research, we will draw on expertise from all eight of our research focus areas to integrate technologies, formulate and disseminate best management practices, and promote their use through a comprehensive technology transfer program.

Fortunately, we have a foundation of sustainability research upon which to build. In this issue of the newsletter, we will highlight three of our research focus areas that are at the forefront of demonstrating how transportation needs can be balanced with resource protection and conservation priorities:

- Winter Maintenance and Effects - WTI researchers have done extensive research to understand and develop recommendations for how highway agencies can keep roads safe and clear without causing corrosion to the infrastructure or threatening nearby water supplies and habitats.
- Infrastructure Maintenance and Materials - Recognizing the ever-growing need for more sustainable and efficient road designs, WTI continually experiments with alternative construction materials such as recycled compounds and energy saving technologies.
- Road Ecology - WTI continues to be a national leader in identifying the most effective methods in reducing wildlife vehicle collisions, as well as training transportation professionals on how to select and implement the best approach.

As always, we encourage you to contact us if you see opportunities for partnership within our research efforts. We look forward to working with you toward a greener tomorrow.

Research

Winter Maintenance and Effects - Balancing Safety with Sustainability

Each winter, road agencies work diligently to keep roads clear and safe for travelers. Technological advancements have made new products and equipment available to make this process easier and more efficient. However, transportation agencies are also increasingly aware and sensitive to the adverse effects some of these products may have on the surrounding environment or the longevity of the roadways themselves.

WTI's Winter Maintenance and Effects (WME) program is focused on evaluating the effectiveness of maintenance techniques, as well as identifying any other possible impacts that could occur through ongoing use. The WME staff has years of training and expertise in chemical, environmental and structural engineering, and access to specialized research facilities in WTI's recently expanded Corrosion and Sustainable Infrastructure Laboratory. "We're targeting our research program to address the specific questions that transportation managers have," said Dr. Xianming Shi, who leads the research in the Laboratory. "In the past, they just wanted to know what worked and how much it cost; now they have questions about metal corrosion, concrete deterioration, and impacts to water quality."

Through both laboratory and field research, WME staff strives to deliver findings that are not only state-of-the-practice, but also easily put to use. Project deliverables may take the form of best management practices targeted to a specific type of roadway, or tools to help an agency select a deicing product that best meets their needs. As a result, the WME program is conducting research

for a growing number of state and federal transportation agencies who are looking for maintenance guidance and recommendations that take sustainability issues into account:

- As early as 2004, WTI developed recommended practices for the Montana Department of Transportation on how to manage winter traction materials on roadways near bodies of water, in order to minimize the risk of harmful runoff. In related research, on behalf of the National Cooperative Highway Research Program (NCHRP), WTI is now developing an autonomous sensing system that will monitor the runoff near highways for potentially harmful materials.
- For the California Department of Transportation, WME researchers recently evaluated the effectiveness of planting reinforced native grass sod along highways. "This project is exciting because it is expected to have a wide range of environmental benefits," said Dr. Shi, "everything from reducing the need for herbicides to increased water conservation."
- WTI has completed research for the Colorado Department of Transportation to help them select safe and effective liquid deicers. CDOT was specifically interested in selecting deicers that would not cause premature damage to their concrete substructures.

What's next for Winter Maintenance and Effects?

In addition to helping agencies make decisions that are tailored to their needs, WME researchers hope that agencies will have the tools to look at the long-term implications of their winter maintenance programs. "By showing agencies that it is possible to balance maintenance needs with sustainability issues, we may prompt them to see the larger view," said Shi; "in time, they might start integrating all of these issues into their transportation planning efforts."

For more information on WTI's Winter Maintenance and Effects research, contact [Xianming Shi](#).

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Infrastructure Maintenance and Materials

In response to the ever-growing need for our transportation infrastructure to be sustainable and efficient, WTI is conducting extensive research on the use of recycled materials and energy saving technologies in infrastructure construction. At this time, WTI is specifically looking at several new concretes made with recycled materials, as well as a new energy efficient method of producing asphalt pavements. The ecological benefits of these efforts are substantial, and include lower energy use with all of its intended environmental benefits, a reduction in disruption of virgin lands by mining for construction materials, and a reduction in the landfill space needed for what were formerly considered waste products. The projects described below and future work in this area will help ensure the sustainability of our transportation infrastructure well into the future.

