



## Research Newsletter

Minnesota Department of Transportation  
Research Services Section  
(651) 282-2274, [research@dot.state.mn.us](mailto:research@dot.state.mn.us)

Office of Investment  
Management

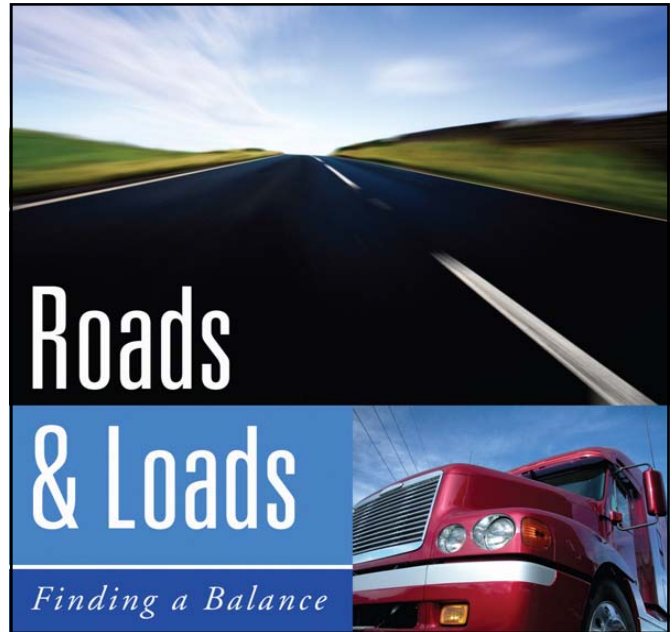
May/June 2006

Issue 10

### New DVD Product - Loads and Roads: Finding the Balance

The Minnesota Local Road Research Board's Research Implementation Committee recently completed a 20-minute educational/training DVD, "Loads and Roads: Finding a Balance". This DVD can be shown in its entirety for a comprehensive look at the subject or it can be divided into about five-minute segments for viewing by different audiences. It is organized in discrete segments which cover the following issue areas. Introduction; Pavement Design Basics; How Loads Impact Roads; Spring Load Limits; Finding a Balance; and Play All. The DVD also features engineers, law enforcement personnel, elected officials and truckers and haulers being interviewed about their experiences with the issue of loads and roads in Minnesota.

Striking a balance between the needs of commerce to carry heavy loads on roads and the need to preserve the significant investment in our transportation infrastructure is a challenging process. There are compelling needs from both sides of the picture that must be acknowledged. This DVD covers subjects such as pavement design basics, how loads impact roads, spring load limits and finding a balance.



Roads and Loads DVD cover

The DVD, along with a brochure, was distributed to Minnesota City and County Engineers, District State Aid Engineers and Townships. If you plan to make a presentation about this subject, feel free to contact your representative from one of the above mentioned groups to borrow the DVD and/or brochure. Or, you can contact the Minnesota Department of Transportation Library for a loan at 651/296-2385, <http://www.dot.state.mn.us/library/>. If you would like a copy of your own, contact Mn/DOT Research Services Section at 651/282-2274.

## Calendar of Events

### July

10-13	AASHTO-SCOR Research Advisory Committee (RAC) Annual Meeting, Columbus, Ohio Contact, Monique Evans at 614/728-6048 or <a href="mailto:Monique.Evans@dot.state.oh.us">Monique.Evans@dot.state.oh.us</a>
-------	--

### July-August

30-3	Second International Symposium St. Petersburg, Florida. For more information please visit <a href="http://www.t2symposium.org">www.t2symposium.org</a>
------	---

### October

2-3	Toward Zero Deaths Conference, Duluth Contact, Shirley Mueffelman at 612/624-4754 or <a href="mailto:smueffel@cce.umn.edu">smueffel@cce.umn.edu</a>
4-5	Minnesota Fall Maintenance Expo, St. Cloud Contact, Kathy Warren at 651/351-7432 or <a href="mailto:kwarren@usinternet">kwarren@usinternet</a>

## Spring Maintenance Training Expo Recap

The 2006 Spring Maintenance Training Expo was held April 11 – 12, 2006 at the St. Cloud Civic Center. It focused on spring and summer roadway maintenance issues, including the latest practices, training and technologies in Minnesota maintenance operations. Attendees included employees from Mn/DOT, townships, city and county public works, street superintendents, maintenance workers and traffic technicians.

