September 2000 Issue 2, Volume 4

Making rural travel and transportation safer, more efficient and convenient through high quality research, education, collaboration and outreach activities.



National Database on Animal-Transportation Research

Nearly 750,000 deer-vehicle crashes occur in the United States annually which in turn account for more than 120 human fatalities per year. Drivers may become desensitized to static animal warning signs because the signs are often seen when there is not a problem. Structures that remove animals from the roadway are either very expensive or do not allow the permeability necessary for healthy herds. Many state and county departments of transportation are grappling with these issues and trying new and innovative mitigation techniques. In order to optimize resources and solve this problem, it is imperative that we share our success and failures with other agencies so that together, we can work toward solving this complex issue.

To this end, the Artemis Clearinghouse is being developed and will act as a focal point for information sharing on the topic of animal/transportation related conflicts. The initial focus of this effort was born from the traffic safety impacts of striking large animals. However, it is envisioned that this information database will be expanded to include issues involving small animal deaths, effects on animal migration and ecological effects of roads. The Artemis Clearinghouse has three main components. First, a searchable document library containing an extensive collection of related research, specifically evalua-

tions of mitigation measures. Second, a cost benefit database containing research facts that attempt to quantify the potential costs or benefits organized by mitigation type. Third, a webpage containing the search engine for the document database, the cost/benefit database, a discussion forum, current news articles and relevant links to other websites.

Table of Contents

TRB Subcommittee on Reduction of Animal-Vehicle Crashes	2
Animal-Vehicle Crash Mitigation Project Update	2
Drought and Wildland Fires May Increase Collisions	3
California-Oregon Advanced Transportation Systems Showcase	4
COATS System Architecture Study	6
University Transportation Center Directors Meeting	8
WTI Welcomes a New Research Engineer	9
Habets Promoted to Research Assistant	10
Rural Outreach	11
Montana Winter Road Maintenance	12
MSU Students Earn National Honor	13
UTC Education Funding Helps Increase Scholarship Funds	14
New Education Coordinator at WTI	14
Introducing Engineering to Elementary Students	15
WTI Fellow is an International Essay Competition Finalist	15

Continued on Page 2.

College of Engineering Montana State University-Bozeman

Research

National Database on Animal-Transportation Research

- *Continued from Page 1.*
- The Artemis Clearinghouse is currently under development and will not be
- effective without the help of agencies involved in the research and mitiga-
- tion of the challenge of animal vehicle collisions. If you have information
- and are interested in contributing to this clearinghouse, please visit the
- Artemis Clearinghouse website at www.coe.montana.edu/wti/artemis or
- contact Patrick McGowen at 406-994-6303 or patm@coe.montana.edu.

TRB Subcommittee on Reduction of Animal-Vehicle Crashes

- Several agencies including WTI, Federal Highway Administration, several
- state departments of transportation, the Forest Service and several environ-



mental groups have developed a subcommittee within the Transportation Research Board to look at the issue of animal vehicle collisions. This will reside as a subcommittee within the TRB Committee A3B05: Safety Data Analysis and Evaluation. Initial efforts may involve the following elements.

- Develop a "magnitude of the problem" white-paper.
- Develop a national research agenda.
- Assist, develop and encourage workshops on the subject.
- Act as an information resource.
- Become a forum for discussion of this challenge.
- For further information please contact Pat McGowen at 406-994-6303 or patm@coe.montana.edu.

Animal Vehicle Crash Mitigation Using Advanced Technologies Project Update

The project initiated in January 2000 to investigate roadside animal detection/driver warning systems has released a Request for Proposals to provide equipment for demonstration. The equipment will be installed in at least one of the four demonstration sites each located in a different state (Montana, Indiana, Iowa, and Oregon). The RFP closed on September 13, 2000. The Technical Advisory Committee will select from these submissions at their September meeting.

Under the current schedule, the systems will be installed spring 2001 giving ample time to work out any inconsistencies before Fall migration. The evaluation will last two years beyond the installation, measuring system accuracy and driver response.

