

# SOLUTIONS



## RESEARCH PROGRAMS WINTER 2008

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## PROJECT HIGHLIGHTS

### HIGHWAYS FOR LIFE: MACDONALD PASS

[http://www.mdt.mt.gov/research/projects/macpass\\_culvert.shtml](http://www.mdt.mt.gov/research/projects/macpass_culvert.shtml)

The Montana Department of Transportation (MDT) was awarded \$320,000 through the Highways for LIFE (HfL) program sponsored by the Federal Highway Administration.

The purpose of Highways for 'LIFE' is to advance **Longer**-lasting highway infrastructure using **Innovations** to accomplish the **Fast** construction of **Efficient** and safe highways and bridges, (thus the acronym LIFE). It is innovation that is the key to finding our way out of the highway challenge. Innovation is an inclusive term used by HfL to convey all of the following: technologies, materials, tools, equipment, procedures, specifications, methodologies, processes or practices used in the financing, design, or construction of highways. The three goals of HfL are to:

- Improve safety during and after construction,
- Reduce congestion caused by construction, and
- Improve the quality of the highway infrastructure.

Specifically, HfL is focused on *accelerating the adoption* of innovations in the highway community.

This project involves retrofitting dilapidated, corrugated steel pipe (CSP) with culvert liners on US 12, MacDonald Pass in Powell County. By lining the existing culverts with plastic and polymer compounds rather than excavating and replacing them, the work will lengthen the useful life of the culverts while requiring one day's closure of a single lane of the four-lane highway. Traditional culvert replacement requires the closure of half of the highway for four days. The plan reduces construction time by 70 percent. This



Deteriorated culvert



Polymer culvert lining during curing

practice will minimize the potential vehicle conflict between opposing traffic, work zone equipment, and personnel.

Specifically, this project involves the use of compact multiple diameter directional drilling equipment to install two different types of culvert lining. The first method involves the installation of a plastic lining into the existing culvert. The second method involves a polymer compound curing process to line the existing culvert. The polymer is cured using either hot water or steam. The culvert lining provides structural integrity, preventing the potential for

catastrophic failure of corroded culverts. By preventing culvert failure the roadway surface life will be prolonged. The expected life of both culvert linings is in excess of 50 years.

The Montana Department of Transportation is looking for volunteers, who regularly travel over MacDonald Pass, to participate in a customer satisfaction survey. Those who wish to participate, please contact Charity Watt Levis at 406.444.7205 or [cwattlevis@mt.gov](mailto:cwattlevis@mt.gov).

Contact Craig Abernathy at [cabernathy@mt.gov](mailto:cabernathy@mt.gov) or 406.444.6269 for more information.





## RESEARCH PROJECTS: IDEA TO PRODUCT

In support of its mission to serve the public by providing a safe and cost-effective transportation system, MDT sponsors a variety of research efforts.

The goal of this research is to evaluate and advance new technologies, materials, and methods; develop design and analysis techniques; and study current transportation challenges. Each year, the MDT Research Section requests new research topics. Nine of the seventeen research ideas submitted during the 2008 research solicitation were moved forward to technical panels:

- Assessment of Sediment Disturbance in Streams during Bridge Construction,
- Determine Erionite Occurrence in Southwestern Montana and Relationship to MDT Highway Construction, Past and Future,
- Geosynthetic Stabilization of a Weak Subgrade,
- Ground Penetrating Radar Analysis,
- Impact of Canadian Economic Development on Northern Montana Highways,
- Keep Encouraging Young Driver Safety Pilot Study,
- Laboratory Evaluation of Subgrade Soils,
- Pile Static Load Test, and
- Swimming and Leaping Abilities of Montana's Coldwater Fish to Determine Fish Passage through Culverts.

Technical panels are formed to investigate the problem and determine the direction of each project. Also, technical panels determine if a research need truly exists, who should conduct the research if the need exists, and, if the research is funded, makes sure the research stays on track and the results are implemented as appropriate.



MDT's [Research Review Committee](#) makes the final

project funding decision. For information on past and current research projects, visit [http://www.mdt.mt.gov/research/projects/sub\\_listing.shtml](http://www.mdt.mt.gov/research/projects/sub_listing.shtml).

For more information, contact Sue Sillick at 406.444.7693 or [ssillick@mt.gov](mailto:ssillick@mt.gov).



## LIBRARY CORNER

### MDT LIBRARY ONLINE - JUST A CLICK AWAY

Can't get away from your desk, but need research assistance? No problem.

The catalog of the Montana Department of Transportation Research Library can be found on either the intranet or [internet](#) (select Search the Catalog). Also, a link to [journal databases](#) at [Montana State Library](#) is just a click away for state employees, and a [PowerPoint](#) presentation is available for help in navigating through the library's resources.

Additional links include [New Books](#) (select Search the Catalog, then New Books in upper right corner) in the catalog site ([RSS feed](#)), access to many state and federal transportation resources on the internet as mentioned in [Sites to Explore in Transportation Research](#), and custom search engines for [State DOTs](#),

[metropolitan planning organizations](#), [university transportation centers](#), [public transit agencies](#), and [Local Technical Assistance Program \(LTAP\)](#) and [Tribal Technical Assistance Program \(TTAP\)](#) Centers.

