This publication is a report of transportation research, education, and outreach activities for the period July 2002 through June 2003 (fiscal year 2003). It covers the Center for Transportation Studies and the special programs housed within it:

- Intelligent Transportation Systems (ITS) Institute
- Minnesota Local Technical Assistance Program (LTAP)
- Transportation and Regional Growth Study

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One of the most respected national rankings of universities in the academic community has been conducted the last two years by The Center at the University of Florida. In this ranking, the University of Minnesota is the third public university listed, behind the University of California, Berkeley, and the University of Michigan.

Key variables evaluated in the Florida ranking parallel our center’s activities in the field of transportation. In fact, they include all of the performance measures our CTS Executive Committee has developed to monitor our performance. Significant measures include research funding attracted, the number and quality of students, publications in peer-reviewed journals, and level of outreach activities. Our performance, as measured by our Executive Committee, remains at a high level despite the economic downturn and state deficit.

The key to national rankings and to our center’s performance is the quality of the University of Minnesota faculty and research staff with whom we work. This past year we began the new CTS Scholars Program to strengthen our relationships with these leaders. This report lists our CTS faculty scholars and CTS research scholars (see page 32). As you can see, we have a strong multidisciplinary breadth and depth of expertise from which to address transportation challenges and educate the future transportation workforce.

An example of what we can accomplish is shown in the completion of our Transportation and Regional Growth Study. The results of five years of research, summarized in the synthesis report *Market Choices and Fair Pricing*, have attracted attention from policy leaders at the state, local, and national level, as you can read about in this annual report.

While we have developed new ways to work with faculty and staff, we also have strengthened our relationship with transportation students. We are pleased to be a sponsor of ITSO, the Interdisciplinary Transportation Student Organization. These student leaders are doing a great job of bringing students from engineering, policy, planning, and logistics together to focus on current transportation issues and career opportunities.

We continue to foster innovation in transportation by providing two key components: scientific knowledge and human resources. With the help of our scholars and ITSO, we will continue to produce new knowledge and new perspectives, and to connect students to the issues and to the potential contributions they can make to develop our future transportation system.

Robert Johns, Director
Center for Transportation Studies
CTS total annual revenues
FY2003: $11,399,586

- State: 38%
- University matching funds: 11%
- Private-sector matching funds: 8%
- Federal: 30%
- Local/regional: 9%
- Miscellaneous: 3%
Transportation and Regional Growth Study concludes

Findings of the research completed under the Transportation and Regional Growth Study were published by CTS in March 2003 in a synthesis report titled Market Choices and Fair Prices. Results of the TRG Study have helped frame the debate surrounding transportation and land development in Minnesota and suggested ways to address congestion and sprawl.

The Minnesota Department of Transportation, the Metropolitan Council, and the Minnesota Local Road Research Board (LRRB) sponsored the five-year study, which comprises 16 separate reports designed to offer policymakers sensible choices to address the state’s transportation and land-development issues.

The study has attracted attention from policymakers and the media. Both Twin Cities newspapers, the StarTribune and the Pioneer Press, gave it prominent coverage. The national Urban Transportation Monitor ran a front-page article about the study. In addition, CTS presented the synthesis to a number of regional transportation leaders.

**Key findings**

The study is the most comprehensive ever done on transportation and regional growth issues in Minnesota. Its key findings are:

- Minnesota’s current state and regional policies have encouraged low-density, spread-out growth.
- While congestion is a sign of growth and vitality, the negative impacts require us to understand its cause.
- Congestion is not the problem, but a symptom of larger transportation and regional growth issues, including a system in which transportation and land-use decisions were made with little reference to each other.
- Neither of the most discussed options—building more roads and traffic lanes, and increasing mass transit—will, by itself, solve our transportation challenges.
- Transit has a limited impact on congestion, but it does effectively serve activity-rich destinations—such as downtown areas and the University of Minnesota.
- Current development patterns have negative environmental impacts, including endangering water resources.
- Minnesota policymakers need to think of the Twin Cities metro area as comprising 19 to 24 counties, not seven.

**Options for further debate**

The study does not offer silver bullet solutions to the state’s transportation challenges. Instead, it offers two options for further debate: “honest pricing” and “more market choices.”

Honest pricing lets the market work, leading to better decisions and more efficient use of resources. Honest pricing exposes potential home buyers, commercial developers, and automobile owners to the true costs of transportation and land development—most of which are currently hidden in state aids to local governments, local property taxes, and motor-vehicle registration taxes.

Gearing policies to accommodate trends already evident in the marketplace is the best way to see faster and more durable results. More market choices means more market-oriented planning and zoning to create destinations that would welcome a mixture of employers, services, and amenities. These would be better served by a combination of improved roads, an expanded bus system, and carefully implanted commuter and light rail lines.

*Market Choices and Fair Prices* (TRG Report No. 17) is available in print from CTS or online in PDF format at: [www.cts.umn.edu/trg](http://www.cts.umn.edu/trg).

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**CTS HIGHLIGHT**

CTS allocated funding for 67 new and continuing research projects totaling approximately $6.3 million. Funding sources included USDOT, Mn/DOT and its Minnesota Guidestar Program, the Minnesota Local Road Research Board, and the University of Minnesota. As part of the CTS research program, the ITS Institute selected eight research projects for funding involving 24 researchers. Total Institute research project funding amounted to $1.2 million.
Putting limits on the speed-versus-safety debate

A new study may help put limits on the vehicles involved in fatal crashes, for which the debate about the role speed plays in researchers collected and analyzed data from the car crashes. Minnesota Department of Transportation and the Minnesota State Patrol. Though it may seem obvious that driving slower is safer, there is a lack of consensus in the public and policy arena about the connection between the speed one chooses to drive and the risk of being involved in a crash. For each case, "control" speeds were collected on vehicles passing the crash site during conditions similar to those when the crash occurred. Crash reconstruction methods were used to estimate each case vehicle's speed. Rather than use a straightforward case-control approach, recent studies that the heterogeneity in the crashes they had to work with required them to develop new methods for extracting information from very small samples. The issue is further muddied by several studies that suggest only a weak connection between driving speed and crash risk.

Taking chances with higher speeds

Civil engineering associate professor Gary A. Davis is hoping his research, sponsored by the U.S. Department of Transportation's "Speed by itself doesn't appear to be sufficient to cause a fatal crash," Davis says. Rather, he adds, speed comes into play when a driver encounters a crash-avoidance situation, resulting either from driver error or by a surprise event outside of his or her control—a pedestrian stepping suddenly into the street, for example. In such a case, speed, while not by itself causing the crash, can make it happen. According to Davis, problems with previous crash avoidance research pitfalls of previous research, the team developed a method for quantifying the uncertainty in estimates made from crash reconstructions, and incorporated this into a case-control study of vehicle speed and crash risk. The "cases" were a sample of vehicle speeds in crashes, and the "controls" were speeds of vehicles that did not crash. The study found that higher speeds were associated with an increase in crash risk, and in some cases, the researchers could identify speed as a definite causal factor for a crash.

