



## Research completed for AIA transportation design study

In a time of limited resources at every level of government, communities need to ensure that the transportation projects in which they invest not only increase connectivity and access, but also bring about a wide array of community benefits.

In 2006, the American Institute of Architects (AIA) selected CTS to conduct a pioneering research study to explore how well-designed transportation projects can enhance communities. Results of this research are now available in a series of reports on the study's Web site: [www.movingcommunitiesforward.org](http://www.movingcommunitiesforward.org).

To address the interdisciplinary issues raised by the study—named Moving Communities Forward—CTS assembled and led a research team drawn from multiple fields. Research funding was allocated to five projects:

- Promoting Economic Development: **John Adams** and **Barbara VanDrasek**, Department of Geography
- Improving Health and the Environment: **John Carmody** and **Virajita Singh**, Center for Sustainable Building Research
- Designing Great Places: **Ann Forsyth**, Metropolitan Design Center (now with Cornell University)
- Fostering Civic Participation: **Carissa Schively Slotterback**, Hubert H. Humphrey Institute of Public Affairs
- Making Communities Safer: **Gary Davis**, Department of Civil Engineering

A sixth project, by **Lance Neckar** of the Department of Landscape Architecture, synthesized the study's key findings into a single document highlighting major themes and rec-

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## Pavement project receives SHRP 2 award

The Department of Civil Engineering (CE), the Minnesota Department of Transportation (Mn/DOT), and the MnROAD pavement research facility will receive more than half of a \$4 million award over four years from the second Strategic Highway Research Program (SHRP 2). The project will investigate the design and construction of new composite pavement systems.

The project proposal was spearheaded by **Mike Darter**, director of the University of Minnesota's Pavement Research Institute (PRI) and principal engineer with Applied Research Associates (ARA), Inc. Darter worked with **Keith Shannon**, director of Mn/DOT's Office of Materials, to ensure Mn/DOT's participation and a featured role for MnROAD.

Darter is the principal investigator for the work, and CE associate professor **Lev Khazanovich** is a co-investigator. Others on the research team include CE associate profes-



*Mike Darter*

sor **Mihai Marasteanu**, PRI associate director **Derek Tompkins**, and MnDOT's **Ben Worel**.

The research will focus on two promising applications of composite pavement systems: an asphalt layer over a portland cement concrete (PCC) layer, and a PCC surface over a PCC layer. The effort is expected to identify and determine the behavior of critical material and performance parameters; develop and validate mechanistic-empirical performance models and design procedures; and recommend specifications, construction techniques, and quality management procedures.

This project is the type of initiative fostered by the Transportation Engineering Road Research Alliance (see article on page 2).

SHRP 2 is a targeted, short-term research program created by Congress to address the challenges of moving people and goods efficiently and safely on the nation's highways. The program is carried out through competitively awarded contracts to qualified researchers in the academic, private, and public sectors. **CTS**

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## AirTAP Forum highlights airport image-making

More than 70 people from general aviation airports and community government across Minnesota attended the fourth annual Airport Technical Assistance Program (AirTAP) Fall Forum, held October 16 and 17 at Breezy Point, Minn. **Jim Grothaus**, CTS AirTAP director, gave the welcoming comments.

The forum's opening sessions on airport image-making were especially relevant in a



*Tom Bullington*

year in which several local airports were in the media spotlight. "Crisis communications should not be your first experience with communications," said **Tom Bullington**, president of CityImage Communications. Airports need to be proactive in creating a solid, positive image for themselves, so that "when something negative happens, it becomes just one piece—not all—of your image." If an airport fails to create an image for itself, someone else will, he added.

**Gary Workman**, the new director of Mn/DOT's Office of Aeronautics, moderated the first day's luncheon session, during which Minnesota Representative **Michael Beard** and Senator

## TERRA highlights innovations at Highway 36 reopening

University researchers, state and local agency personnel, and industry representatives gathered November 1 to learn about innovations used in the reconstruction of Minnesota Trunk Highway 36 through North St. Paul.

The event kicked off the new TERRA Innovation Series. TERRA, the Transportation Engineering Road Research Alliance, is a research governance structure formed in 2004 to foster a comprehensive road research program.