To further enable distance research, library items and interlibrary loans can often be sent in electronic form to your e-mail address, significantly speeding up the process. If an item is not available in an electronic form, it can almost always be found and sent through interoffice mail.

Of course, the library staff also welcomes walk-ins, phone calls, and e-mails with research requests. Contact Lisa Autio at [lautio@mt.gov](mailto:lautio@mt.gov) or 406.444.6125 for more information or research help.

### RIISING TO DIGITAL CHALLENGES: BEST PRACTICES EXCHANGE 2008

This [upcoming conference](#), to be held in Helena, May 21-23, is geared toward all those who have an interesting digital project they would like to share, or who would like to develop one.

The format of the conference is a little different in that the attendees are the focus of information sharing. Multiple small group sessions will take place simultaneously, allowing for more discussion and round table exchange. These sessions will cover five broad [tracks](#) related to digital information in the

government environment. The [format](#) offers a unique opportunity to meet, experience, and cooperate with practitioners, educators, and researchers working through the same challenging digital issues that many are confronting in this fast-paced environment.

To present, [submit](#) a short descriptive paragraph for a session ([View a list of presentations](#) submitted to date). An informal discussion of projects and experiences, successes, failures, and lessons learned is welcomed, and will take place in small group settings.

**DID YOU KNOW?****INTERNATIONAL SCANNING TOURS**

<http://international.fhwa.dot.gov/scan/>

The International Technology Scanning Program (ITSP) is a means for identifying foreign highway technologies and practices that can be adapted to U.S. Federal and state highway programs. The approach is similar to benchmarking that is widely used in the private sector. Benchmarking involves comparing an organization's methods and products to the world's best with the intent of exceeding them. Instead of duplicating others' work, this process enables advanced technology to be put into practice more quickly and makes efficient use of research funds. Ultimately, the program provides better and more environmentally sound roads by implementing the best practices developed abroad.

Collaboration among transportation research managers and other officials has been taking place among state and local American agencies for decades, but there are plans afield to take this type of cooperative resource sharing to other countries in April 2008, when an American delegation of managers will travel to Sweden, The Netherlands, Belgium, France, Japan, and South Korea to gather information from those countries' high performing programs.

Topics will include:

- Short and long term needs,
- Use of research to make effective policy,
- Coordination among jurisdictions to identify national priorities,
- Information management and accessibility,
- Opportunities for efficient use of research funds,
- Opportunities for partnering,
- Effective program delivery,
- Innovative techniques to measure performance, and
- Enhanced dissemination of research successes and program value.

Results of the visit by the delegation will be documented in a final report. The group is co-sponsored by AASHTO, FHWA, and NCHRP. For more information contact Sue Sillick at [ssillick@mt.gov](mailto:ssillick@mt.gov) or 406.444.7693.

Special thanks to the Ohio Department of Transportation, Office of Research and Development, for permission to use extracts for this story: *Moving Forward*, 2008, Vol. 1.



## CALENDAR OF EVENTS

### March

AASHTO SCOR Meets to Select New NCHRP  
Projects (3/25-27)  
MDT RRC Meeting (3/25)  
TCRP Synthesis of Practice Topics Due (3/31)

### April

ACRP Problem Statements Due (4/30)  
MDT RRC Meeting (4/29)  
NCHRP Panel Nominations Solicitation  
Preliminary NCHRP Program Announced

### May

AASHTO Spring Meeting (5/4-8)  
MDT RRC Meeting (5/27)  
NCHRP Panel Member Nominations Due  
NCHRP Synthesis of Practice Topics Selected  
TRB Annual Visits Begin (conducted through  
summer)

### June

MDT RRC Meeting (6/24)  
State CEO Ballot on NCHRP Program Due  
TCRP Problem Statements Due (6/15)  
TRB Call for papers for 2008 Annual Meeting

### July

AASHTO Research Advisory Committee National  
Meeting (7/14-17)  
LTAP National Meeting (7/14-17)  
MDT RRC Meeting (7/29)  
NCHRP Funding Due

### August

MDT RRC Meeting (8/26)  
TRB Annual Meeting Abstracts Due (8/1)

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## NEW RESEARCH REPORTS

2007 Annual Report for the Montana Department of Transportation Research Programs

A listing of all past and current projects can be found at  
[www.mdt.mt.gov/research/projects/sub\\_listing.shtml](http://www.mdt.mt.gov/research/projects/sub_listing.shtml).



## **NEW RESEARCH PROJECTS**

### Field Investigation of Geosynthetics Used for Subgrade Stabilization

A listing of all past and current projects can be found at:  
[www.mdt.mt.gov/research/projects/sub\\_listing.shtml](http://www.mdt.mt.gov/research/projects/sub_listing.shtml).

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### **REMINDER**

Information on research services and products, such as research and experimental project processes and reports, and technology transfer services, including our library catalog can be found on the Research web site at [www.mdt.mt.gov/research](http://www.mdt.mt.gov/research).

[New Books in the Research Library – Catalog](#) (Select Search the Catalog, then New Books in upper right corner)

[New Books in the Research Library – RSS Feed](#)

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### **CONTACT US**

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