Drought and Wildland Fires May Increase Animal-Vehicle Collisions

By:

Justin Farrell WTI Graduate Fellow Two years of relatively mild winters have increased ungulate (hoofed mammal) populations across many areas of the country. Current drought conditions throughout the west have animals on the move. Add to that the preponderance of wildland fires in western states that further serve to displace animals from their habitat, and one could see a proportionately higher likelihood of animal-vehicle crashes this fall.

The effects of drought on wildlife have been documented for many species. It is not the amount of precipitation that is important to wildlife, merely the distribution of it. When water sources diminish and primary forage disappears, animals pursue secondary sources. According to the Natural Resources Conservation Service, many areas of the west are experiencing low surface water supplies which is a good indicator of drought. However, the foremost impact on ungulates is not the decreasing of surface water, but rather the loss of forage and nourishment. When perennial plants and shrubs lack an ordinate amount of water, they do not produce new, succulent growth (protein-rich) upon which most ungulates browse. Rather, perennials concentrate energy to maintain the woody stems that will continue to live. Another response to drought is noticed in the decreased supply of annuals, which correspond to a decrease in the distribution of rain, and make up a significant portion of the ungulate diet. Drought not only causes animals to migrate in search of sources of food but also causes ungulate malnourishment. Historically, it has also been



shown that weakened and undernourished animals tend to move down slope, often bringing them to highway right-of-ways, where travel (and browsing) tends to be easier. Increased down slope animal movement can mean increased likelihood of conflicts and the potential for animalvehicle collisions.

Similarly, wildland fire is a natural part of the environment for animals in the

west. Behavioral patterns indicate that ungulates find adequate warning of oncoming fire, which generally burns non-uniformly, and allows them to elude danger. Fire has immediate effects on the short-term seasonal habitat uses—by altering the distribution and movement of large mammals. Historically, elk and deer habitat use declines following the first year after a fire, but increases 2-3 times the control for many years after. Similar to drought, fire affects short-term population dynamics, again by altering habitat, and not by outright killing of animals. Wildland fires and droughty conditions are increasing the movement of animals in many areas and may result in a higher likelihood of animalvehicle collisions this fall.

California – Oregon Advanced Transportation System Showcase

By:

Chris Strong Research Associate Western Transportation Institute Since 1998, WTI has been working in cooperation with the California and Oregon Departments of Transportation on the California – Oregon Advanced Transportation Systems (COATS) project. The purposes of this project have been the following:

- identify the transportation and information needs within the study area;
- determine intelligent transportation systems (ITS) solutions that would be beneficial, cost-effective, and implementable for demonstration within the study area;
- identify, design, demonstrate and evaluate initial, small-scale "earlywinner" projects/systems; and
- develop a model deployment and evaluation plan that describes a strategic approach for implementing rural ITS strategies on a larger scale.

The fourth of these purposes paves the way for a project called Showcase. This is a broader demonstration and evaluation effort designed to explore the effectiveness of ITS in the rural environment of southern Oregon and northern California. Projects that are deployed as a part of Showcase are selected in a manner consistent with those selected through the earlywinner process and reflect the broader COATS vision as approved by the COATS Steering Committee.

Deployed technologies will include the following integrated infrastructure elements that will be connected to transportation management centers in each state:

- closed circuit television cameras,
- variable message signs,
- advisory television,
- flood detection/ warning,
- wind detection/ warning,
- road closure sign/ beacon,
- road weather information systems,
- highway advisory radio,
- slide detection,
- vehicle detection, and
- transportation management centers.

Project locations are shown on page 5. The initial \$5.5 million research, demonstration and evaluation project will examine individual project and cross-cutting issues relating to the following areas:

- system development and performance,
- cost effectiveness,
- institutional arrangements and impacts,

- integration issues, and
- education and training.

WTI's role in this project will be to develop an evaluation work plan, identifying strategies for evaluation as well as potential measures of effectiveness. Once Showcase projects are deployed, WTI will perform the evaluation studies and summarize and publicize results and lessons learned.

