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CTS Research E-News brings you the latest research project milestones, published reports, and seminar coverage.

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Upcoming Events**Policy & Planning****CTS to conduct \$1 million study for AIA on transportation design and communities**

The [American Institute of Architects](#) (AIA) has selected CTS to conduct a \$1 million research study to examine the benefits that well-designed transportation projects bring to communities. The research is part of a \$2 million grant to AIA from the [Federal Highway Administration](#) (FHWA).

"Placing a greater focus on walkable, mixed-use urban development around transportation options is something that architects have been advocating for many years," said **David T. Downey**, managing director of the AIA Center for Communities by Design. "This study will measure the value of well-designed transportation projects and the extent to which the transportation investment extends beyond the basic infrastructure and enhances the neighborhood and community as a whole."

The effort—"A Community Enhancement Study on the Effects of Well-Designed Transportation Projects: Outcomes, Measures, and Best Practices"—was authorized by Congress in the 2005 transportation bill.

The research component of the study will be conducted by an interdisciplinary research team at the University of Minnesota with primary investigators from architecture, landscape architecture, geography, planning, and civil engineering. **Robert Johns**, director of CTS, will be the study's overall principal investigator responsible for interdisciplinary leadership.

"Despite the many impacts of well-designed community transportation projects, there is little quantifiable or qualitative data about their benefits," said Johns. "The findings from this research project will provide a framework to help communities make wiser transportation decisions."

Landscape architecture professor **Lance Neckar** was instrumental in helping CTS prepare the proposal. He is the co-investigator of the study, responsible for technical guidance of the research.

The research will have three separate parts that will document measurable outcomes and best practices relative to design and planning. These outcomes, measures, and practices will be integrated in a fourth part, a synthesis on the composite synergies of the other three parts. This synthesis will be cross-linked to cases and provide information that can be used as a guidebook.

Each of the four parts will be led by a principal investigator with assistance from interdisciplinary staff and students. The research team is:

- ◆ Research Part I: Promoting Economic Development, **John S. Adams**, professor, and **Barbara J. VanDrasek**, research associate, [Department of Geography](#)
- ◆ Research Part II: Protecting Public Health, Safety, and the Environment, **John Carmody**, director, [Center for Sustainable Building Research](#)
- ◆ Research Part III: Enhancing the Architectural Design and Planning of Communities
 - ▶ IIIA: Community Identity/Vision/Aesthetic, Architectural, Cultural and Scenic Benefits, **Ann Forsyth**, professor and director,

[Metropolitan Design Center](#)

▶ IIIB: Public Participation Practices, Public-Private Outcomes, **Carissa Schively**, assistant professor, [Humphrey Institute of Public Affairs](#)

◆ Research Part IV: A Study Synthesis, **Lance Neckar**, professor, [Landscape Architecture](#), and **Gary Davis**, professor, [Department of Civil Engineering](#)

The researchers will be brought together as a group by CTS on a frequent basis to discuss approaches, share findings, and plan joint activities. CTS will use its experience in leading previous interdisciplinary research teams—such as the [Transportation and Regional Growth Study](#)—to facilitate linkages across academic departments and colleges.

The AIA will develop and implement outreach efforts that involve practitioners at various points of the study, including focus groups that will bring local officials and AIA practitioners together with the research team to explore the case studies in greater detail. The focus groups will be held in various regions of the country and include as many community and transportation project types as possible.

A key outreach goal by both CTS and the AIA will be to educate transportation practitioners, community designers, and the public about the benefits and best practices of working together to enhance communities through well-designed transportation projects. CTS will work with the AIA to plan and conduct forums of practitioners and members of the public and to develop tools for communicating progress on the research. CTS will also use its existing outreach mechanisms, including the *CTS Report* and the electronic *CTS Research E-News*, to communicate to a broad set of transportation stakeholders.

In addition, CTS will consider incorporating best practices resulting from this study in the training programs of the [Minnesota Local Technical Assistance Program](#) (which is sponsored by the FHWA, Minnesota Local Road Research Board, and the Minnesota Department of Transportation and housed at CTS) and in other outreach and training efforts. This will complement the AIA's communications and outreach to the design community.

The study, which will involve graduate students from multiple disciplines, also advances the educational mission of CTS and the University. "These students are our future practitioners and intellectual leaders," said Johns. "They will gain knowledge that will influence their careers, learn new approaches and practices, and experience the process of interdisciplinary collaboration."

Understanding changes key to statewide transportation planning



The role of the highway system in Minnesota is changing in response to economic and demographic trends, according to a new report from researchers **John Adams** and **Barbara VanDrasek** of the University of Minnesota's geography department. Understanding these changes and their implications for the future will be key to successfully planning for tomorrow's transportation needs.

The report, *Urbanization of Minnesota's Countryside, 2000–2025: Evolving Geographies and Transportation Impacts*, continues a research program established by Adams and VanDrasek in the interdisciplinary [Transportation and Regional Growth \(TRG\) Study](#) coordinated by CTS. Adams, former chair of the University's geography department, and VanDrasek were also co-authors of a 2003 TRG report, *Urbanization of the*

Minnesota Countryside: Population Change and Low-Density Development Near Minnesota's Regional Centers, 1970–2000.