Avoiding research pitfalls

The goal of the project is to improve safety and mobility at intersections through improved traffic surveillance systems and better understanding of human response behavior.
BRT lane-assist technology expands road capacity

In the 1997 science-fiction film *The Fifth Element*, the problem of increased roadway demand is solved by creating multiple tiers of moving traffic—in the air—filled with cars capable of flight. Although this film offers a fantasy view of urban transportation for the year 2215, the lesson here is that building more roads to carry more traffic may not be a viable option in the future. Experts acknowledge that in many areas, constructing new roadways or adding lanes to existing ones is no longer feasible or credible as the primary solution to traffic congestion.

One way to get more capacity from existing roads is to allow transit buses to drive on road shoulders, creating, in a sense, a bus rapid-transit, or BRT, system. Metro Transit and Mn/DOT are developing driver-assistive technologies to assist buses operate in high-occupancy vehicle (HOV) lanes and on specially designated road shoulders. This change in driving environment affects driver performance and stress.

Researchers from the ITS Institute are developing driver-assistive technologies to assist bus driving on dedicated shoulders for BRT applications and also indicate that drivers support bus driving on shoulders. This is difficult under the best of conditions and becomes impossible in bad weather, low visibility, and high traffic congestion. In response, ITS Institute researchers are developing driver-assistive technologies to assist as the primary solution to traffic congestion.

Researchers from the ITS Institute are developing driver-assistive technologies to assist as the primary solution to traffic congestion. These technologies integrate GPS, magnetic guidance, vision, and other available technologies and then test a robust, fail-safe system. More information about BRT lane-assist systems may be found online at: [www.its.umn.edu/research/brt](http://www.its.umn.edu/research/brt).

The TechnoBus is fitted with a steering actuator, which provides torque feedback to a driver. This feedback system uses a differential global-positioning system (DGPS) and an inertial sensor to determine bus position and orientation. Position of the bus as determined by the DGPS system is compared to the location of the shoulder as provided by a digital lane-Element, the problem of increased roadway demand is solved by creating multiple tiers of moving traffic—in the air—filled with cars capable of flight.
Passing up congestion

Since 1994, the Minnesota Department of Transportation and the Metropolitan Council have been working with the Humphrey Institute at the University of Minnesota to find a solution to gridlock on Twin Cities’ highways. These efforts, financed by a series of grants from the Federal Highway Administration, have focused on value pricing as a way to manage rush-hour traffic flow.

“Value pricing” or “congestion pricing” is the use of electronically collected user fees during congested times in order to use highway capacity more efficiently. Drivers who pay the fee can use a special express lane, which allows them to bypass the congestion.

**Pilot project**

In 2001, a 30-member value-pricing advisory task force, composed of state legislators, mayors, and business, environmental, and transportation association leaders, examined value pricing options in Minnesota and concluded that the state should proceed with a pilot project. Two years later, Gov. Tim Pawlenty signed a law that supported the conversion of existing high-occupancy vehicle (HOV) lanes, also known as car pool lanes, into tolled express lanes, or high-occupancy toll (HOT) lanes, for solo drivers.

The pilot project developed by Mn/DOT will begin in January 2005. Solo drivers on I-394 will be able to pay a fee to drive in the HOV, or “MnPass,” lane. Buses and car pools will continue to use the lane free of charge.

As drivers approach the MnPass lane, they will see signs announcing the user fee, which may vary according to demand or time of day. As they enter the lane, an electronic device on an overhead gantry will read a transponder mounted on their windshield or dashboard. The user fee will be deducted from the transponder, which functions much like a telephone card.

Proponents of MnPass believe that user fees will pay for the initial infrastructure costs. After that, revenue will be used to improve transportation in the I-394 corridor: one half will be spent on public transit; the other half, on road improvements.

**California models**

Many people are concerned that MnPass will create a “Lexus lane” used only by wealthy drivers. But, according to Lee Munnich, director of the State and Local Policy Program at the Humphrey Institute, research has shown that this hasn’t happened in areas where such lanes are in operation.

“Studies show that in Orange County, California, people of all income levels use the peak-period express lanes on SR-91,” Munnich says. “And in San Diego, four years after the express lanes opened on I-15, 89 percent of the city’s drivers support extending them.”

The benefits of MnPass may extend beyond those who pay to use the lane. It is possible, Munnich adds, that congestion in the other lanes will lessen as some traffic goes to the express lane. On California’s SR-91, for example, average rush-hour speeds in the general lanes doubled.

Transit users may also benefit from improvements paid for by MnPass revenue. In San Diego, improvements financed by user fees led to a 25 percent increase in bus ridership between 1999 and 2001.

Of course, there is a chance MnPass tolls will cause the few car poolers already using the HOV lane on I-394 to stop. But the opposite effect is more likely—that more people will start carpooling. That’s what happened in both Orange County and San Diego, Munnich says, where carpooling increased after the express lanes were opened to solo drivers willing to pay a user fee.

**Funding implications**

Because the project is expected to pay for itself, Munnich notes that it will probably not be necessary to raise taxes to defray the necessary infrastructure changes. Once the initial cost is paid off, user fees should be able to fund the cost of additional improvements.

In addition, since MnPass is approved by FHWA, the state of Minnesota may avoid costly penalties imposed by the federal government, which financed the original highway construction, for opening the HOV lane to solo drivers.

According to Munnich, value pricing promises to reward people for making less costly choices, such as riding the bus, carpooling, or traveling at less-congested times. The result may mean slower congestion growth and a reduced need for costly road construction. In addition, he says, congestion pricing could help pay for critical transportation improvements.

More information about this research is available online at: [www.lrrb.gen.mn.us/pdf/200331.pdf](http://www.lrrb.gen.mn.us/pdf/200331.pdf) (4.7 MB).
A shipper panel to measure transportation services

In a study sponsored by Mn/DOT and titled "The Feasibility of a Shipper Panel to Measure Common Transportation Services," Beier’s team found that a panel could provide shippers and others (including carriers) with standardized metrics criteria. Though the evaluation methods differed between metro and non-metro shippers, evaluation (including carriers) did not. Overall, firms reported that on-time delivery and costs were most important. According to Beier, this is significant because it reduces the number of individual criteria a shipper panel would have to focus on, thereby simplifying the process. A shipper panel would not measure prices, but it would track four or five service characteristics including on-time delivery.

First, the researchers needed to document the current evaluation processes that shippers use. To do so, they held focus groups with, then surveyed, shippers in the metro area and greater Minnesota. Based on what Beier and his research team have discovered so far, a shipper panel is feasible and may increase the quality of service carriers provide to their customers or help pinpoint where problems in transport of goods services may be occurring.

Shippers often lack quantitative evaluation metrics and tend to rely more on qualitative methods. Data often does not exist in electronic formats or even as hard copy. Also, shippers are generally reluctant to switch carriers because they have fewer alternatives.

More information about this research may be found online at: www.lrrb.gen.mn.us/PDF/200304.pdf (0.7 mb PDF).
Mapping ‘suburban DNA’ for a new design strategy

Our physical traits are determined by the genetic information encoded in the DNA molecules of our chromosomes. Even if we try, we cannot will ourselves to have a smaller nose, straighter hair, or a taller frame.

In much the same way, University landscape architecture professor Lance Neckar says, suburban development is determined by a well-established legal framework that shapes designs, planning practices, and policies. This “suburban DNA” is also deeply embedded in the culture of the Twin Cities region.

For example, in most suburban communities, the minimum single-family residential lot size is one-third of an acre, which results in low population density. Building codes require that residential and commercial development be separated, which means suburban neighborhoods have no “corner stores” within walking distance.