Electricrete: 100 % Fly Ash Concrete

For more than a decade, WTI has been developing a new type of structural concrete in which 100 percent of the Portland cement (the binder used in conventional concrete) is replaced with fly ash, a byproduct of burning coal to generate electricity. Each year, over 71 million tons of fly ash is produced in the United States, of which 59 percent are disposed of in landfills. While fly ash has been used in concrete construction for years, it typically is used to replace less than 25 percent of the Portland cement in a concrete mixture. Several years ago, while experimenting with a variety of alternate building materials, WTI discovered a concrete mixture made with 100 percent fly ash for the binder offered exceptional performance in terms of strength, comparable or exceeding that of conventional Portland cement concrete. Ever since that discovery, WTI has been evaluating the durability of this new concrete in a variety of conditions, as well as investigating its commercial production using conventional redmix equipment. As part of this work, several field demonstration projects using the product have been conducted, including all of the concrete used in the construction of the shop, pump houses and sidewalks at TRANSCEND, WTI's field research facility in Lewistown, MT.

Recycled Glass as Concrete Aggregate

In pursuit of an even "greener" construction material, researchers at WTI began investigating the use of pulverized post consumer glass as the aggregate in 100 percent fly ash concrete. Considerable concern exists with using pulverized glass as aggregate in conventional concrete, as deleterious chemical reactions are known to occur between Portland cement and certain silicates in conventional aggregates. Thus, in addition to establishing the basic set and strength characteristics of fly ash/glass aggregate concretes, WTI has been studying their performance relative to possible adverse reactions between the fly ash binder and the glass. No issues have been discovered in this regard to-date. Once again, as the performance of this material is being thoroughly investigated in the laboratory, work is being done on moving it out of the laboratory and into practice. When WTI's new building was constructed on the Montana State University campus, 100% fly ash, glass aggregate countertops were installed in the kitchen and copy room. Of considerably greater significance, 100 percent fly ash, glass aggregate concrete was used extensively on a commercial building project in Missoula, MT. MacArthur, Means, and Wells (MMW) Architects of Missoula enlisted WTI to help achieve a Platinum LEED certification on a building they were working on for Missoula Federal Credit Union (MFCU). The footings and foundation walls, floor slabs, exterior precast architectural wall panels and two interior load bearing beams were constructed of fly ash, glass aggregate concrete.

The MFCU project used 682 tons of fly ash from the Corette Power Plant in Billings, MT, equivalent to a 20'x20'x20' space in a landfill and representing a 341 ton saving of CO₂ emission by not using Portland cement - and yet it used only 3 percent of what the Corette plant produces in a year. The 614 tons of recycled pulverized glass, the equivalent of 2,456,000 twelve ounce beer bottles, were provided by the Montana Department of Environmental Quality, and also are equivalent to a 20'x 20' x 20' space in a landfill. Imagine the savings if this material could be used in pavements and bridges. "Based on its engineering performance and environmental benefits, this new material could have a profound impact on transportation and other infrastructure construction," says Doug Cross, WTI Research Associate. "It has attracted keen interest from around the country and literally from around the world".

Recycled Asphalt Pavement as Concrete Aggregate

WTI is just beginning a project with the Montana Department of Transportation to evaluate the properties of conventional concrete made with recycled asphalt pavement as the aggregate. Each year, the highway construction industry in the United States produces over 100 million tons of reclaimed asphalt pavement (RAP) through standard rehabilitation and construction of our nation's roads. Although this reusable material has been put to use in some applications (usually in the form of asphalt paving), a large amount of this material remains unused and is either stockpiled or land filled. Alternative uses for this material are needed. One possible use for this material is the replacement of conventional aggregates in Portland cement concrete pavement. Preliminary research has demonstrated the feasibility of using RAP in this application; however, these research efforts are limited and have focused primarily on short-term mechanical characteristics of the material and have not addressed long-term durability characteristics such as alkali silica reactivity (ASR) or freeze-thaw resistance. Therefore, the proposed research will focus on further characterizing RAP in Portland cement concrete (including durability), a necessary step in validating its use in transportation applications.