For more information about this project, contact Steve Albert at 406-994-

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6114 or stevea@coe.montana.edu.



COATS System Architecture Study

By:

Chris Strong Research Associate Western Transportation Institute The purpose of the COATS project is to encourage regional, public and private sector cooperation between California and Oregon organizations to better facilitate the planning and implementation of intelligent transportation systems (ITS) in a bi-state area extending between Eugene, Oregon and Redding, California.

One critical component to the successful implementation of intelligent transportation systems is a system architecture for the region under study. Having a regional system architecture offers several benefits. It facilitates regional integration by helping agencies and other stakeholders identify and plan for the many integration and information sharing opportunities which ITS offers. It provides guidance for how projects implemented in stages should fit together, improving interoperability between the projects, making efficient use of scarce resources, and facilitating future ITS expansion in the region. For these reasons, the development a regional architecture was deemed to be critical to the success of the COATS project.

The COATS architecture was developed from earlier work performed by WTI which ruralized the National ITS Architecture, using the Federal Highway Administration's Turbo Architecture software package. This allows COATS to maximize its ability to leverage federal funding for future COATS deployments and enables other ITS systems that will be developed for use throughout the U.S. to operate with systems in the COATS region. While ITS plans typically must include consideration of systems architecture, the COATS regional architecture has several distinguishing characteristics.

<u>Geographic scale</u>. The COATS study area includes parts of thirteen counties in northern California as well as the southern half of Oregon, including approximately 80,300 square miles. This represented a technical challenge in terms of how to incorporate the hundreds of stakeholders who are involved in the transportation system in the study area. Success required demonstrating to stakeholders the local applicability of the architecture while simultaneously emphasizing its regional benefits.

<u>Subregional architectures</u>. To provide local relevance, the COATS study area was subdivided into four subregions. Architectures were developed for each subregion to better represent how stakeholders at a local level interact with each other. Interconnections between sub-regions were provided to define the need for improved interregional cooperation to achieve the COATS vision. The four subregions include:

- southern Oregon;
- north central California, which includes Colusa, Glenn, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, and Trinity Counties;
- north California coast, which includes Del Norte and Humboldt Counties; and
- Lake and Mendocino Counties.

Extensive outreach. The COATS architecture was developed through continuing outreach to the project's Steering Committee and Regional Teams, in addition to six architecture workshops held throughout the study area.

<u>Market package identification</u>. Four different rankings of market packages were

developed in order to reflect the perspectives of users, operators and managers.

- These different ranking methods include the following.
- Four stakeholder outreach workshops were held at the beginning of the COATS
- project in the spring of 1998. If a particular ITS opportunity was supported by at least three of the four workshops, it was given a priority ranking.
- Findings from a Traveler Needs Survey conducted in 1998, where a total of over
- 1,000 motorists filled out surveys at 14 rest areas throughout the study area, were adapted to develop a prioritized list of market packages.
- Steering Committee and Regional Team members were surveyed regarding what market packages they perceived to be as a priority in the COATS study area. This produced a list of priority market packages for short-term and longterm deployment in the region. This was an important input into the process in order to get the more subjective perspectives reflecting the experience of the members of the Steering Committee and Regional Teams.
- Steering Committee members also completed a series of worksheets, which
- prioritized various ITS technologies. These priorities were also mapped back to
- market packages.
- Multiple views of the architecture. Because the scale of the region is larger than



typically considered by individual stakeholders, multiple views of the architecture had to be developed to improve its accessibility. Views included a high-level "sausage diagram" for the entire COATS region, sub-regional architecture flow diagrams for subsystems in each of the four subregions, and a project level architecture diagram for the earlywinner project at Siskiyou Pass.