Proposed commuter rail corridor

Neckar took a critical look at this “suburban DNA” in a recent study of the proposed Highway 61/Red Rock Commuter Rail Corridor. The study is part of the larger Transportation and Regional Growth Study, which is a collaboration among CTS, the Center for Urban and Regional Affairs, the Minnesota Department of Transportation, the Metropolitan Council, and the Minnesota Local Road Research Board.

In the Red Rock study, Neckar concentrated on two critical variables that could alter the “genetic code of sprawl”: vehicle-miles traveled (VMT) and water quality and quantity.

“In many communities, a person cannot get a carton of milk without getting into the car,” he explains. “This increase in VMT is related to zoning laws and funding for better roads that lead from single-use residential areas to strip malls in areas zoned for commercial development.”

The second variable, water quality and quantity, is an essential element of growth. “Suburban growth has been based on ground water,” Neckar adds. “We’re drinking water that is hundreds and thousands of years old. We’re drinking it faster than it’s being replenished.”

The Red Rock Commuter Rail Corridor extends from Minneapolis to Hastings, with a principal station in St. Paul. Neckar and his research team focused on projected growth in the Cottage Grove area near the proposed station at Jamaica Avenue and Highway 61.

Development in the area depends on water from the Prairie du Chien aquifer. No effort is being made to conserve this ground water by using rain and snow as sources of drinking water. Instead, storm water is treated as waste. It flows through suburban streets and is eventually piped to distant receiving basins.

A new design strategy

Neckar and his team proposed a design strategy that would use streets as “parkways” similar to those in Minneapolis. These parkways feature wide swaths of open land with grass and trees along the street in front of houses. Storm runoff filters through this open land (infiltration) and returns to the ground water.

This design strategy calls for an increase in the density of dwelling units from three to as many as seven per acre. Nodes of commercial and institutional services would be created within walking distance of residents. Some, but not all, nodes would be located in the area of the commuter station.

This design strategy conserves water and reduces VMT by incorporating infiltration approaches into the design of pedestrian-friendly streets. By increasing density and placing residents within walking or biking distance of the station, the design also assures that commuter rail will have enough riders to be sustainable.

Neckar admits that this strategy, though promising, does not follow local planning and zoning regulations. What is needed is more regional integration of urban design and land use. “With a few tweaks to the infrastructure,” he says, “we can accommodate substantial growth, protect our water supply, and serve a sustainable transit system.”

More information about this research may be found online at: www.cts.umn.edu/trg.
There’s no fence like a snow fence

Each year, travel on many roads in the appropriate height and density for the problem Upper Midwest is affected to varying area, expanding the fence far enough lengthwise, and placing it an accurate distance from the road. Direct consequences often include hazardous driving conditions, degraded road quality, and significant snow removal costs. The team launched an interactive Web site during one year of unusually high snowfall, the state of Minnesota spent $215 million on snow control. In addition, secondary effects of snow-covered roads can include the compromised safety and prosperity of local businesses and communities.Shipments may be delayed, schools can be closed, and farms are often cut off from emergency services when roads shut down.

Seeking a better way, University of Minnesota researchers joined practitioners from the Minnesota Department of Transportation (Mn/DOT), the Minnesota State Climatology Office, and other agencies to address the issue with a study entitled "Implementation of Climatological Summaries for Blowing and Snow Control: Design, Training, and Website Development." University soil, water, and climate professor Mark Seeley and Dan Gullickson of Mn/DOT's Office of Environmental Services initiated the project after the snowy winter of 1996–97. The goal was to determine the most effective snowdrift mitigation strategies for any given site, with a focus on the living snow fence approach.

A barrier between road and snow fence provides an economically and environmentally beneficial means for rural or communities to improve road conditions and (usually 150–300 feet) from the roadway. The aim of these fences is to create a barrier between driver visibility, living snow fences also result in fewer accidents and safer travel on our roads during the winter season.

During the beginning of the project, researchers analyzed snow and wind data using a database with the most comprehensive coverage available; the database contained the climatic history of 370 locations, some dating back to the 1850s. After analyzing the data, the team was able to determine the criteria necessary for the creation of an effective living snow fence. They joined their findings with previous studies in order to develop site-specific methods for the most effective design and deployment of snow fences. Effective design includes choosing a snow fence with an environmental benefit, reducing wind speed and improved driver visibility, living snow fences also result in fewer accidents and safer travel on our roads during the winter season.

More information about this research may be found online at: www.climate.umn.edu/snow_fence/.
Understanding integral abutment bridges

Motorists traveling on Olmsted can damage the bridge structure. County Road 104 south of Rochester are probably unaware that expansion joints must be cleaned out regularly. In addition, bridges with typical jointed bridges is costly in terms of money, equipment, and personnel. During maintenance, bridges must be closed to traffic, which inconveniences motorists, delays shipping, and hampers emergency vehicles.

That's because this 217-foot-long bridge is an integral abutment bridge, built without expansion joints. Bridge 55555 is also the subject of a field study sponsored by the Minnesota Local Road Research Board and led by civil engineering professors Catherine French and Carol Shield. These bridges contain no expansion joints. Instead, they are designed so that the abutment itself can move in relationship to the soil, or backfill, that it retains. Approach panels at both ends of the bridge accommodate relative movement between the bridge deck and the roadway pavement leading to the bridge.

The interaction of the soil and the abutment is complicated. The result is that the design of integral abutment bridges has been based largely on trial and error. French and Shield began their investigation of Bridge 55555 while it was under construction in 1995. They installed over 120 instruments to monitor the movement of the abutments with respect to the backfill, the effects of temperature, and other aspects of bridge behavior.

Expansion joints relieve stress. They also developed a computer model of the bridge. To verify the model, they compare its response to simulated traffic... for the bridge, the abutments also support or hold back the soil of the embankments on either side of the river or highway spanned by the bridge.

Extending the study

French and Shield are now working with their students to extend the... for move. The bridge wants to continue to expand the state's drivers. and contract, but the frozen joints do not permit this movement. The result is increased stress that...
Uncovering the likelihood of surface-initiated cracking

CTS HIGHLIGHT

CTS, in partnership with the Civil Engineering Department, Mn/DOT, and the Minnesota Local Road Research Board (LRRB), established a Pavement Research Institute to address a wide range of pavement research needs. The first task of the Pavement Research Institute was to appoint a new director, Erland Lukanen.
Graduate Certificate Program in Transportation Studies

Enrollment in the Graduate Certificate Program in Transportation Studies has climbed steadily during the past year, and semi-annual information sessions about the program consistently draw more than a dozen students and professionals, including transportation planners, civil engineers, and public policy consultants.

Seven students received a graduate certificate in transportation studies this academic year: Andrew Johnson, Heather Krause, Peter Langworthy, Nancy Lueke, Nicholas Mackaman, Molly McCartney, and Peter Rafferty.

John Adams (Geography), Gary Davis (Civil Engineering), Kevin Krizek (Humphrey Institute), David Levinson (Civil Engineering), and Gerard McCullough (Applied Economics) served as faculty advisors. Davis replaced McCullough in fall 2003 as certificate director of graduate studies.

CTS and the University of Minnesota Graduate School launched the program in fall 2001 for professionals in transportation-related fields as well as for students seeking a master's degree in a related discipline. By completing the flexible program requirements, participants acquire advanced knowledge of the complex issues in transportation and gain a significant professional credential.