Trainers/speakers were from cities, counties, DNR, Mn/DOT, Community Colleges, County Sheriff Departments, Occupational Safety and Health Administration, and consultants. Everyone was very knowledgeable about their subjects and many had great handouts for individuals to take back with them.

Most of the nine sessions offered each day were well attended. Session topics included:

- Know Your Personal Protective Equipment
- New Traffic Signing Requirements
- Street Sweeping, Disposal, Policies and Safety
- Work-Zone Traffic Safety & Flagger Training
- Roadsides for Wildlife: Integrating Wildlife in Your Roadside Vegetation Management
- Gravel Road Maintenance: Meeting the Challenge
- Maintenance Operations

Vendors from a variety of companies were on hand to show their latest wares. Expo attendees look forward to checking out all the new technology and many bring back notes of new items/equipment they feel would be great to have for their particular job.

Sponsors of this event were:

- Minnesota Local Technical Assistance Program, Center for Transportation Studies, University of Minnesota
- Minnesota Local Road Research Board
- Minnesota Department of Transportation
- Minnesota Street Superintendents Association
- Minnesota Public Works Association

Mark your calendars for the Minnesota Fall Maintenance Expo in St. Cloud, October 4 and 5.

For more information, contact Kathy Warren, 651/351-7432, [kwarren@usinternet.com](mailto:kwarren@usinternet.com).



## Annual TRB Visit at Mn/DOT



Martine Micozzi and Sue Lodahl

The Minnesota Department of Transportation welcomed Martine Micozzi, a representative of the Transportation Research Board, for a visit on June 15<sup>th</sup> and 16<sup>th</sup>, 2006. The objectives of these visits are to identify problems/issues and identify ways that TRB can help our organization in addressing these issues, identify research results to disseminate to others, and discuss research implementation activities.

Martine's portfolio included the areas of transportation finance, economics, road pricing, social and environmental factors associated with transportation projects, and transportation issues affecting Native Americans and women.

During the two day visit, Ms. Micozzi met with representatives from Mn/DOT Offices that matched her areas of interest, had an informal discussion with the Division Directors, toured the 394 MNPASS project, and met with area managers in the Metro District.

Please contact Sue Lodahl with any questions at 651/282-2270 or [sue.lodahl@dot.state.mn.us](mailto:sue.lodahl@dot.state.mn.us).

## Library Corner

### TL Cat Continues To Grow

The union catalog of transportation libraries, initiated by the National Transportation Library and the Midwest Transportation Knowledge Network, continues to attract new participants. It now includes the records of 18 libraries serving state DOTs and a number of federal agency and university transportation center libraries. The total number of resources currently listed in TL Cat is 513,927 with 157,340 or 31% of those resources listed in only a single library participating in WorldCat. Participants can be divided into two groups – those libraries whose catalog records are included in TL Cat (contributors) and those who subscribe with OCLC for full access, as opposed to guest access to TL Cat (subscribers). Several subscriber libraries, including PennDOT and Tennessee DOT, are working toward adding their records to TL Cat. If you have any questions about TL Cat please contact the library at 651/296-2385 or [library@dot.state.mn.us](mailto:library@dot.state.mn.us)

## **User Perspectives on Location Efficient Mortgages & Car Sharing**

A growing population seeking relatively reasonably priced housing is placing high demands on outlying, auto-dependent residential markets. Simultaneously, public policies addressing housing, transportation and land use aim to increase homeownership, decrease drive-alone travel and harness outlying development. A relatively new mortgage lending procedure aims to address each of these public policy aims by allowing low and moderate income households the opportunity to purchase homes in transit-accessible neighborhoods that would otherwise be unobtainable because of cost. Location Efficient Mortgages and similar mortgage products are currently available in more than a half-dozen cities nationwide, including Chicago, San Francisco, Los Angeles, Seattle and Minneapolis/St. Paul.

Houses in transit-accessible neighborhoods require less driving, it is easier for households to lower their rate of automobile ownership and use, thereby lowering their transportation costs. This reduction in costs is then folded into the mortgage calculation. If the household moves to such a neighborhood, the mortgage allows for a lower down payment from the borrower's own funds and a higher mortgage-to-income qualifying ratio. The result is a mortgage several thousand dollars more than a traditional one, just because the household moves to a transit-rich neighborhood. This report draws on the smart growth, anti-sprawl literature to present the theoretical foundations of Location Efficient Mortgages and how they address goals of growth management programs. After introducing the concept of the LEM, the report describes matter associated with how the loans are administered as well as major players and administrative issues central to their implementation. The prospects for this tool and the fundamental circumstances likely to bedevil its widespread adoption or overall impact are addressed. Together, these components constitute a primer of the current state of knowledge about these unique loan programs.