Warm Mix Asphalt

As energy costs increase, transportation agencies look to technological advances that can lead to more fuel efficient operations. For highway construction and repair, one promising strategy that is gaining national prominence is the use of Warm Mix Asphalt (WMA) as an alternative to conventional Hot Mix Asphalt (HMA).

As its name implies, WMA is produced at temperatures that are 30°F to 100°F lower than typical HMA. "Using WMA to produce and compact asphalt is very appealing to highway agencies," says Dr. Steve Perkins, Professor of Civil Engineering at Montana State University. "It could reduce construction costs by lowering energy use, improving quality and efficiency of construction, and improving environmental stewardship through decreased air emissions."

Despite these potential benefits, WMA has demonstrated varying levels of performance in experimental studies and construction projects in Europe and the U.S. WTI recently completed a research project evaluating all of the recent research on WMA. In addition to producing a synthesis on the state-of-the-practice, specific recommendations were formulated for the Montana Department of Transportation on how to incorporate WMA technologies into their construction practices. A follow-on project is being proposed that consists of full scale field evaluation of WMA test sections.

"Using WMA, pavements can be constructed in cooler weather, which greatly extends the length of the paving and patching season in colder regions," added Perkins. "This will make roadway maintenance easier not only in Montana, but in northern states across the country."

What's next for Infrastructure Maintenance and Materials?

The global consciousness is turning green. The yearning for sustainability—of natural resources as well as our nation's collective quality of life—is taking center stage as we embark on the second decade of the 21st Century. The Federal Highway Administration's (FHWA) "Highway of the Future" Strategic Plan addresses the need for environmentally sensitive highway infrastructure. WTI has always been committed to engaging in research that improves the design and maintenance of rural highway infrastructure. Through research on green materials and construction methodologies, such as that currently underway on innovative concretes made with recycled materials and warm mix asphalt technologies, WTI is working now for a sustainable future.

For more information on WTI's Infrastructure Maintenance and Materials research, contact [Eli Cuelho](#).

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Road Ecology

There is no simple solution to eliminating wildlife vehicle collisions (WVC) or the barrier effects roads have on wildlife populations. However, research shows that wildlife underpasses and overpasses, in combination with fencing, can reduce mortality by at least 80 percent, sometimes as much as 100 percent. Building crossing structures, however, is a costly measure in the short-term. But WTI's cost-benefit analysis of a variety of WVC mitigations found that wildlife crossing structures, combined with fencing, can generate benefits in excess of costs on road sections that have a certain minimum number of collisions with large mammals. In addition, wildlife crossing structures, combined with fencing, are currently projected to be more cost effective than other measures that can reduce collisions substantially, such as animal detection systems. Wildlife crossing structures not only substantially reduce collisions with large mammals, they also allow for safe crossing opportunities for wildlife.

A growing body of literature and information has resulted from over a decade of increased implementation and research of wildlife crossing systems in North America. But technical guidelines and best management practices have not been widely communicated, and after ten years of increased building activity, engineers and land managers still lacked guiding principles. In spite of valuable kernels of information, a large void existed in devising functional designs based on criteria that were relevant to real management decisions. Until now....

Guidelines for Designing and Evaluating North American Wildlife Crossing Systems

In September of 2009, WTI published the [FHWA Handbook for Design and Evaluation of Wildlife Crossing Structures in North America](#). Sponsored by the Federal Highway Administration, and the culmination of extensive research and collaboration by WTI researchers Dr. Tony Clevenger and Dr. Marcel Huijser, the handbook provides technical guidelines for the planning and placement, design, and monitoring and evaluation of wildlife crossing structures that facilitate the safe movement of wildlife across roads and increase motorist safety. The handbook also specifies how to increase the effectiveness of established designs and recommends ways to design for particular species and species groups in different landscapes. The guidelines can be used for wildlife crossings on new or existing highways, highway expansions, and bridge reconstruction projects.