The certificate program is built around a core set of graduate-level courses in policy, engineering, and supply chains. Participants are required to complete two of these courses, as well as a transportation technology seminar. Participants also must select two or three elective courses from a broad range of offerings in numerous academic departments.

Application materials and information about the Graduate Certificate Program in Transportation Studies may be found online at: www.cts.umn.edu/certificate.

CTS research seminars

CTS holds hour-long research seminars to provide University faculty and researchers from a variety of disciplines an opportunity to share their findings.

**Fall-semester presentations**

“Bituminous Materials Characterization,” Mihai Marasteanu, Civil Engineering

“Increasing the Value of Public Involvement in Transportation Project Planning,” Gary Barnes, Humphrey Institute of Public Affairs

“Does Land Use Planning Affect Travel? Analyzing Moving Households and Neighborhood Accessibility,” Kevin Krizek, Humphrey Institute of Public Affairs

**Spring-semester presentations**

“Experimental Investigation of the Effect of Vertical Pre-Release Cracks in Prestressed Bridge Girders,” Catherine French, Civil Engineering

“Improving the Design of Roadside Ditches to Decrease Transportation-related Surface Water Pollution,” Jodi Elfering and David Biesboer, Plant Biology

“Groundside Effects of Air Transportation: Three Case Studies,” Julie Cidell, Geography

Mihai Marasteanu, Gary Barnes, Kevin Krizek, Catherine French, Jodi Elfering, David Biesboer, and Julie Cidell

The Graduate Certificate Program in Transportation Studies gained popularity during the year with 15 students enrolled in the program, up from six last year. The Center also celebrated seven certificate graduates.
Advanced transportation technologies seminars

During the 2002–2003 academic year, the Intelligent Transportation Systems Institute continued its multidisciplinary seminar series. These advanced transportation technologies seminars included a diverse set of presentations by local and national researchers addressing different areas of ITS research, such as traffic management and modeling, human factors, sensing, and intelligent vehicles as they relate to road- and transit-based transportation. The seminars are offered for credit and required as a course in the Graduate Certificate Program in Transportation Studies at the University of Minnesota.

**Fall-semester presentations**

“Ramp Meters on Trial,” David Levinson, Civil Engineering

“Is the Sequential Travel Forecasting Paradigm Counterproductive?” David Boyce, Civil and Materials Engineering, University of Illinois at Chicago

“Wireless EMS Services: Opportunities and Challenges to Bringing Safety and Travel Services to Rural Minnesota,” Tom Horan and Frank Douma, Humphrey Institute of Public Affairs


“Simulating Snowplow Scheduling in District One,” Martha Wilson, Industrial Engineering, University of Minnesota—Duluth (videocast from Duluth)

“Dynamics and Control of Tilting Vehicles,” Lee Alexander, Mechanical Engineering

“Mn/DOT ITS Projects,” Farideh Amiri, Mn/DOT Office of Traffic Engineering and Intelligent Transportation Systems

**Spring-semester presentations**

“A Unified Approach to Spatial Outliers with Application to Traffic Data Analysis,” Shashi Shekhar, Computer Science and Engineering

“Advanced Traffic Signal Control and Prioritization,” Thomas Urbanik II, University of Tennessee–Knoxville, Civil and Environmental Engineering

“Vehicle-based Student Competitions at the U of M: History and Educational Impact,” Patrick Starr, Mechanical Engineering

“Comparing Dualmode Transportation Systems with Other Proposed and Existing Systems,” Francis D. Reynolds, dualmode transportation inventor and private consultant

“The ITS Laboratory—Building the Future,” Ted Morris, Center for Transportation Studies

“Traffic Flow Study of the Miller Hill Corridor,” Jiann-Shiou Yang, Electrical and Computer Engineering (Duluth)


**Special presentation**

“Advanced Technology for Homeland Security Applications,” Vassilios Morellas, Honeywell Laboratories’ Automation and Control Systems
With tightening budgets, the transportation field has a promising future. Openings for entry-level jobs are scarce, even for students with transportation education. Cheri Marti of CTS, who led the general session on career preparation, said that internship experience is often better insulated against budget cuts because of the crucial role in society that transportation plays.

In March 2003, about 75 students from Minnesota and Wisconsin, and 18 exhibitors came to the Eighth Annual Transportation Career Expo in Minneapolis. Most attendees had similar intentions: to land a job or, at minimum, gather advice for pursuing a variety of careers in transportation.

Employers promoted their organizations through booths, and several company representatives led informational sessions.

Speakers encouraged students to be persistent in their job seeking and reminded them that...
EDUCATION

Student Programs

The Intelligent Transportation Systems Institute welcomed a group of secondary school students from the Fond du Lac area in July 2002.

ITS Laboratory manager Ted Morris led a tour of his lab’s facilities and talked about current research at the Institute, including computer simulations and traffic control studies. He also highlighted the diversity of potential careers in intelligent transportation systems, including engineering, management, and research.

After lunch at the lab, the group departed for the Mn/DOT Traffic Management Center, where they toured the nerve center of Twin Cities traffic management. The ITS Institute hosts groups of college-bound students each summer as part of the National Summer Transportation Institute, sponsored by the Federal Highway Administration.

National Summer Transportation Institute
CTS awards, scholarships, and employment

CTS presented the Matthew J. Huber Award for Excellence in Transportation Research and Education to two students: Xue Li and Lei Zhang, doctoral candidates in the Department of Civil Engineering. Li’s major is pavement engineering and his advisor is Assistant Professor Mihai Marasteanu. Zhang, who is advised by assistant professor David Levinson, is concentrating in transportation engineering. CTS presents the award to graduate students each year in April at the CTS annual meeting and awards ceremony. The award is named in honor of the late Professor Matthew J. Huber, in recognition of his contribution to the teaching and study of transportation at the University of Minnesota.

Zhang also received the Milton Pikarsky Award—Science and Technology during the Transportation Research Board’s 82nd Annual Meeting in Washington, D.C. in January 2003. In Zhang’s thesis, Developing Efficient and Equitable Freeway Ramp Control Strategies, measures of efficiency and equity for ramp meters are defined and applied to data collected in the Twin Cities ramp metering shut-off experiment of fall 2000.

Also at the TRB annual meeting in January 2003, graduate research assistant Robert F. K. Martin received the ITS Institute’s 2002 Outstanding Student of the Year Award. Martin, seeking his master’s in computer and information science, was recommended for the award by Nikolaos Papanikolopoulos, professor of computer science and engineering. Martin’s work is focused on the detection, tracking, and classification of vehicles using computer vision techniques.

Dan Herber, a joint-degree student in law and a graduate program in urban and regional planning, was named a 2003 Eno Transportation Foundation Fellow. The award included a five-day visit to Washington, D.C. where he and 19 other fellows met with top policymakers and transportation leaders to discuss the reauthorization of transportation funding legislation. The Eno Foundation, created in 1921 by William Phelps Eno, a pioneer in the transportation field, is a private organization dedicated to improving all modes of transportation. Transportation graduate students are nominated by their professors, with a limit of one nominee from each campus. Professor Kevin Krizek and CTS supported Herber’s nomination.