The event was hosted by TERRA in cooperation with the Federal Highway Administration (FHWA), FHWA Highways for LIFE, and Mn/DOT.

The daylong event featured several local, state, and national speakers and included two panels about project innovations and accelerated construction. The program was capped with a tour of the construction area.

The reconstruction project is notable for its use of complete closure and intelligent compaction. The complete closure of the highway was expected to cause a major traffic problem in the east metro, but pro-

duced results to the contrary. The highway, which closed to all traffic May 1, partially reopened to traffic in October. The majority of the construction was completed during the six-month span at an estimated 15 percent under budget. The project could have taken more than two years using traditional methods.

“Quite possibly it was the biggest non-event of the year,” according to Mn/DOT’s **Chris Roy**, discussing the accelerated construction process.

Mn/DOT has funded a study of the full closure by **John Hourdos**, director of the Minnesota Traffic Observatory (MTO), and Professor **Gary Davis** of the Department of Civil Engineering. The MTO is a laboratory of the Intelligent Transportation Systems (ITS) Institute at CTS.

Full closure is a relatively new strategy for addressing present-day transportation network needs in Minnesota. The Highway 36 construction gives the researchers the unique advantage of using an actual project as a test case. Their analysis includes an evaluation of all traffic operation alternatives in the greater



Researchers are using the project as a test case.

project area, a cost/benefit comparison with other construction alternatives, market research to identify the public’s acceptance of the project during and after completion, and identification of lessons learned. The final product will be a guide for other projects considering full-road closure as a construction alternative.

The TERRA Innovation Series communicates TERRA activities, innovations, and products through knowledge transfer, exchange, and demonstration. More information about TERRA and the series is online at [www.terraroadalliance.org](http://www.terraroadalliance.org). **CTS**

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**Michael Jungbauer** addressed current legislative issues related to aviation. Beard said he is participating in a committee recently formed to look at the state’s revenue streams for aeronautics. Airline taxes and registration fees in Minnesota are among the highest in the nation, he said. “I have heard that if we could lower [them], it might bring back some of the larger aircraft,” he said.

Jungbauer, a member of the transportation budget and policy division finance committee, urged airports to work to promote themselves and the benefits they bring to a community. When communities are planning for future growth, airports can make the case that they helped the community grow, particularly in outstate Minnesota. “Use the airport as a key component of the strategic growth for a community,” he urged. “What does it bring to a city every time a plane lands? You guys have got to know that, and you have to protect that for all it’s worth.”

**Jeff Hamiel**, executive director of the Metropolitan Airports Commission, was back again to discuss current aviation issues in the metro area, including

the MAC’s \$127 million settlement with southern metro property owners on noise-abatement work and Northwest

Airline’s emergence from bankruptcy. Although passengers and operations are down, Hamiel said he expects the airline to stabilize, then start to grow the market again. He also talked about the possibility of a merger between NWA and Delta Air Lines.

**John Schroeder**, lighting engineer for Mn/DOT, led participants in a hands-on look at airport lighting and maintenance, held on-site at Brainerd Regional Airport. Other forum sessions covered airport planning, fuel handling and storage, Capital Improvement Program basics, and turf maintenance.

The forum was sponsored by Minnesota AirTAP (housed within CTS) and the Mn/DOT Office of Aeronautics, in cooperation with the Federal Aviation



Gary Workman



Jeff Hamiel



Michael Beard



Michael Jungbauer



John Schroeder gives a hands-on demo at the AirTAP Forum.

Administration and the Minnesota Council of Airports.

More coverage of the forum will be published on the AirTAP Web site and in a special issue of *Briefings*, the program’s quarterly newsletter, in early 2008. **CTS**

## Cost estimation workshop draws state DOT leaders to Minnesota

Cost estimation and cost management are fundamental challenges facing transportation agencies today, and many agencies are exploring how to achieve consistency and accuracy in project and program estimating. In response to this need, the Federal Highway Administration (FHWA) is sponsoring two capacity-building workshops in cooperation with the American Association of State Highway and Transportation Officials (AASHTO) and the Minnesota Department of Transportation (Mn/DOT). CTS is conducting the workshops on behalf of the sponsors.