Performance evaluations can be a consistent aspect of wildlife crossing structure transportation projects. But WTI road ecologists have long recognized monitoring as an integral part of mitigating road impacts on wildlife crossings. "We do need to move beyond just measuring use," says Huijser. "We need to know how much use is needed to maintain or restore viable populations of selected species." Unfortunately, monitoring is rarely conducted long enough to meet the adaptation periods (or learning curves) wildlife need to begin using crossings on a regular basis. The handbook provides guidance on the increasing number of techniques available for monitoring wildlife crossings, designing sound monitoring programs, and evaluating performance for adaptively managing future transportation projects.

US 93 Phase II Post Construction Agreement

One needs only to drive up US Highway 93 in Montana to find a working example of effective monitoring in action. In 2000, the Confederated Salish and Kootenai Tribes, the Federal Highway Administration, and the Montana Department of Transportation signed a historic agreement regarding the reconstruction of a fifty six mile segment of U.S. Hwy 93 located on the Flathead Indian Reservation. This unique agreement between the three governments incorporated a wide array of new concepts in highway design and construction that stressed motorist safety, acknowledged and respected the cultural and historical values of the Tribes, attempted to better fit the highway to the landscape, and mitigated direct road mortality and the barrier effect of roads and traffic on wildlife.

Engineers and wildlife biologists of the three governments worked to develop designs and construct a series of wildlife crossing structures. Today, as a result of these efforts, this stretch of US 93 hosts more than 40 wildlife crossings designed to accommodate safe crossing opportunities for a wide range of species ranging from fish and turtles to deer and grizzly bears.

Prior to construction, WTI was contracted to conduct a pre-construction monitoring project to assess wildlife crossing at selected locations where crossing structures would be placed. From 2002-2005, WTI researchers used tracking beds to sample highway crossings, primarily of deer and bears. The results provided an excellent baseline to evaluate the effectiveness of the crossing structures.

On December 7, 2009, the Montana Department of Transportation approved the US 93 Phase II Post Construction Agreement. This five and a half year agreement gives WTI and its partner, the Confederated Salish and Kootenai Tribes of the Flathead Nation, the opportunity to evaluate the effectiveness of the newly built wildlife crossing structures and wildlife fencing. Researchers will investigate the mitigation measures in terms of human safety, safe crossing opportunities for wildlife, and they will conduct a cost-benefit analysis. These efforts will also benefit future wildlife-vehicle collision reduction and wildlife crossing mitigation projects.

What's next for Road Ecology?

WTI and multiple transportation partners are hosting ARC: North American Wildlife Crossing Structure Design Competition. The goal of the competition is to spur new creative thinking about cost-effective and context-sensitive designs that afford safe passage for wildlife over roadways. The ARC Competition will challenge entrants to design structures of the future while also reconnecting habitat for wildlife.

Students, universities and professionals will engage in the multi-disciplinary nature of road ecology with a real world application. West Vail Pass, Colorado, ninety miles west of Denver along Interstate 70, has been chosen as the official site for the competition. With species ranging from the diminutive marten to stately moose and where natural and human-dominated worlds collide, West Vail Pass serves as the perfect setting for design teams to let their imaginations run wild.

"The road network, and all the luxuries it affords, is a remarkable societal and engineering achievement. But unless we, as a society, figure out a way to lessen its impact on wildlife and wild processes - the relevance of that achievement is diminished," says Dr. Tony Clevenger, wildlife ecologist for WTI and initiator of the ARC Steering Team. "The crossing structures of today are built of concrete and steel. The possibilities for lighter, more durable, mobile and less expensive structures exist - the ARC competition encourages innovative thinking out of the box."

Interested sponsors and competitors may find additional information and registration requirements by visiting www.arc-competition.com. The contest is scheduled to launch in the spring of 2010.

For more information on wildlife crossing structures or other Road Ecology research please contact Rob Ament rament@coe.montana.edu.

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Outreach

2010 National Summit for Rural Traffic Safety Culture



National Summit for Rural Traffic Safety Culture

Initiated in 2009, the first National Summit for Rural Traffic Safety Culture gathered over 60 safety researchers, practitioners, and policy makers to discuss the cultural factors that define our values and govern our behavior as they relate to traffic safety. Building on the first summit's overwhelming success and the enthusiasm of the participants, the Summit has become an annual event. Sponsored once again by the Western Transportation Institute and the AAA Foundation for Traffic Safety, the second annual National Summit for Rural Traffic Safety Culture will be held July 11-13, 2010 in Big

Sky, Montana.