In May 2003, Nancy Lueke, a graduate student at the University of Minnesota’s Humphrey Institute, won the graduate scholarship award from the Minnesota chapter of Women’s Transportation Seminar.

In addition, CTS continued to work with faculty to offer graduate assistantships and undergraduate scholarships to help increase the number of transportation students, and to provide expense reimbursement scholarships for student attendance at the annual TRB and ITS America conferences. CTS also continued to help match University of Minnesota students with possible job opportunities in transportation-related organizations through its newsletter and Web site. And the Center’s student interns assisted in the research, education, and outreach areas as well as provided office support.
Participants in LTAP Events

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Minnesota Local Technical Assistance Program

Housed within CTS, Minnesota LTAP is part of a network of 58 centers nationwide funded by the Federal Highway Administration’s Local Technical Assistance Program, better known as LTAP. Funds for Minnesota LTAP are also provided by the Minnesota Local Road Research Board (LRRB) and Mn/DOT.

Minnesota LTAP offers a statewide workshop program and partners with other organizations to cosponsor events. LTAP offered the following workshops in FY2003:

- Gravel Road Maintenance and Design
- Bridge Maintenance
- Context-Sensitive Design Workshop for Local Governments
- Design, Construction, and Maintenance of Stormwater Basins and Erosion Control
- Asphalt Pavement Maintenance and Preservation
- Reducing Risk and Liability
- Design and Maintenance Considerations for Erosion Control on Local Roads
- Advanced Automotive Training in Electricity
- Hydraulic Testing and Troubleshooting
- MMUTCD Training
- Motor Grader Operator Training

Minnesota LTAP cosponsored the following events:

- Eighth Annual Transportation Career Expo
- Seven Annual Minnesota Pavement Conference
- Spring and Fall State Maintenance Expos
- Context-Sensitive Design (Mn/DOT) workshop
- APWA “Click, Listen, and Learn” online courses
- Work Zone Traffic Control and Road Marking workshop
- Traffic Engineering Fundamentals workshop

LTAP and CTAP (see page 20) workshops included 118 total sessions in more than 42 statewide locations. These sessions reached more than 8,611 city, county, state, and other transportation personnel.

In a new effort, Minnesota LTAP, in cooperation with Mn/DOT, developed and delivered training using the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD). This one-day class was offered at 10 sites across the state, attracting a record 362 attendees. Minnesota LTAP also delivered two new mechanic training workshops in the fields of advanced automotive training in electricity and hydraulic testing and troubleshooting.

In addition, Minnesota LTAP, the Minnesota Department of Transportation Office of State Aid, the Minnesota LRRB, and FHWA designed and distributed a CD-ROM version of the previously released Asphalt Maintenance Field Guide. This version was distributed to all LTAP centers and FHWA resource centers.

A resource card containing key Web sites, as well as contact information for the Minnesota LTAP and Mn/DOT Library staff, is available from Minnesota LTAP or online at: www.mnltap.umn.edu/publications.

More information about Minnesota LTAP is available online at: www.mnltap.umn.edu.
State maintenance expos

Minnesota LTAP partners with Mn/DOT, the Minnesota Local Road Research Board (LRRB), the Minnesota Public Works Association, and the Minnesota Street Superintendents Association to hold annual spring and fall maintenance research expos. These events allow transportation professionals, especially those in the maintenance area, to exchange ideas and information; learn about new technologies, practices, and materials; and improve communications within the workplace. Also included are half-day outdoor equipment demonstrations and indoor equipment displays of exhibitors’ technology.

Expo attendance has nearly doubled in recent years. The fall 2002 expo, held October 3-4 in St. Cloud, attracted approximately 2,000 attendees from state, county, city, and township governments. The snowplow “rodeo” competition and other fall expo events generated extensive news coverage and drew the attention of TV stations from the Twin Cities, Greater Minnesota, and the Cable News Network. The spring expo drew more than 800 attendees April 24-25, 2003, also in St. Cloud.

Roads Scholar Program

Minnesota LTAP launched a new certificate program, the LTAP Roads Scholar Program, designed for local and state agency maintenance personnel who are committed to learning new skills and expanding their knowledge in the latest road and bridge innovations and best practices. The program combines Minnesota LTAP’s many training options into a structured curriculum of half-day and one-day training sessions.

Participants must earn eight credits to complete the program: three credits from required LTAP workshops and five elective credits from a combination of LTAP workshops, maintenance expos, and Circuit Training and Assistance (CTAP) workshops. There is no enrollment fee, and students have five years to complete the certificate. Graduates will be recognized through various means, such as a press release to their local newspapers and coverage in the Minnesota LTAP newsletter and on the Web site.

More information about the LTAP Roads Scholar Program may be found online at: www.mnltap.umn.edu.

Circuit Training and Assistance Program

CTAP, or the Circuit Training and Assistance Program, is a mobile outreach effort providing training, technical assistance, and technology transfer to city, county, state, and related personnel. Workshops may be scheduled for a range of topics upon request.

CTAP instructor Kathy Schaefer, a former maintenance supervisor with Mn/DOT, made statewide training tours focused on snow and ice control, and asphalt pavement maintenance, as well as offering several short courses. In all, more than 4,100 employees from cities, townships, counties, and the state participated in CTAP training sessions. In addition, Schaefer gave a presentation on erosion control at the county engineers’ association annual conference in January 2003 and at the 2003 spring maintenance expo.

CTAP is sponsored by Minnesota LTAP, Mn/DOT’s Maintenance Research and Operations Office, and the Minnesota Local Road Research Board. More information about CTAP may be found online at: www.mnltap.umn.edu.
AirTAP

A

TRAINING AND TECHNICAL ASSISTANCE

Minnesota
AirTAP

AirTAP—the Airport Technical Assistance Program—is a statewide assistance program for aviation personnel requesting easy-to-implement ideas that help build support for airport operations and also provides a range of helpful information, community. The toolkit was distributed to more than 1,500 airport personnel.

In cooperation with Mn/DOT and MCOA, (www.airtap.umn.edu), along with other useful information, materials, and resources. Minnesota AirTAP designed and delivered two workshops, Wildlife Control Seminar and Asphalt, Concrete, and Turf Maintenance Preservation, to address maintenance challenges facing local airports in Minnesota. AirTAP also partnered with Mn/DOT, MCOA, and Minnesota LTAP to present a one-day workshop, Disadvantaged Business Enterprise (DBE) Program and Labor Wage Compliance, to update airport personnel involved with airport funding and construction compliance.

The program continued publication of Briefings, a quarterly one-page insert for the MCOA newsletter, and continued to publish highlights of its workshops and training sessions. Specifically, Minnesota AirTAP developed and distributed four reports based on AirTAP programs: Airfield Pavement Maintenance, Project Funding and Development, Snow and Ice Control, and Wildlife Control Seminar Highlights.

In addition, AirTAP published Flying High:
CTS celebrated 15 years at the University of Minnesota during its fall luncheon where speakers reviewed CTS accomplishments, acknowledged CTS supporters, and addressed future goals.
CTS 15th anniversary

CTS celebrated its first 15 years at a special luncheon in November 2002, remembering growth milestones, recognizing CTS partners, volunteers, and staff, and looking toward the future.