The new report looks at ongoing changes in population, residential patterns, employment, and economic development affecting regional centers and their surrounding areas throughout the state. These areas include fast-growing northern regions with economies buoyed by recreation and retirement, economically diverse areas experiencing moderate growth, and slow-growth areas with economies heavily reliant on natural resources and agriculture. Economic and housing changes in all regions lead to changes in travel behavior, the report states, resulting in corresponding impacts on the state's highway system.

Although highways and county roads were originally built to connect towns with the countryside, they are increasingly serving as an extended network of residential streets as formerly agricultural areas are penetrated by low-density development, the authors say. The report gives considerable attention to the commuting behavior of workers statewide, particularly in terms of how households select places to live and how these choices subsequently affect employment and commute times.

As economic, demographic, and technological transformations play out across our increasingly connected state, understanding such changes is important not just for planners in major cities, but for officials in small towns and rural areas as well.

Urbanization of Minnesota's Countryside, 2000–2025: Evolving Geographies and Transportation Impacts (Mn/DOT 2006-23) is available from the Minnesota Department of Transportation.

Local road tax options report published

As reported in the [June issue](#) of *CTS Research E-News*, **Barry Ryan** of the [Department of Applied Economics](#) has recently completed a research project evaluating road tax options for Minnesota. Ryan compared approaches used in Minnesota to those of several other states, with the goal of helping governments make better decisions about road funding strategies.

Ryan's final research report on this project, titled *Local Road Tax Options: Is Minnesota Really That Different?* (Mn/DOT 2006-17) has been published by the Minnesota Department of Transportation and is available online.

Intelligent Transportation Systems

Advanced Transportation Technologies seminar series begins September 12

The Intelligent Transportation Systems Institute will launch its annual Advanced Transportation Technologies Seminar Series on September 12, 2006, when **Frank Douma** of the [Humphrey Institute of Public Affairs](#) will speak on "Developing ITS to serve a diverse population." The seminars, held every other week on the Minneapolis campus of the University of Minnesota, provide updates on ITS-related work by researchers in a wide range of disciplines.

In 2003, the [State and Local Policy Program](#) (SLPP) at the University of Minnesota's Humphrey Institute of Public Affairs began research into how intelligent transportation systems (ITS) technologies can be used to deliver transportation services to an increasingly diverse population in Minnesota. The objective of this research is to identify the nature of the gap between the emerging needs and existing services, and to propose ways of using technology to bridge the gap, both in terms of providing better transportation options and in reducing the cost of these options.

Douma's recent work continues this theme through a series of analyses of ITS applications that appear most promising to improve mobility and access for Minnesota's increasingly diverse population. These applications include car sharing, use of ITS to implement value pricing through conversion of an HOV lane to an HOT lane, and evaluation of Web-based Advanced Traveler Information Systems. Specifically, the presentation will address how technology is enhancing each of these transportation systems and discuss how they can enhance the transportation services used by diverse populations.

For more information on the seminar series, visit www.its.umn.edu/seminars.

Intersection Decision Support reports analyze rural crash patterns

A pair of recent research reports from the [ITS Institute's Intersection Decision Support](#) (IDS) research examine patterns of vehicle crashes at rural highway intersections. The IDS program is developing new countermeasures to prevent crashes at rural through-stop highway intersections. The reports document techniques used to identify intersections in Minnesota and Wisconsin that exhibit crash characteristics making them suitable for the installation of new countermeasures.

Intersection Decision Support represents a new approach to preventing crashes at rural highway intersections where a low-volume rural road crosses a high-speed, high-volume rural expressway. Instead of relying on traffic signals, which are often unsuitable for deployment at such intersections, IDS builds on advances in intelligent transportation systems technologies to give drivers better information about approaching traffic.

Statistical Modeling for Intersection Decision Support by **Gary Davis**, **Nebiyou Tilahun**, and **Paula Mesa** of the [Department of Civil Engineering](#) explores the use of statistical methods and modeling techniques similar to those employed in the [US Department of Transportation's Interactive Highway Safety Design Model](#). The research also tested the hypothesis that older drivers were over-represented in crash statistics at many rural intersections.

Review of Wisconsin's Rural Intersection Crashes: Application of Methodology for Identifying Intersections for Intersection Decision Support highlights IDS research underway in Wisconsin, one of the ITS Institute's partners in rural intersection research. The report, authored by **Howard Preston** and **Richard Storm** of engineering consultants CH2M Hill with **Max Donath** and **Craig Shankwitz** of the [ITS Institute](#), presents a further analysis of the methods used to select intersections where IDS countermeasures would be likely to have a measurable impact in reducing crashes.

Statistical Modeling for Intersection Decision Support (Mn/DOT 2006-03) and *Review of Wisconsin's Rural Intersection Crashes* (Mn/DOT 2006-10) are available from the Minnesota Department of Transportation Web site.