The objective of this year's summit is to increase understanding and unify concern amongst traffic safety researchers, practitioners, and policy makers about the role of traffic safety culture on (1) driver behavior that increases traffic crash risk; (2) organizational factors that impede institutional progress for traffic safety, and (3) paradigms and tools that can be applied to changing these cultural factors. By affecting the audience with this information, it is hoped that future practice, policy, funding, and research agendas will prioritize the role of culture in rural traffic safety.

"We need to think about traffic safety from a systems perspective and realize that driver decisions to take risks do not occur in a vacuum. Rather, society itself embodies beliefs and attitudes that impact all levels of this system - most notably the decisions that drivers may make about engaging in risky driving behavior or complying with safety interventions and laws," says Nic Ward, Senior Research Scientist at WTI and conference organizer. "Unless we tackle the outer shell of this system, we are not going to get the change we want inside the system. Thus, we must focus on culture and try to change society's attitudes and beliefs toward how people act in the societal activity of driving. We must learn to drive for each other and not just ourselves."

The 2010 registration information for the Summit will be posted by March 2010. For lodging, agenda, and travel tips for the 2010 event as well as proceedings from 2009, please visit www.RuralTSCSummit.org.

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Chinese Delegation Visits MSU to Explore Collaboration with WTI

by Melynda Harrison, MSU News Service

A delegation from the Chinese Academy of Transportation Sciences (CATS) visited the Western Transportation Institute (WTI) at Montana State University this week to explore the possibility of a joint research program. The collaboration would initially focus on road ecology and winter maintenance programs.

"We are rapidly developing our highway facilities and infrastructure in China," said Chen Jiding, director of CATS' Center for Transport, Environment and Safety. "We have done quite a bit with the greening of highways, soil reclamation and revegetation, but wildlife crossings is a new field of study for us."



Members of a delegation from the Chinese Academy of Transportation, Chen Jiding, Lin Xiaoping and Li Zongyu, inspect road materials in a Western Transportation Institute laboratory. WTI research director and civil engineering professor Jerry Stephens looks on. (MSU photo by Kelly Gorham)

The Chinese spend around \$150 billion annually on the construction of highway facilities, according to Jiding. In comparison the U.S. spent approximately \$65 billion on the construction and maintenance of highways in 2006.

The Chinese delegation, which also included Lin Xiaoping, Li Hua and Li Zongyu, heard about WTI from the book "Road Ecology"; WTI's Tony Clevenger was a co-author in the book. The projects and research in the book addressed some of the issues China's Ministry of Transport is facing, according to Jiding. The Chinese have just published their companion to the book that specifically addresses China.

"WTI has done very good road ecology work and we can learn from them." Jiding said. "There is not much new road construction in the U.S. anymore, so maybe WTI researchers can use China as a test bed for various practices."

WTI is one of only four rural transportation centers in the U.S. The U.S. Department of Transportation designated WTI as a University Transportation Center (UTC) in 1998. It is well recognized for its work on preventing collisions between wildlife and vehicles. WTI provides numerous opportunities for students to conduct research in civil engineering and road ecology.

The group spent Tuesday introducing themselves and talking about their respective projects and research. They toured WTI and other MSU facilities. The Chinese delegation tried out WTI's driving simulator, inspected materials used for road construction and saw the winter maintenance laboratory.

Wednesday morning started with a trip to the I-90 wildlife crossing project at Bear Creek underpass east of Bozeman. The project's goal is to determine how wildlife use crossings designed for them. The Chinese delegation observed the project's motion detector cameras and track bed—a two-meter wide sand bed that records animals' prints when they use the underpass. They spent the rest of the day in Yellowstone National Park.

"Even though we have some bridges and tunnels for wildlife in China, it has not been well studied," said Jiding. "There has been little research on how to use the best practices as reported in WTI research to usher wildlife through the crossings."

Sharing research is one aspect of the collaboration the group from CATS hopes to embark on with WTI.