CTS director Robert Johns, associate director Laurie McGinnis, and assistant director Cheri Marti led the festivities, which included staff, supporters, advisors, and committee and council members from the past and present. MIT civil and environmental engineering systems professor Joseph M. Sussman delivered a luncheon presentation titled “Transportation in the 21st Century: A Systems View.” (For more about Sussman’s speech, see page 27.)

Marti moderated a “roving microphone” retrospective of major CTS milestones interspersed with recollections by nine industry leaders and contributors to the Center’s history. During the discussion, she explained that the idea of a transportation center at the University was first conceived by three faculty members in the Department of Civil Engineering—Panos Michalopoulos, Yorgos Stephanedes, and Ray Sterling.

Dick Braun, the founding director of CTS, wrapped up the memories describing his move from the Mn/DOT commissioner’s office to a tiny space in the civil engineering building, where the program was first housed. With counsel from various people, he came to see what kind of center was needed—a platform with a neutral outlook, not part of one department, that would bring together stakeholders. “Under Bob Johns, it’s developed into something far beyond what I first perceived,” he concluded, “and I applaud the staff for their efforts.”

McGinnis took a few moments to acknowledge the organizations and volunteers whose support has been vital to CTS. She thanked the sponsors, in particular Mn/DOT, for their ongoing support, and the hundreds of volunteers who have contributed to CTS by serving on the CTS Executive Committee, Board of Advisors, program steering committees, and councils. Finally, she thanked all current and former staff.

Johns closed the celebration with a look toward the future, where he sees CTS serving two main functions: to help create knowledge through its support of faculty-led research, and to help educate and train future transportation professionals. CTS, he added, will also anticipate new issues and continuously remake itself in order to adapt to the changing policy and funding environment.
Regional and national transportation officials, policymakers, and professionals joined U.S. Rep. James L. Oberstar March 16–17, 2003, to discuss improving intermodal connections among passenger and freight carriers. It was the second meeting of the forum named after Oberstar and hosted by CTS.

Oberstar headlined the event, which featured Associate Deputy Secretary of Transportation Jeffrey Shane and Lt. Gov. Carol Molnau. CTS director Robert Johns served as master of ceremonies.

“Intermodalism is more than just a ‘buzzword’ or the flavor of the day among transportation policymakers,” Oberstar said, kicking off the forum by laying out a broad vision for the nation’s transportation system. “We need to think in intermodal terms as we engage in long-range planning for our transportation infrastructures.”

In his keynote address during the portion of the forum open to the public, Shane cited the critical role freight transportation has played in making the U.S. economy one of the most efficient in the world. But he stressed the need for improving intermodal links for passenger travel and providing consumers with more travel choices.

After Shane’s keynote remarks, a mixed panel of freight and passenger transportation executives swapped ideas and fielded questions from an audience of more than 200. Oberstar and moderator Robert Johns were joined by Peter Bell, chair of the Metropolitan Council of the Twin Cities; William Berry, intermodal vice president of Canadian National Railway Company; Donald Schneider, chairman of Schneider National, Inc.; Gerry Brown, president of Cargo Marine and Terminal, Inc.; and Paul Skoutelas, CEO of the Port Authority of Allegheny County.

A detailed report summarizing the second James L. Oberstar Forum for Transportation Policy and Technology is available online at: www.cts.umn.edu/oberstarforum.
CEO Leadership Forum

CTS hosted a three-day DOT leadership forum to foster in-depth discussion of and develop action plans for addressing how each DOT carries out leadership strategies, delivers programs, and operates its transportation systems. The event, which took place May 4–6, 2003, was sponsored by the American Association of State Highway and Transportation Officials (AASHTO), the Transportation Research Board (TRB), and the Federal Highway Administration (FHWA), with funding provided by the National Cooperative Highway Research Program (NCHRP).

CTS director Robert Johns, Lt. Gov. and Mn/DOT commissioner Carol Molnau, and AASHTO president James Codell kicked off the first day of the forum, which included presentations built around three forum topics—strategic leadership, program delivery, and system operations—and set the stage for more focused interaction later in the forum.

Opening presentations were made by John Brandl, a professor at the Hubert H. Humphrey Institute of Public Affairs, Steve Lockwood, vice president with Parsons Brinkerhoff, and Tom Warne, president of Tom Warne and Associates. Other participants included Codell, John Horsley, executive director of AASHTO, Robert Skinner Jr., TRB executive director, and Frederick “Bud” Wright, FHWA executive director.

Forum invitees also took part in a series of unique conversation circle discussions designed to address each of the three forum topics. The event culminated with a large-group brainstorming session followed by small work-group sessions geared to finalize action plans to carry out the initiatives and ideas generated throughout the forum. The group came up with 21 specific action plans, which the sponsoring organizations, through an NCHRP panel, prioritized for future implementation.

A report summarizing the three-day workshop is available online at quality.transportation.org.

2003 Annual Transportation Research Conference

In April 2003, CTS held the Fourteenth Annual Transportation Research Conference in St. Paul. Throughout the event, security concerns since September 11 consistently emerged as a top priority along with congestion and funding reauthorization. Highlights include:

• A “State and Regional Transportation Policy Update” by Lt. Gov. Carol Molnau, Minnesota transportation commissioner, and Peter Bell, chair of the Metropolitan Council.

Molnau and Bell, two of the Pawlenty administration’s top transportation leaders, said the governor’s goal is moving people and goods as efficiently as possible. Each shared their visions for the future of transportation in Minnesota. Molnau said their plan couples a clear commitment to building critical road and bridge projects with innovative financing tools to deliver progress to Minnesota drivers. In addition to singling out congestion as the number one lifestyle issue in the seven-county metro area, Bell also set forth a number of goals for the council.

• A luncheon presentation titled “Leveraging Technology to Reshape Transportation Planning,” by Michael Shiffer of the Chicago Transit Authority. (For more about Shiffer’s presentation, see page 27.)

• Nearly two dozen concurrent sessions, including topics such as value pricing, environmental streamlining, human-powered transportation, data gathering, safety and security, transportation access for the disadvantaged, transportation asset management, and the I-35W access project.

• A half-day workshop on bridge design and rapid replacement, featuring Minnesota and national experts.

Complete coverage of the 2003 Transportation Research Conference may be found online at: www.cts.umn.edu/news/report/2003/06/.
CTS annual meeting and awards luncheon

As the featured speaker at the CTS annual meeting and awards luncheon in April 2003, U.S. Rep. Martin O. Sabo addressed the funding and logistical challenges of responding to the threat of terrorism. Sabo recently left the House Transportation Appropriations Subcommittee to become the ranking member of the new Homeland Security Subcommittee.

CTS also presented the following awards at the meeting. The ceremony is an opportunity for CTS to recognize significant contributions to the field of transportation.