Turbo Architecture in a rural setting. The COATS project represents one of the first attempts to use Turbo Architecture in a rural environment. The software package facilitated dealing

with the vast number of elements included in the COATS regional architecture, including:

- 213 subsystems and terminators, many of which represented aggregations of several individual stakeholders (such as "Redding-Area Municipal Planning Agencies" which included dozens of planning bodies in north central and northeast California) for sake of processing efficiency;
- 995 architecture interconnects selected out of over 10,000 potential interconnects identified in Turbo Architecture; and
- 10,449 architecture flows selected from over 47,000 potential flows generated by the software package.

The COATS architecture represents a significant rural application of the National Architecture at a significant geographic scale. It successfully blended the needs of

- Architecture at a significant geographic scale. It successionly blended the needs of
- local stakeholders while addressing regional integration and coordination issues,
- including across a state border. This effort can be a catalyst for improved architecture
- development throughout the project area, as well as nationally.

7

University Transportation Center Directors Meeting

By:

Steve Albert Director Western Transportation Institute In June, WTI in cooperation with the University of Idaho's National Center for Advanced Transportation Technology (NCATT) organized and facilitated a meeting of University Transportation Center Directors in Tampa, Florida. Approximately twenty-five Center representatives attended the meeting that was hosted by University of South Florida's Center for Urban Transportation Research and sponsored by USDOT, Research and Special Programs Administration. The goals of the two-day meeting were as follows.

- Document actions for coordination and communication.
- Discuss issues associated with UTC competition and re-selection .
- Provide for a common understanding of issues and lessons learned relating to management, reporting requirements, strategic planning, project selection, recruitment, technology transfer and education.



Small group discussions were conducted which identified opportunities relating to Management and Strategic Planning, Research and Technology Transfer and Education. The Management and Strategic Planning discussion focused on communication, planning, management, structure, research, and retaining qualified staff. Some of the suggestions included common UTC Program annual report and newsletters, increasing communication frequency between centers and incorporating a list serve. Also, focusing on a career path for researchers plus faculty staffing is an issue for healthy management in the centers. Planning comments were geared

toward presentations, conferences and where to spend the money. Effective communication and UTC performance indicators were the two issues examined in the Research and Technology Transfer discussion. It was emphasized that research needs to focus and keep the Center's mission in

sight and that the Centers are building a transportation research education infrastructure through recruitment of students, professional staff and new faculty. Education was the strongest group discussion. Communication was the key to effective education programs through web site, annual report, and a central educational directory. Also it was mentioned that transportation education needs to go beyond engineering to include other disciplines. Also, to further assist in the education mission, student exchange/summer research programs were discussed as an opportunity. Opportunities for increased student recruitment included increased stipends, early and frequent recruitment at a pre-college level, employer scholarships, and employer

networking were mentioned. Other good opportunities for recruiting that will be pursued are using summer programs and a poster session at the annual Transportation Research Board meeting.

Additional information on this meeting can be obtained by contacting Michael Kyte, NCATT (<u>mkyte@uidaho.edu</u>) or Stephen Albert, WTI (<u>SteveA@coe.montana.edu</u>).

WTI Welcomes a New Research Engineer



WTI would like to welcome a new research engineer, Lisa Ballard. She brings with her an excellent skill set and enthusiasm to conduct research in the rural environment. Previously, Lisa worked as a Transportation Systems Engineer at National Engineering Technology in La Mirada, California. Much of her work invloved the design, layout, and implementation of most components of the Advanced Transportation Management System (ATMS) including:

- incident management,
- ramp metering,
- planned lane closures, and
- historical traffic data reports.

Her other projects included:

- Los Angeles and Ventura Counties ITS Strategic Deployment Plan,
- Intermodal and Jurisdictional Integrated Network Environment (IMAJINE), and
- PS&E (plans, specifications and estimates) projects for installing Changeable Message Signs (CMS), Closed Circuit Television (CCTV), vehicle detectors, ramp meters and communications on Los Angeles County freeways.

Lisa graduated with a Bachelors Degree in Civil Engineering from Cal Poly San Luis Obispo in 1995. She earned her Master's Degree in Civil Engineering in 1999 from the University of California Irvine while working full time. Lisa became a professional engineer in the state of California in 1998.

At WTI, Lisa is currently serving as the principal investigator for several projects.