"We don't know where this collaboration will go," said Rob Ament, WTI road ecology program manager. "We may work on research projects together or participate in student and researcher exchanges or provide them with technical workshops."

"WTI is recognized as having one of the premiere road ecology programs in the world," Ament said. "We hope to develop a program that will be mutually beneficial."

National Scan of Best Practices for Chemical Treatments on Unpaved Roads

The need for advancing road dust control and soil stabilization technologies was highlighted at the inaugural Road Dust Management Practice and Future Needs Conference in San Antonio, TX in 2008. Practitioners, scientists, and vendors convened for the first time to discuss the state of the practice and to determine the future direction of unpaved road management. The four themes explored at the conference were dust suppression, soil stabilization, environmental impacts of dust suppressants used to control dust, and planning and design for the future.

FHWA, an original sponsor of the 2008 conference, is undertaking a national scan of best practices for unpaved road management, with special emphasis on chemical treatments other than cement, lime, fly-ash, and asphalt emulsion. These treatments, which may overlap with some mechanical treatments such as bentonite, are used for numerous reasons as part of unpaved road maintenance programs including, but not limited to, dust control, improving the properties of wearing course aggregates, reducing road maintenance and reducing the rate of gravel loss. Treatments are either sprayed directly onto the road surface at periodic intervals, or mixed into the unpaved road aggregates during construction, gravel replacement, or separate stabilization exercises.

The National Scan Tour will take place throughout 2010. A diverse team of stakeholders under the sponsorship of FHWA and the coordination of the Western Transportation Institute have developed a survey as the initial step of the scan. The survey will help obtain a better understanding of why agencies use chemical treatments as part of their unpaved road maintenance strategy, what type of treatments are being used, to what extent they are being used, and what sites to include in the scan tour.

If you are a practitioner, decision maker, or researcher involved in unpaved road management, you are invited to take the 20 minute survey as part of The National Scan of Best Practices for Chemical Treatments on Unpaved Roads. Participation is anonymous and will greatly assist FHWA in identifying future research and documentation needs pertaining to effective and sustainable use of chemical treatments on unpaved roads.

Take the survey at www.RoadDustInstitute.org. Responses will be accepted until January 31, 2010.

For more information contact [Angela Kociolek](#), WTI, or [Roger Surdahl](#), FHWA-CFLHD.

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Division Street



Since making its screen debut as an official selection at Patagonia's 7th Annual Wild and Scenic Environmental Film Festival in January, *Division Street* has been on a successful wild ride with no end in sight! The creation of WTI graduate fellow, Eric Bendick, *Division Street* highlights sustainable road projects sensitive to wildlife's needs for the 21st century. As roads have fragmented wild landscapes and ushered in the age of urban sprawl, *Division Street* introduces us to a new generation of ecologists, engineers, city-planners, and everyday citizens who are transforming the future of the American road.

After a year of screenings and competitions, including over 20 locations throughout the country and a side trip to New Zealand, the road led to Washington, D.C. where *Division Street* was shown at the U.S. Capitol Visitor Center on October 26. The screening was well received with attendees representing senators' offices, government agencies, conservation organizations, academia, and private practices.

The film has been selected for the 18th Environmental Film Festival in the Nation's Capital, March 16 - 28, 2010. The National Academy of Sciences (NAS) will also host the film at their auditorium in Washington, D.C., on March 27th.

Division Street 2009 Successes

1. Winner: Florida Nature Documentary Award, Orlando Film Festival 2009
2. Finalist: Best Conservation Film, Jackson Hole Wildlife Film Festival 2009

3. Finalist: Best Feature Documentary, Reel Earth Film Festival (New Zealand) 2009
4. Finalist: Wild & Scenic Film Festival (Nevada City, CA) 2009
5. Finalist: International Wildlife Film Festival (Missoula, MT) 2009
6. Official Selection: Blue Planet Film Fest, (Los Angeles) 2009
7. Finalist: American Conservation Film Festival, (Shepherdstown, WV) 2009
8. Official Selection: Nevada Wilderness Film Festival (Reno, NV) 2009

For more information on Division Street's touring schedule or how to bring the film to your community, please contact Eric Bendick at ebendick@gmail.com.