Transportation Infrastructure

Cold-weather cracking research delves deeper

Minnesota is famous for its bone-chilling winter weather, and the effects are felt by our roads as well as by people. Low-temperature cracking leads to accelerated aging of asphalt pavements and necessitates annual maintenance and repairs costing millions of dollars. Associate professor **Mihai Marasteanu** of the [civil engineering department](#) is working to improve pavement durability by developing better asphalt materials.

Since 2003, Marasteanu has carried out research both in the laboratory and at the [MnROAD](#) pavement research facility, where materials and construction techniques can be tested under real-world traffic and environmental conditions. (See the [article](#) from the December 2003 *CTS Research E-News*.) A new report from Marasteanu's research group compares the characteristics of several asphalt mixtures as measured in the laboratory to observed performance in the real world.

The report notes that the effects of aging are highly important to the performance of asphalt mixtures in the field. Several recent studies have indicated that field mixtures may behave differently than their laboratory counterparts, and the reasons for these differences must be understood in order to develop effective mechanistic-empirical design procedures for asphalt roads.

In the current study, samples from three pavement cells at MnROAD were tested and the results compared to previous experiments on the mixtures carried out in the lab. Properties of asphalt binders in the field were found to differ from those of laboratory-aged binders. Overall performance differences between the three mixtures, however, were confirmed under real-world conditions. The results suggest new directions for low-temperature cracking research, which should shed further light on the effects of aging and crack propagation.

Investigation of the Low-Temperature Cracking Properties of Three MnROAD Asphalt Mixtures (Mn/DOT 2006-15) is available from the Minnesota Department of Transportation Web site.

Transit & Alternative Modes

National Transit News

TCRP research publications available online

The federal [Transit Cooperative Research Program](#) (TCRP), administered by the [Transportation Research Board](#), provides practical transit research to address technical and operational issues. TCRP emphasizes putting research results into the hands of organizations and individuals that can use them to solve problems. TCRP publications may be viewed at www4.trb.org/trb/onlinepubs.nsf/web/crp.

Recent TCRP publications include:

- ◆ [Transit Agency Participation in Medicaid Transportation Programs](#) (TCRP Synthesis 65)

◆ [Bus Use of Shoulders](#) (TCRP Synthesis 64)

◆ [Guidebook for Evaluating, Selecting, and Implementing Suburban Transit Services](#) (TCRP Web-Only Document 34)

Journal of Public Transportation

The *Journal of Public Transportation*, Vol. 9, No. 3, 2006, published by the [National Center for Transit Research](#) at the University of South Florida, includes these articles, available at www.nctr.usf.edu:

Special Edition: Bus Rapid Transit

- ◆ Bus Rapid Transit in Australasia: Performance, Lessons Learned and Futures
- ◆ Bus Rapid Transit Plans in New York's Capital District
- ◆ Analyzing the Impacts of Vehicle Assist and Automation Systems on BRT
- ◆ The Issues and Realities of BRT Planning Initiatives in Developing Asian Cities
- ◆ Issues and Technologies in Level Boarding Strategies for BRT
- ◆ An Evaluation of Comprehensive Transit Improvements—TriMet's Streamline Program
- ◆ Simulation of Transit Signal Priority Using the NTCIP Architecture
- ◆ Impact of Bus Priority Attributes on Catchment Area Residents in Dublin, Ireland
- ◆ An Update on Curb Guided Bus Technology and Deployment Trends
- ◆ Microscopic Simulation Approach to Capacity Analysis of Bus Rapid Transit Corridors
- ◆ Ex-Ante Evaluation of Exclusive Bus Lanes Implementation
- ◆ The Potential for Bus Rapid Transit to Reduce Transportation-Related CO2 Emissions
- ◆ Calibration of Vissim for Bus Rapid Transit Systems in Beijing Using GPS Data

Upcoming Events

Here are selected events related to transportation research. Visit the CTS Web site, www.cts.umn.edu/events, for more comprehensive event information. You may also subscribe to e-mail event announcements using our [subscription form](#).

September 12, 2006

Advanced Transportation Technologies Seminar, U of M East Bank. **Frank Douma** of the [Humphrey Institute of Public Affairs](#) will present on "Developing ITS to serve a diverse population." Contact Stephanie Malinoff at 612-624-8398 or e-mail malinoff@umn.edu.

October 11-12, 2006

AirTAP Fall Forum, Breezy Point. Contact Mindy Carlson at 612-625-1813 or e-mail carlson@cts.umn.edu. [[More](#)]

November 2-3, 2006

Toward Zero Deaths Conference, Duluth. Call Shirley Mueffelman, 612-624-4754, conferences2@cce.umn.edu. [[More](#)]

May 1-2, 2007

18th Annual CTS Transportation Research Conference, RiverCentre, St. Paul. Contact Shirley Mueffelman, 612-624-4754, conferences2@cce.umn.edu.