- Greater Yellowstone Regional Traveler and Weather Information System
- California Vehicle-Highway Cooperative Systems Rural Fleet Application Case Study
- Development of a Surface Transportation and Weather Decision Support Tool and Strategic Plan for Improved Highway and Operations in Montana
- Montana.
- She is also working on the California/Oregon Advanced Transportation

WTI will be hosting a conference entitled Context Sensitive Highway Design: Transferring Lessons from Our Collective Experiences on September 5-7, 2001 in Missoula, Montana. The purpose of this conference is to share emerging lessons from highway projects across the nation that have been designed and constructed with flexible considerations and sensitivity to the local, regional, natural and human environment while fulfilling the need for increased transportation efficiency. If you would like to be added to the mailing list or would like more information on this conference please contact Traci Ulberg, Conference Planner at sagedesigns@msn.com or 406-273-7224. Systems Showcase Evaluation.

Lisa has two adorable cats, Mia and Candide. We welcome Lisa and her husband Kevin Ulrich.

Lisa can be reached at 406-994-6529 or lballard@coe.montana.edu.

Habets Promoted to Project Assistant



WTI would like to announce the promotion of Amy Habets to Project Assistant. Amy has worked at WTI since September 1997. She began as a student employee and then completed an internship during the summer of 1998. In January, 1998, Amy was awarded an Undergraduate Fellowship. She graduated with a Bachelor's Degree in Civil Engineering from Montana State University-Bozeman in December 1999. Currently, Amy has undertaken the challenge of working full time for WTI while pursuing a Master's Degree in Civil Engineering.

Amy recently completed an extensive presentation for FHWA in conjunction with Science Applications International Corporation (SAIC). This presentation was developed for a variety of audiences with very different and distinct stakeholders in mind, that would address national rural transportation challenges, provide an understanding of common interests, and create an opportunity for partner-

ship development. The presentation was created in module design to allow users to customize the material contained on the compact disc. Ten modules were created to target different technology applications in the seven Technology Focus Areas. The Focus Areas include:

- Crash Prevention and Security,
- Emergency Services,
- Operations and Maintenance,
- Transit and Mobility,
- Surface Transportation Weather,
- Travel and Tourism, and
- Traffic Management.

When this outreach tool is used, the viewer will leave the presentation with the impression that there are problems but that rural transportation and safety is evolving and that only through partnering and the use of advanced technologies can we succeed in accomplishing our mutual goals. In other words, the viewer will be made aware that rural challenges and the application of advanced technology must be a community investment.

During her tenure at WTI, Amy has worked on many projects. However, most recently she has worked on the Siskyou Pass Evaluation and Incident Management Plan. Amy is also beginning work on the Greater Yellowstone Rural ITS Incident Management Plan. When she isn't working, Amy likes to hike, raft and take road trips in her cool car. She also enjoys the two cats who run her life, Ethel and Sammie.

Amy can be reached at 406-994-7377 or amyh@coe.montana.edu.

Montana Winter Road Maintenance

By:

Lisa Ballard Research Engineer Western Transportation Institute Each year, 7,000 people lose their lives on US highways under adverse weather conditions, and another 450,000 are injured (USDOT). Montana Highway Patrol statistics show that between the years 1994 and 1998 approximately 45 fatalities and 7,350 injuries in Montana occurred in crashes caused by poor weather conditions. To try to keep roads safe and open for travel, the Montana Department of Transportation (MDT) and other agencies require effective winter snow and ice control. To provide for safe and efficient winter highway maintenance and operations, MDT must know the current and forecasted road and weather conditions, have confidence that the



information is accurate and reliable, and evaluate those conditions so that maintenance staff can allocate resources to manage the conditions.