- William K. Smith Distinguished Service Award: Gary Eikaas, vice president of Dedicated Logistics Inc. and the inaugural winner of the award last year, presented the 2003 award to Ron Lifson, vice president/general manager of LDI Fibres, Inc.
- Distinguished Public Leadership Award: CTS Executive Committee member Fred Corrigan, executive vice president of the Minnesota Transportation Alliance, presented the award to Colleen Landkamer, a Blue Earth County commissioner and former policy fellow at the Humphrey Institute.
- Richard P. Braun Distinguished Service Award: Richard P. Braun, founding director of CTS, presented the award to Robert Benke, former Mn/DOT research services director.
- Ray L. Lappegaard Distinguished Service Award: CTS director Robert Johns announced

Pete Fausch, principal engineer for SRF Consulting Group, Inc., as this year’s recipient.
- CTS Research Partnership Award: The project recipient was “Implementation of Climatological Summaries for Blowing Snow Control: Design, Training, and Website Development.” In the project, University researchers joined practitioners from several agencies to develop snowdrift mitigation strategies in order to save lives, money, and time. *(For more about the project, see page 9.*) Project partners included:
  - Mark Seeley, Amy Baker, and Dave Ruschy (University of Minnesota’s Department of Soil, Water, and Climate)
  - Martha Shulski (Alaska Climate Research Center, formerly with the Department of Soil, Water, and Climate)
  - Dan Gullickson, Lou Barrett, Ed Fleege, Elizabeth Hobbs, and Jim Klessig (Mn/DOT)
  - John Doan (Minnesota Department of Finance, formerly with Mn/DOT)
  - Paul Flynn (U.S. Department of Agriculture Natural Resources Conservation Service)
  - Lee Klossner (University of Minnesota’s Southwest Research and Outreach Center at Lamberton, Minnesota)
  - Kenny Blumenfield (University of Minnesota Department of Geography)
  - Pete Boulay, Greg Spoden, and Jim Zandlo (Minnesota Department of Natural Resources State Climatology Office)

Research Partnership Award winners: (front row, left to right) Elizabeth Hobbs, Amy Baker, Jim Klessig, Dan Gulickson, Lou Barrett, Laurie McGinnis. (Back, left to right) John Doan, Dave Ruschy, Mark Seeley, Pete Boulay, Kenny Blumenfield, Paul Flynn, Ed Fleege, and Jim Zandlo
CTS luncheon presentations

The Center’s luncheon presentations provide a setting for transportation professionals, faculty, and students to interact as they listen to presentations of national issues. The spring luncheon is held in conjunction with the annual CTS transportation research conference.

At the spring luncheon in April 2003, Michael Shiffer told the assembled researchers and practitioners, “Wonderful plans fail without communication.” As vice president of planning and development for the Chicago Transit Authority, Shiffer is responsible for making sure the nation’s second-largest transit operator is not left behind by shifting land-use patterns or changing customer behavior. His presentation shared some of the ways his agency is using technology to meet the needs of today while preparing for the future. At the core of an effort he led to reorganize and consolidate CTA’s technological resources was the idea of an “information infrastructure” to support decision-making. But as Shiffer pointed out, it’s the communication—not the technology itself—that makes plans succeed or fail.

At the CTS winter luncheon in February 2003, Hiroshi Tsuda offered his personal perspective on the challenges faced by engineers and designers working with intelligent transportation systems (ITS) technologies. Tsuda, a researcher from Nissan Technical Center North America, used examples from his work developing in-vehicle navigation systems. Tsuda’s presentation touched on some classic problems in interface design, as well as complex implementation issues that are becoming increasingly important as ITS technologies enter the mainstream. As ITS applications become common, Tsuda said, researchers and engineers must pay attention to both the needs of the driver and the large-scale effects of implementing new technologies—a lesson he has learned through experience.

During the CTS 15th anniversary celebration in November 2002, MIT civil and environmental engineering systems professor Joseph M. Sussman delivered a fall luncheon presentation titled “Transportation in the 21st Century: A Systems View.” Sussman observed that transportation is facing significant transitions in the interconnected areas of technology, systems, and institutions. In response to such challenges, Sussman expressed the need for a “T-shaped professional” who has not only an in-depth knowledge within a transportation specialty, but also a breadth of knowledge in transportation fundamentals.

Freight and Logistics Symposium

Economic concerns, post-September 11 security measures, congestion, infrastructure innovations, public- and private-sector responsibilities, and the development of an regional air cargo facility were just some of the many topics examined by freight and logistics professionals, researchers, and policymakers at the Sixth Annual Freight and Logistics Symposium, hosted by CTS in December 2002.

The event’s main sessions included a keynote address by Wilbur Smith Associates vice president Arno Hart, a panel discussion about Minnesota’s global connections, and a public policy perspective from Congressman Mark Kennedy. Other highlights included a presentation on building exclusive truck lanes by Naresh Amatya, a senior planner with the Southern California Association of Governments, and an update on the Minneapolis-St. Paul international air cargo study by Mn/DOT’s Cecil Selness.

Kennedy touched on a wide range of transportation-related topics, from a fundamental public responsibility for building roads to the demands of increasing globalization. “We need to make sure we have the capacity to move goods and services around this state and the country, and internationally,” he said. Hart’s presentation, titled “Hang Ten: Riding the Wave of Transportation Integration,” discussed how freight transportation has evolved from a business dependent on inventory to one relying on operations. “Transportation information is the catalyst for change,” Hart observed, citing the necessity for agility, for moving and responding quickly. “Logistics is becoming a strategic weapon for economic development.”

CTS sponsored the symposium in cooperation with the CTS Logistics Task Force, Mn/DOT, the Minnesota Freight Advisory Committee, the Council of Logistics Management, and the Metropolitan Council.

A summary report detailing the entire event is available online at: www.cts.umn.edu/publications/proceedings/.
Congressional and legislative staff visits

Members of the Minnesota House Transportation Policy Committee and the Transportation Finance Committee visited CTS in March 2003 for a first-hand look at transportation research in progress at the University. The TechnoBus, demonstrating the latest in high-tech navigational equipment, transported the legislators to and from the University, with a demonstration on the intercampus busway. The December 2002. After an overview from CTS director Robert Johns, Kline heard an update by ITS Institute director Max Donath about research being performed in the Institute’s Intelligent Vehicles (IV) Laboratory. Kline then viewed a demonstration at the HumanFIRST lab. U.S. Rep. Martin Sabo received a similar tour and briefing following his remarks at the CTS annual meeting and awards luncheon in April 2003.

In November 2002, CTS hosted a congressional staff day attended by Dick Larson (Congressman Gil Gutknecht’s office), Katie Delmore (Congresswoman Betty McCollum’s office), Louis Moore (Congressman Martin Sabo’s office), Mark Matuska (Congressman Mark Kennedy’s office), and Deven Nelson (Congressman James Oberstar’s office). In addition to various presentations, the group received tours and demonstrations at the HumanFIRST Program, the IV Lab and the Technobus intelligent vehicle, and the ITS Institute Lab.

In May 2003, about 75 attendees of the 2003 ITS America national conference, held in Minneapolis, also took part in tours and demonstrations at the HumanFIRST Program, the IV Lab and the Technobus intelligent vehicle, and the ITS Institute Lab.

A TechnoBus demonstration for lawmakers concludes at the Minnesota Capitol.

group also toured the HumanFIRST Program’s facilities, which include a driving simulator that allows researchers to test driver response to various situations. Visiting transportation committee members included policy committee chair Ron Erhardt, finance committee chair Bill Kuisle, and Bernie Lieder, Peter Nelson, Frank Hornstein, Bruce Anderson, Alice Hausman, Nora Slawik, Chris DeLaForest, Mike Beard, Connie Ruth, and Andy Westerberg. Committee staff Margaret Amundson and Mark Meffert also attended.