The first workshop was held November 15 and 16 in Minneapolis and included representatives from 20 states. One of its objectives was to “build capacity” for planning and engineering professionals to implement NCHRP 8-49, *Procedures for Estimation and Management of Highway Projects During Planning, Programming, and Preconstruction (The Guidebook)*. The guidebook, now published as National Cooperative Highway Research Program Report 574, provides strategies, methods, and tools to help agencies develop, track, and document cost estimating during each phase of transportation projects.

Speakers at the November workshop described how states are moving forward with the implementation of the guidebook and shared advances and lessons learned from other states’ initiatives on cost estimating. **Robert Johns**, CTS director,

moderated the workshop and gave opening comments with **Robert Ritter**, team leader with the FHWA Office of Planning.

According to the guidebook, many factors between project initiation and construction completion affect a project’s final costs. This time span is normally several years, but highly complex and technologically challenging projects can easily exceed 10 years—and the project scope and its definition change during that period.

During the early stages of a project, many factors—such as insufficient knowledge about right-of-way costs and project location, environmental mitigation requirements, traffic control requirements, or work-hour restrictions—influence project costs. Moreover, other process-type factors often increase project cost estimates. These factors can include unforeseen engineering complexities, changes in regulatory requirements, local governmental and stakeholder pressures, and a transformation of community expectations. The impact of all of these issues is compounded if agencies lack staff with appropriate training in cost estimation or institutions lack cost estimation management processes.

Sessions at the event, which focused on planning issues, included small-group



*Participants shared lessons in cost estimating and management.*

discussions of the challenges of cost estimating and management from a planning perspective, and presentations on strategic approaches for addressing cost estimating and cost management in the planning process. General sessions included a facilitated discussion of the prospects for guidebook implementation, and presentations on themes and next steps. **Tim Henkel**, director of Mn/DOT’s Planning, Modal, and Data Management Division, was a key presenter in the latter session.

A second workshop in the spring of 2008 will focus on design and project development issues. CTS will produce a written summary of the outcomes of both workshops.

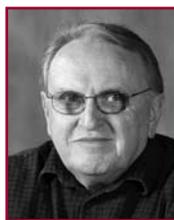
For more information, contact **Gina Baas**, CTS communications and outreach director, at 612-626-7331, [baasx001@cts.umn.edu](mailto:baasx001@cts.umn.edu). **CTS**

## Jerry Baldwin retires from Mn/DOT Library

On December 14, **Jerry Baldwin** retired from Mn/DOT after 35 years of service to the state.

More than a hundred people came to his retirement party to thank him for his contributions as Mn/DOT’s first library director. CTS associate director **Laurie McGinnis** and librarian **Arlene Mathison** represented CTS.

McGinnis thanked Baldwin for his contribution to CTS over the years, especially his vision and leadership for the CTS-Mn/DOT Partnership. A primary goal of the partnership is to coordinate the



*Jerry Baldwin*

development of research projects and the use of research funds administered by the two organizations. The coordination of the two agencies’ library services is an important part of this partnership agreement. Baldwin is a long-time member of the CTS Education and Outreach Council.

Baldwin was also the instigator of the Minnesota Transportation Libraries

Program. The program was created in 1996 with the mission to serve the information needs of the state’s entire transportation community, including transportation officials in state and local governments, University of Minnesota faculty and students, other transportation organizations, and the public.

Baldwin dedicated his career to providing excellent library services to the transportation community and to advancing the transportation knowledge networks around the country. He will be greatly missed. **CTS**

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ommendations. Neckar also assisted CTS director **Robert Johns** in providing overall direction for the project.

The research team employed a case study-based approach, analyzing nearly 30 transportation projects across the nation that represent a broad spectrum of regions, demographics, and project types.

Using the case studies, the team identified key principles and practices that communities, transportation officials, designers, and policymakers can use—in the context of their unique situations and environments—to realize multiple enhancements to their communities. The research shows that in many cases, a small change in the design process, or the addition of relatively inexpensive or less intrusive design strategies, can reap large rewards.

Funding for the study was derived from a grant to the AIA from the Federal Highway Administration, authorized by Congress in SAFETEA-LU.