To help address these issues, MDT has deployed a Road-Weather Information System (RWIS) including 59 environmental sensor stations throughout the state. Maintenance staff has access to a variety of other sources of information. However. MDT has found that these different sources of information are not used as fully as anticipated and that the purchased systems require improvement to meet their long-term expectations. WTI has teamed with Meyer Mohaddes and Associates to evaluate how MDT uses these tools in making winter maintenance decisions in a UTC-funded project titled, "Development of a Surface Transportation and Weather Decision Support Tool and Strategic Plan for Improved Highway and Operations in Montana." The goals of the project are to recommend improvements in the process, identify how the current equipment can be improved, and define any new decision support tools that can help identify when and how to treat the roads.

WTI is currently conducting a Web-based survey of all MDT maintenance chiefs, supervisors, and field supervisors as a key part of this project. The survey evaluates the use of the RWIS and other sources of information for determining winter

maintenance decisions, focusing on the following areas:

- sources of weather information and medium used to obtain information;
- RWIS;
- Value Added Meteorological Services (VAMS);
- anti-icing, the treatment of roads before a storm to prevent ice from forming on the road; and
- training on the use of these tools.

The survey is designed to help evaluate if the information available in making these decisions are useful, accurate, easy to understand, and timely. By choosing to carry out the survey by Web instead of the traditional paper-based survey, WTI will cut down on the response time and will eliminate data entry. The survey, which can be viewed at <u>www.coe.montana.edu/wti/weathersurvey</u>, was completed on September 18, and preliminary results will be presented at the MDT Total Winter Maintenance Seminar in October.

Page 11

Technology Transfer

Rural Outreach

By:

Steve Albert Director Western Transportation Institute WTI staff continued to assist local, state and federal organizations on the rural transportation challenges and advanced technology applications with outreach workshops in Vermont and Nevada. Brandon is a small town in western Vermont with the main regional arterial roadway passing through town along the main street. A quarry to the north and a processing plant to the south are connected by a stream of heavy trucks which pass back and forth through the downtown. Considerable discussion of this situation and what to do about it has taken place during the past decade. Capital construction options (including a bypass) are under study, but the time frame for implementing these is perhaps best measured in decades.

An attempt to see what intelligent transportation systems (ITS) might be able to do for the transportation concerns in the Brandon downtown led to three days of workshops in the spring and summer of 2000. The small, rural character of the community caused concern about the applicability of ITS in this type of setting. It was decided to use Brandon as a case study for rural ITS and a group of invited stakeholders discussed the transportation issues and potential solutions.



With help from WTI on rural ITS and with professional facilitation, the group investigated the available technology, the institutional issues, and the transportation problems in the town. Potential solutions were then matched with issues, and priorities were set for short and medium term implementation. The group developed a set of action items, and it remains to be seen how successfully these are implemented.

A second workshop was conducted in Las Vegas, Nevada for the ITS America State Chapter on rural issues and ITS opportunities. This outreach effort utilized the recently developed FHWA CD by Amy Habets entitled "Advanced Rural Transportation System: Rural Challenges and Application of Advanced Technology Must be a Community Investment". The CD contains presentation modules that provide quantified needs and example projects from across the United States that include:

- 1. Introduction and Challenges
- 2. Technology Focus Areas and User Needs
- 3. Crash Prevention & Security
- 4. Emergency Services
- 5. Traffic Management
- 6. Operations & Maintenance
- 7. Transit & Mobility
- 8. Travel & Tourism
- 9. Surface Transportation & Weather
- 10. Benefits of Advanced Technologies, How to Get Involved & Funding Opportunities

In the coming months WTI staff will be assisting Smokey Mountains National Park and the states of Tennessee and North Carolina. The funding for these opportunities to bring stakeholders together and address needs is being provided through the USDOT ITS Peer-to-Peer Program.

Education

MSU Students Earn National Honor

Jodi Carson Associate Professor Department of Civil Engineering, Montana State University-Bozeman Each year, over one hundred universities in the United States and Canada compete for the honor of being named Outstanding Institute of Transportation Engineers (ITE) Student Chapter in the Nation. For the second year in a row, the honor was awarded to Montana State University-Bozeman. The MSU-ITE Student Chapter successfully placed first within District 6, which is comprised of 27 universities in 13 western states including California. Each of the district-level winners (there are ten ITE Districts designated within the U.S. and Canada) then went on to compete for the national honor.