Lending institutions traditionally provide mortgage loans up to a maximum amount that depends almost solely on the borrower's income. An upper limit for the ratio of housing expenses to income is set, usually on the order of 28 percent. Only a small degree of flexibility is available in response to particular household conditions, such as a good credit history. The typical formula does not consider either the lifestyle preferences of the borrower or the location attributes of the house. A given household qualifies for the same mortgage amount regardless of whether the property is in the city where transit service is plentiful or on the urban fringe where the need for driving is typically greater.

Barring polycentric urban forms, housing prices in many metropolitan areas still generally follow traditional bid-rent curves. Property is more costly near the city center than in outer suburban areas. The current rules effectively create an environment where many households that want to own are forced to move closer to outlying urban fringe communities to acquire affordable housing. Such location decisions exacerbate many of the environmental, economic and social problems that planners are trying to address.

Higher-cost housing closer to the city is passed up in favor of lower-cost housing farther away from many services, jobs and other amenities. Development creeps more rapidly into the countryside. The often-told tale of inner-city decline relative to suburban sprawl gradually plays out; urban flight leads to decreasing investment in inner-city infrastructure and increasing investment to pave over rich agricultural lands and so on. From a transportation perspective, outlying locations tend not to support transit or pedestrian alternatives, contributing to more drive-alone travel and the associated externalities of the automobile. Other consequences are increased discrimination against those with no means of auto travel—that is, people with disabilities, the poor, the elderly, or the young. The central premise is that conventional mortgage lending helps fuel the demand for more suburban, auto dependent locations—locations where households drive more than they would otherwise, given different lending procedures.

For additional information on the research results or for the full report, please visit <http://www.lrrb.org/pdf/200524.pdf>

## The Safety of Pedestrian and Bicycle Travel in Minnesota Towards Zero Deaths

Mn/DOT and the Minnesota Department of Safety are currently leading an initiative known as "Towards Zero Deaths" to reduce the number of traffic fatalities in the state. A key part of this initiative is to have a better understanding of bicycle and pedestrian related accidents and crashes. The project of Safety of Pedestrian and Bicycle Travel in Minnesota is directly linked to the Towards Zero Deaths Initiative. This project has four stages:



- 1) To learn the types of information and knowledge necessary for a complete understanding of pedestrian/bike safety
- 2) To inventory existing data
- 3) To compare existing data in Minnesota relative to urban form features
- 4) To prepare a plan of how such information could be translated to knowledge necessary for a complete understanding of these issues, within budgetary constraints

Learning about pedestrian/bike safety

Towards Zero Deaths has an up-coming conference November 2 – 3, 2006 at the Duluth Entertainment Convention Center in Duluth Minnesota.

You can learn more about the Towards Zero Deaths initiative and the November conference at their web-site: <http://www.tzd.state.mn.us/news/2006/conferenceinfo.html>

## Tools for Predicting Usage and Benefits of Urban Bicycle Network Improvements

This research is being funded by the Minnesota Department of Transportation, the National Cooperative Highway Research Program and a variety of other sources. This project was part of a larger body of bicycling-related research that is ongoing at the Humphrey Institute at the University of Minnesota.

Because of the very broad nature of this program, there was no one single question guiding the research that was gathered and reported. Instead, the project essentially consisted of four independent research questions, under a broad unifying theme.

The theme was bicycling preferences and behavior with regard to bicycling facilities.

For more information on this please visit <http://www.lrrb.org/pdf/200550.pdf> or contact Darryl Anderson At 651/297-2136 [Darryl.Anderson@dot.state.mn.us](mailto:Darryl.Anderson@dot.state.mn.us)



Predicting Usage and benefits of urban bicycle

## The Bicycle and Pedestrian Toolbox

The Bicycle and Pedestrian Toolbox is the result of a research implementation grant from Mn/DOT's Research Section. It provides transportation planners, engineers and citizens with information on how to plan and design a bicycle and pedestrian network for a community.

Based on existing research and policy the toolbox provides transportation practitioners with a quick reference of basic guidance and public involvement tools. It was created to assist in the development of bicycle and pedestrian networks at the community level. This toolbox summarizes each stage involved in the process of designing an active transportation network with a focus on how land use affects transportation planning.