**Selected findings from Moving Communities Forward**

- Integrated design from the outset of a project helps address the full spectrum of challenges.
- Participatory processes and structures build constituencies for design solutions.
- Visualization tools provide critical support and add transparency to the citizen engagement process.
- Human-scaled structures and spaces give intense, multimodal development a sense of place.
- Clearly marked and connected trans-



*This Michigan transit station features a “green” roof that reduces runoff and maintains the building’s temperature.*

- portation modes make multimodal systems easier to use.
- Durability and flexibility create places that are sustainable and meet future challenges.

CTS has also begun developing a Moving Communities Forward Web site with the AIA as part of a coordinated outreach effort designed to share the research

findings and recommended practices with transportation and design professionals, policymakers, and the public. **CTS**

**Upcoming events**

To publicize your event, call CTS at 612-626-1077, fax 612-625-6381, or e-mail [snopl001@cts.umn.edu](mailto:snopl001@cts.umn.edu). Visit the CTS Web site—[www.cts.umn.edu](http://www.cts.umn.edu)—for more comprehensive event information.

Jan. 22–25	Minnesota County Engineers Association Annual Conference, Brainerd. Contact <b>Carrie Alkins</b> , 612-624-3492, <a href="mailto:cceconf3@umn.edu">cceconf3@umn.edu</a> , or visit <a href="http://www.mncountyengineers.org">www.mncountyengineers.org</a> .	March 5	52nd Annual Asphalt Contractors’ Workshop/MN Quality Initiative Workshop, Brooklyn Center. See <a href="http://www.asphaltisbest.com">www.asphaltisbest.com</a> or e-mail <a href="mailto:jthomas@mnapa.org">jthomas@mnapa.org</a> .	Apr. 23–25	Minnesota Council of Airports Annual Conference, Bloomington. Contact <b>Judy Meyers</b> , 651-234-7232, 1-800-657-3922 or <a href="mailto:judy.meyers@dot.state.mn.us">judy.meyers@dot.state.mn.us</a> .
Jan. 30–Feb. 1	City Engineers Association of Minnesota Annual Conference, Brooklyn Center. Contact <b>Carrie Alkins</b> , 612-624-3492, <a href="mailto:cceconf3@umn.edu">cceconf3@umn.edu</a> , or visit <a href="http://www.ceam.org">www.ceam.org</a> .	March 13	Transportation Career Expo, Minneapolis. Contact <b>Mindy Carlson</b> , 612-625-1813, <a href="mailto:carlson@cts.umn.edu">carlson@cts.umn.edu</a> .	May 20–21	CTS 19th Annual Transportation Research Conference, St. Paul. Contact <b>Sara Van Essendelft</b> , 612-624-3708, <a href="mailto:cceconf5@umn.edu">cceconf5@umn.edu</a> . <b>CTS</b>
Feb. 13	CTS Winter Luncheon, Minneapolis, featuring <b>Ronald Medford</b> , National Highway Traffic Safety Administration. Contact <b>Sara Van Essendelft</b> , 612-624-3708, <a href="mailto:cceconf5@umn.edu">cceconf5@umn.edu</a> .	March 13–14	Concrete Paving Association of Minnesota 47th Annual Concrete Paving Workshop, Mankato. Contact <b>Deb LaValle</b> , 651-762-0402, <a href="http://www.concreteisbetter.com">www.concreteisbetter.com</a> .		
Feb. 14	12th Annual Minnesota Pavement Conference, St. Paul. Contact <b>Shirley Mueffelmann</b> , 612-624-4754, <a href="mailto:cceconf2@umn.edu">cceconf2@umn.edu</a> .	Apr. 15–16	Minnesota Spring Maintenance Training Expo, St. Cloud. Contact <b>Shirley Mueffelmann</b> , 612-624-4754, <a href="mailto:cceconf2@umn.edu">cceconf2@umn.edu</a> .		

**ITS Minnesota Annual Meeting and Exchange Forum**  
**March 25, 2008**  
**Continuing Education and Conference Center, St. Paul**

All information, including an agenda and registration information, is posted at [www.itsmn.org](http://www.itsmn.org).