The Outstanding Student Chapter Award was initiated in 1984 to provide a means for the Institute to recognize outstanding accomplishments in student-related activities. Since its inception, Outstanding Student Chapter Award winners have included:

- University of Auburn (1984)
- Texas A&M University (1985, 1988, 1991, 1993, 1998)
- Purdue University (1986, 1989, 1996)
- University of Missouri-Rolla (1987)
- University of North Carolina Charlotte (1990)
- University of Washington (1992)
- University of Florida (1994)
- Georgia Institute of Technology (1995, 1997)
- Montana State University-Bozeman (1999, 2000)

Though Texas A&M and Purdue University have been awarded the Out-

standing Student Chapter Award more often than Montana State University-



Bozeman, the MSU-ITE Student Chapter has the distinction of being the only Chapter to win the award for two consecutive years.

Many of the MSU-ITE activities, particularly travel-related activities, were financially supported through the University Transportation Center Program at WTI. Several MSU-ITE Student Chapter members, accompanied by their Academic Advisor, Jodi Carson, traveled to Nashville, Tennessee August 5th through 9th to attend the ITE Annual Meeting and receive the Outstanding Student Chapter Award for

1999-2000 MSU-ITE Student Chapter Officers (from right to left): Lani Tribbett, President Alan McAllister, Secretary Alyssa Reynolds, Treasurer Dan Blomquist, Vice President the Nation. This followed a recent trip to San Diego, California where they were presented the Outstanding Student Chapter Award for District 6 at the District 6 Annual Meeting. Also during the District 6 Annual Meeting, Lani Tribbett, WTI Graduate Fellow and MSU-ITE Student Chapter President, was the recipient of the Outstanding Student Paper Award for District 6. Lani's paper, entitled "An Evaluation on the Effectiveness of the Dynamic Curve Warning System at Reducing Vehicle Speeds in the Sacramento River Canyon," was based on work conducted by WTI for the California Department of Transportation.

Page 13

By:

Introducing Engineering to Elementary School Students

By:

Anders Larsson Adjunct Instructor Department of Civil Engineering, Montana State University-Bozeman A group of second and third grade students from Montana have recently been exposed to the civil engineering profession as an alternative to the ever popular occupations of that age group. This group of students was participating in a new pilot outreach program that is trying to excite young students about engineering to motivate interest in math and science at an early age. This goal is being accomplished through hands-on exploration by the students of two familiar components of civil engineering; bridges and dams.



During the two hour program, students are familiarized with the components of bridges and dams and are then guided through a variety of stations that illustrate these same components. The project has been taken to the Lame Deer Elementary School in Lame Deer, Montana and to the Hawthorne Elementary School in Bozeman, Montana. This project is also promoting science and engineering to girls by involving female civil engineering students as presenters and interaction leaders. The experiences learned to-date are being used to improve the program and apply for funding for a large scale outreach program that will cover the entire state. For more information, contact Anders Larsson at 406-994-7187 or andersl@ce.montana.edu.

New Education Coordinator at WTI

Effective July 1, 2000, John Mounce assumed the position of UTC (University Transportation Center) Education Coordinator, previously held by Jodi Carson for the past two years. Jodi has done an outstanding job of establishing the UTC Education program, goals and guidelines. However, both Civil Engineering faculty duties and research demand an increasing majority of her time in addition to serving as student chapter advisor for the MSU-Bozeman Institute of Transportation Engineers. The current success of the UTC Education program is testimony to Jodi's prior efforts, which are greatly appreciated.

John has been at MSU-Bozeman for the past six years and is currently an Adjunct Associate Professor teaching in the Civil Engineering Department and a Senior Research Engineer with WTI. He had previously worked for over twenty years at Texas Transportation Institute and Texas A&M University in both teaching and research, with focus on roadway design, operations, and safety.