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Education

Outstanding Student of the Year

For the past 18 years, the U.S. Department of Transportation (USDOT) has honored an outstanding student from each University Transportation Center at a special ceremony held during the TRB Annual Meeting. Jessica Mueller was selected as the Western Transportation Institute's Student of the Year for 2009.



Originally from Knoxville, Tennessee, Jessica obtained her undergraduate degree in Industrial Engineering at Tennessee Technological University and is currently pursuing a Master's degree in Industrial Engineering with the Human Factors group at Montana State University (MSU). She received a Graduate Transportation Fellowship award from the MSU Western Transportation Institute to conduct research involving the effects over time of providing defensive training to novice drivers. She is also currently working with naturalistic data reduction and analysis involving emergency medical personnel behavior and work environment while driving and in the rear patient cabin of a rural ambulance.

In addition to producing technical reports to project sponsors, Jessica contributed to a published paper in the Human Factors and Ergonomic Annual Meeting Proceedings, entitled *Effectiveness of a Multistage Driver Education Program for Novice Drivers*. Her work on *Differences in Subjective and Objective Data* was also selected for presentation at the Annual Regional National Occupational Research Agenda Symposium. Jessica has consistently demonstrated a strong aptitude in both research and academic pursuits and has shared her enthusiasm for her field by mentoring an undergraduate student on an independent project from October 2008 to May 2009. She has proven a critical asset to the human factors program at the Western Transportation Institute.

Jessica will be recognized at the 19th Annual Outstanding Student of the Year Awards ceremony, which will take place in January as part of the Council of University Transportation Centers (CUTC) annual banquet in Washington, DC. She will also receive \$1,000 in addition to paid travel to attend the 2010 Transportation Research Board Annual Meeting.

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WTI Student Success Stories

Zachary Freedman, a fellowship student at the Western Transportation Institute, completed requirements for his Masters degree in Civil Engineering this December. He defended his thesis entitled *Analyzing the Operational Effects of Passing Lanes on Two-Lane Highways*, which he completed under the mentorship of Dr. Ahmed Al-Kaisy. A portion of Zachary's thesis on *Estimating the appropriateness of a new performance measure: PI*, will be presented at a poster session during the 2010 Transportation Research Board (TRB) annual meeting in Washington, DC.

Tiffany Holland, a graduate student in Ecology and WTI fellowship recipient, will also be attending the 2010 TRB Annual Meeting. She received travel funds from the Dwight David Eisenhower Transportation Fellowship to present her work on wildlife mitigation measures along US Highway 93 at a TRB committee meeting.

Two 2009 Safe Passages Research Experience for Undergraduates (REU) participants were co-authors on a final NCHRP project report for the IDEA Program on *An Autonomous and Self-Sustained Sensing System to Monitor Water Quality near Highways*.

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New Projects

National Technical Assistance Center for Parks and Public Lands

Project Objective: The objective of this project is to create a national technical assistance center that provides federal land managers with easy and expedient access to technical support, training and information on alternative transportation issues and resources.

[Find out more »](#)

Validating the Durability of Corrosion Resistant Mineral Admixture Concrete

Project Objective: The objectives of this research are to validate chloride diffusion coefficients of mineral admixture concrete mix designs currently developed by departments of transportation (DOTs) for corrosion mitigation, and to verify the adequacy of existing measures to mitigate corrosion caused by exposure to marine environments and deicing salt applications.

[Find out more »](#)

The I-70 Eco-Logical Field Test

Project Objective: The objective of this project is to assist the Center for Native Ecosystems (CNE) with developing a wildlife mortality and habitat connectivity monitoring and evaluation program, and with developing a mitigation plan for the I-70 Corridor in Colorado from Evergreen to Glenwood Springs in portions of the Clear creek, Blue River and Gore Creek Watersheds.

[Find out more »](#)

Medic's Work Environment During Rural Emergency Response - UTC

Project Objective: The principal purpose of this project is to observe activities and behaviors exhibited by emergency medical personnel along with the conditions that they are subjected to during emergency vehicle use.

[Find out more »](#)

Animal Detection System Project - UTC

Project Objective: The objective of this project is to investigate the reliability of a microwave radio signal break-the-beam animal detection system at the TRANSCEND facility in Lewistown, Montana.