The planning is a recurring six-stage process as follows:

- First, community values are assessed;
- Second, existing features are evaluated;
- Third, desire lines are identified;
- Fourth, phasing of development is defined;
- Fifth, design treatments are selected;
- Sixth, the network is evaluated based on performance criteria.

The information found in the toolbox can be used alone, even though it was designed to complement the Mn/DOT Modal Plan, the Mn/DOT Bicycle Facility Design Manual and the Pedestrian and Bicycle Safety Initiative. All of these projects are intended to work together to ensure a safe, encouraging and accommodating environment for all modes of transportation.

This toolbox is an evolving document that is designed to be updated over time. For more information on The Bicycle and Pedestrian go to: <http://www.lrrb.org/pdf/200602.pdf>

More information on Mn/DOT's Modal Plan can be found at: <http://www.dot.state.mn.us/bike/>



Kids using bicycle as a way of transportation

## **Development of a Web-Based Economic Impact Calculator for Small and Medium Size Airports**

Airports serve numerous functions. The larger and better known are anchored by commercial scheduled air service. However, there are many more small and medium-size airports, most without any commercial scheduled air service, that provide essential services to rural communities. What is most important is to recognize that these services require a system of regional airports. The present system of general aviation airports in the state of Minnesota fills that need.

This report details the development of a web-based economic impact calculator for Minnesota's small and medium size, general aviation airports. Economic impact is defined as the result of expenditures or sales transactions between businesses or other entities that can be directly traced to the presence of a particular facility, activity, or related services. In this case, "economic impact" is defined as the result of expenditures or sales transactions between businesses or other entities that can be directly traced to the presence of an airport. Determining whether economic expenditures are due to the presence of an airport is the first step in estimating economic impact that an airport has on the community.



**Dan Erkkila giving demonstration of impact calculator at the fall forum**

The process used for this project involved site visits at a total of 51 airports, from all regions of the state of Minnesota. This included meetings with Airport Managers, Fixed Base Operators, Fixed Base Operators Business Employees and Metropolitan Council Officials, as well as data collection of financial information from airport sponsors and FBOs.

The purpose of the project was to create a web based economic impact calculator that could be used by airport managers and city staff to determine the economic activity generated as a result of the airport. This information can then be used to help community leaders make financial decisions for the many demands on their limited infrastructure dollars.

Airport managers and community employees responsible for public airports can also benefit from using this tool when they need to present information to local government leaders that emphasizes the value of the airport and its impact on the regional economy. It will assist them to help justify local expenditures in airport development and maintenance. This tool has been used to help provide a broader understanding of what the airport means to the region it serves.

**Continued on page 8**

## Personnel Changes in Research Services Section and Library



Catherine Roath

Catherine (Cate) Roath joined Research Services Section on May 9th as a student worker Administrative Assistant. Cate is a student at the University of Minnesota majoring in History and Latin American Studies. Her schedule is Monday through Thursday from 1:30PM to 4:30PM and Friday 9:00AM-4:30PM. Cate will be going to Mexico for three weeks in August to study Spanish and will return to work after her trip. Cate may be reached at 651/282-2274 or [catherine.roath@dot.state.mn.us](mailto:catherine.roath@dot.state.mn.us)

## Development of a Web-Based Economic, continued from page 7

Bill Gartner, Professor of Applied Economics, the primary researcher for the project, presented the web tool at the Minnesota Airport Symposium. Co-researcher Dan Erkkila, Tourism Specialist and Professor at the University of Minnesota gave a hands on demonstration at the Airport Technical Assistance Program Fall Forum (pictured right). These two events were attended by airport personnel and county and community leaders. Hands on training was given at the AirTAP Fall Forum to familiarize airport personnel on how to use the economic impact tool. Representative Mike Beard, (Shakopee) and Representative Dan Severson, (Sauk Rapids) were among those in attendance at the Fall Forum.

This web tool was also presented by Bill Gartner at the 2005 Airport Symposium in Mankato.

For more information please contact: Peter Buchen, Mn/DOT Office of Aeronautics at 651/296-0523 or [Peter.buchen@dot.state.mn.us](mailto:Peter.buchen@dot.state.mn.us) or William Gartner, University of Minnesota at 612/624-4947 or [wcg@umn.edu](mailto:wcg@umn.edu)

Or To use the web tool go to the Mn/DOT Office of Aeronautics web site at:

<http://dotapp1.dot.state.mn.us:8080/aeic/main.htm>

To read the full report go to:

<http://www.lrrb.org/pdf/200519.pdf>

**We're on the Web!**

<http://www.research.dot.state.mn.us/>