John was involved with Joe Armijo in founding the Western Transportation Institute as well as initiating the Transportation Graduate Program at MSU-Bozeman. He is also currently project manager of the UTC research project, entitled *Safe Passage*, which is in its second year of implementation. John can be contacted regarding fellowships, assistantships, internships, and/or scholarships, associated with the UTC Education program at: (406) 994-1770 or johnm@ce.montana.edu.

Page 14

UTC Education Funding Helps Increase Intermountain ITE Scholarship Funds

Pat McGowen Research Engineer Western Transportation Institute At the Annual Intermountain Section meeting of the Institute of Transportation Engineers (ITE) in Jackson, Wyoming on May 19-20, 2000; State Chapters made their annual contributions to the Intermountain scholarship fund. The Western Transportation Institute, using University Transportation Center funding, offered to match the donation made by the Montana Chapter. Because of this matching effort, the Montana Chapter was able to donate \$1,350, a substantial increase over the previous donation of \$600. The Intermountain Section includes the states of Idaho, Montana, Nevada, and Utah. The scholarship fund provides scholarships to students that are pursuing a university engineering degree in these four states and have an interest in transportation. Additionally, the fund is used to award a scholarship to the annual student paper award winner.

WTI Fellow is an International Essay Competition Finalist

- Andy Beddoe, currently pursuing a Master's in Mechanical Engineering and
- serving as a UTC Graduate Fellow, was recently named one of three final
 - ists in the Philip E. Rollhaus, Jr. Highway Safety Essay Competition. Andy's essay entitled, *The Role of New Technologies in Tomorrow's Rural Roadway Safety Around the World*, described rural safety challenges and developments in roadway hazard (i.e., adverse road and weather conditions) modeling and driver assistance technologies. Mention was made of the *Safe Passage Project* that Andy is currently involved in through WTI among other related projects from around the world. Jodi Carson was the sponsoring professor for this effort.

The essays were limited in length from 300 to 1000 words and to two topics:

- 1. Highways of the Future How will the integration of tomorrow's electronic concepts with today's highway roadside safety features affect roadway safety around the world?
- Workzones: Speed up or slow down? Evaluate the pros and cons of increasing or maintaining highway speeds through work zones vs. reducing highway speeds in work zones. Considerations might include motorist and worker safety, road rage, environmental effects and societal productivity effects.

Over 60 essays from around the world were submitted. The top four essays were chosen by the international panel of judges on the basis of content, clarity, style and creativity. This year's Grand Prize Winner attends Northwestern University. Two other finalists were named at the University of Texas at El Paso and the University of Illinois – Urbana/Champagne. As a finalist, Andy will receive \$1,000 from the competition sponsor, Energy Absorption Systems, Inc.



By:

Page 15



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Bozeman, MT 59715

Classifieds

Research Associate. Rare opportunity to join a progressive leading edge Intelligent Transportation Systems (ITS) research team in the heart of Montana. The Western Transportation Institute (WTI) of the Civil Engineering Department at Montana State University – Bozeman is seeking an energetic individual wishing to live within a hour of Yellowstone National Park, two internationally recognized ski resorts, and five blue ribbon trout rivers to fill a Research Associate position responsible for the development and completion of project tasks related to ITS, transportation planning and traffic engineering. Required: M.S. in civil engineering or a related field and a record of transportation experience in ITS applications, transportation engineering and/or computer systems. For more information about WTI, visit our web site at www.coe.montana.edu/wti. Screening of applications will continue until the position is filled. For application information, contact Jeralyn Brodowy, WTI, 416 Cobleigh Hall, P.O. Box 173910, Montana State University-Bozeman, Bozeman, MT 59717 -3910. Phone: 406/994-6006. ADA/AA/EO/ Veteran's Pref.

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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 Principle Investigator for information on specific projects. For general information or to be added to our mailing list contact Robbi Colvin at 406-994-6114, via email at wti@coe.montana.edu or write to: Western Transportation Institute, 416 Cobleigh Hall, PO Box 173910, Montana State University-Bozeman, Bozeman, MT 59717-3910.

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