[Find out more »](#)

Steel Pile Cap/Concrete Pile Cap Bridge Support Systems

Project Objective: The objective of this project is to conduct physical testing of MDT's new steel pipe pile to concrete pile cap connection design method.

[Find out more »](#)

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Staff

Awards:

WTI's Dr. Bill Jameson Wins Prestigious IEEE Award

Dr. Bill Jameson, Senior Research Scientist for Montana State University's Western Transportation Institute, has been honored by the IEEE with the 2009 Region 6 Outstanding Leadership and Professional Service Award. The IEEE is the world's largest technical professional society and is dedicated to fostering technological innovation and excellence for the benefit of humanity. It is designed to serve professionals involved in all aspects of the electrical, electronic and computing fields and related areas of science and technology that underlie modern civilization.



The Outstanding Leadership and Professional Service Award recognizes IEEE members who, through their professional and technical abilities, have made outstanding and noteworthy contributions to the Institute, their communities, fellow professionals and fellow man. Dr. Jameson's distinguished engineering career spans six decades encompassing military, private sector, public sector, education, and research and development experience. He has published peer reviewed articles and is a contributing author to a widely used communications systems text. He continues to serve as a valued researcher, educator, and professional and contributes endless service to his community and society.

Transitions:

Jeanie Peterson

Marijean (Jeanie) Peterson, manager of WTI's Corrosion and Sustainable Infrastructure Lab (CSIL), is transitioning to a new position within WTI. In addition to managing CSIL, Jeanie will perform administrative duties associated with TRANSCEND, including coordinating use and maintenance of the TRANSCEND vehicle fleet, managing financial accounts, coordinating use of the facility, and developing policies and procedures. She may be reached at marijean.peterson@coe.montana.edu.

New Staff:

Jenni West

Thanks to WTI's \$1.5 million grant award last spring from the Federal Transit Administration, WTI welcomes Jenni West as the manager for the new Technical Assistance Center (TAC). Jenni will assist with project management of the FTA grant project to develop a National Technical Assistance Center for Alternative Transportation in Parks and Public Lands, coordinate efforts between WTI and outside organizations (universities, consultants, and government agencies), and act as the central point of contact for the Center.

Jenni has over 14 years of experience in private industry and government/educational organizations, including economic development, international education, and event planning. Her transportation-related experience includes managing international logistics for a carpet manufacturer with factories in the UK, South Africa and Tasmania, and as a training liaison for Gulfstream Aerospace and Savannah Technical College. She earned a M.A. in Latin American Studies from the University of Kansas and a B.A. in Spanish from Western Carolina University. She lived in Germany for four years and has traveled in Europe in Latin America.

Jenni, her husband (who directs the Army ROTC program at MSU), and their three dogs moved to Bozeman from Georgia this past summer. She enjoys photography, hiking, camping, traveling, and foreign languages and cultures. She can be reached at jenni.west@coe.montana.edu.

Taylor Lonsdale

Taylor Lonsdale is a Research Engineer who has joined WTI as the Safe Routes to Schools (SRTS) Coordinator. SRTS is a federally funded, competitively awarded program that enables community leaders, schools, and parents to improve safety and encourage children to walk and bicycle to school. In the process, SRTS is reducing traffic congestion to help the environment and improving health, making communities more livable for everyone. Taylor's work under Montana's SRTS program is sponsored by the Montana Department of Transportation.

Taylor has 18 years of professional engineering experience. He worked for the Vermont Department of Transportation for eight years including seven years in the Structures Section designing bridges. He earned a B.A. in Civil Engineering from the University of Vermont.

Taylor and his wife, Gennifre, their two young sons, and two dogs have lived in Bozeman since 2001. Taylor skies, rock climbs, and plays soccer. And true to his role as a bike and pedestrian advocate, he can be seen on his bicycle - anywhere, anytime, any weather! He can be reached at taylor.lonsdale@coe.montana.edu.

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Montana State University College of Engineering
PO Box 174250
Bozeman, MT 59717
Tel: (406) 994-6114
www.westerntransportationinstitute.org

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