U.S. Rep. John Kline received a briefing on a variety of CTS programs during a site visit in
Minneapolis Pavement Conference

Through participants at the Seventh Annual Minneapolis Pavement Conference heard updates on the usual suspects—such as bituminous treatments and concrete quality improvement—a new emphasis was on contracting, specifically, how to define and administer warranty contracts and avoid fraud and litigation.

Moderated by Pat Hughes, director of Mn/DOT’s Office of Materials and Road Research, the February 2003 conference featured speakers from the local, state, and federal levels. A special highlight was the presentation of the Annual Pavement Conference Award, renamed in honor of the 2002 recipient, Gerry Rohrbach. Doug Differt, Mn/DOT deputy commissioner, presented the 2003 Gerry Rohrbach Distinguished Service Award to Erland Lukanen. Differt praised Lukanen as a leader in the pavement industry since the late 1960s, first with the Minnesota Highway Department and then with consultants Braun Intertec and ERES.

Three of the plenary session speakers then touched on contracting-related issues. John D’Angelo, asphalt materials engineer with the Federal Highway Administration, presented the findings of an FHWA International Scanning Tour that investigated European experiences with warranties. Mark Peters, senior special agent with the USDOT Office of Inspector General, discussed contractor fraud statistics and trends. Legal matters were also the focus for Tom Vasaly, assistant attorney general with the state of Minnesota.

Mn/DOT, Minnesota LTAP, and the Department of Civil Engineering sponsored the conference. Planning committee members from the University were civil engineering researcher Gene Skok, Jim Grothaus of CTS, and Lori Graven and Teresa Washington of the College of Continuing Education.

The pavement conference was sandwiched between the Third Annual Mn/ROAD Conference on February 19 and the 51st Annual Geotechnical Engineering Conference on February 21.

University presenters at the Mn/ROAD conference were: civil engineering assistant professor Mihai Marasteanu, “Advanced Asphalt Binder Testing”; plant biology research assistant Jodi Elfering, “Improving the Design of Roadside Ditches”; mechanical engineering professor and ITS Institute director Max Donath, “ITS Participation at Mn/ROAD”; soil, water, and climate professor Satish Gupta, “Moisture Retention Characteristics of Unbound Materials”; and civil engineering assistant professor Bojan Guzina, “Base/Subgrade Characterization Devices.”

Transportation finance roundtables

CTS and the Humphrey Institute of Public Affairs held four roundtables in early 2003 to discuss the rethinking of transportation finance. The roundtable series was intended to stimulate open discussion among transportation leaders about a wide variety of transportation viewpoints.

The first event, in February, featured Jeff Squires, a senior policy advisor to Sen. James Jeffords of Vermont, the ranking minority member of the Senate’s Environment and Public Works Committee. Squires spoke about the need for finding other sources of financing transportation projects due to an expected decrease in gas-tax revenues, and gave some examples of how other metropolitan areas are addressing transportation financing and congestion issues.

In March, the breakfast roundtable featured Bob Poole, a researcher from the Reason Public Policy Institute who, along with his colleague Ken Orski, authored a recently released study of HOT (high-occupancy toll) networks. Poole highlighted the positive financing and congestion impacts of HOT networks and detailed the benefits they could provide for metropolitan areas around the U.S.

In April, University of Minnesota researchers Barry Ryan of the Department of Applied Economics and Gary Barnes of the Humphrey Institute’s State and Local Policy Program presented some of the work related to transportation finance that they did as part of the CTS Transportation and Regional Growth Study. Ryan described how different types of highways and streets in Minnesota are paid for, and Barnes discussed his research on travel behavior.

Finally, in June, U.S. Rep. Mark Kennedy, a member of the House Transportation and Infrastructure Committee, presented highlights of his Freeing Alternatives for Speedy Transportation (FAST) Act, which he co-authored in April. In addition, Marthand Nookala, director of Mn/DOT’s Operations, Safety, and Technology Division, explained specifics of a new Minnesota law that allows the express lanes on I-394 to be tolled. A roundtable discussion, moderated by former state senator Carol Flynn, featured Alan Steger of the FHWA, Sen. Ann Rest, author of the state senate legislation, Sen. Dick Day, Natalio Diaz of the Metropolitan Council, and Mn/DOT’s Doug Differt.
Toward Zero Deaths Program

Midwest Transportation Knowledge Network

CTS is one of the members of the Midwest Transportation Knowledge Network (MTKN), an 10-state network of transportation libraries in the Midwest. It was founded in December 2001 through the efforts of the National Transportation Library, Midwest transportation libraries (both at state DOTs and universities) and numerous concerned professionals in the region.

One major goal of the MTKN is to create a single point of access for the bibliographic catalog records of all member libraries, with cooperative lending of these resources among members. This resource will help managers, engineers, and planners to find and apply the most recent, credible, validated technical information related to their current projects. Desktop access to this database will be available in March 2004. The MTKN has also partnered with the National Transportation Library and the National Highway Institute to develop online training to educate customers on topics such as finding transportation information on the Internet and using transportation information databases.

If you would like further information about the Midwest Transportation Knowledge Network, please see [www.mtkn.org](http://www.mtkn.org), or contact Jerry Baldwin, Mn/DOT Library director and MTKN Executive Committee chair, 651-297-4532, jerry.baldwin@dot.state.mn.us, or Arlene Mathison, CTS librarian, 612-624-3646, amathison@cts.umn.edu.

CTS Library

The CTS library can provide assistance in obtaining CTS publications and research, as well as transportation-related research and publications from other organizations. Please call 612-624-3646 or e-mail library@cts.umn.edu.
Selected CTS Publications

Newsletters

**CTS Report**
A monthly publication on transportation research, education, and information/outreach activities at the University of Minnesota

**CTS Research E-News**
An electronic newsletter of the latest transportation research, project milestones, published reports, and seminar coverage at the University of Minnesota

**CTS Freight/Logistics E-News**
A periodic electronic newsletter to communicate logistics-related research results and news

**The Sensor**
A newsletter from the Center’s Intelligent Transportation Systems (ITS) Institute

Technology Exchange
A quarterly newsletter of the Minnesota Local Technical Assistance Program (LTAP)

AirTAP Briefings
A quarterly newsletter from the Airport Technical Assistance Program (AirTAP)

Proceedings
**Second James L. Oberstar Forum on Transportation Policy and Technology**, March 16–17, 2003

Sixth Annual Freight and Logistics Symposium, December 6, 2002

Handbooks
**Erosion Control Handbook for Local Roads**
Guidelines and methods for effective erosion control practices on low-volume roads

**Flying High: A Marketing Toolkit for Minnesota Airports**
Ideas for airport personnel wanting to build support for their operations in the communities they serve

**Videos**
**Advanced Transportation Technologies Seminar Series (Fall semester 2002)**

Ramp Meters on Trial
David Levinson, Civil Engineering
(September 10)

**Is the Sequential Travel Forecasting Paradigm Counterproductive?**
David Boyce, Civil and Materials Engineering, University of Illinois at Chicago
(September 24)

**Wireless EMS Services: Opportunities and Challenges to Bringing Safety and Travel Services to Rural Minnesota**
Tom Horan and Frank Douma, Humphrey Institute of Public Affairs
(October 8)

**Ecological Validity in Applied Perception Research in Simulation Environments: Past, Present, and Future**
Mike Manser, HumanFIRST Program
(October 22)

**Simulating Snowplow Scheduling in District One**
Martha Wilson, Industrial Engineering (UMD)
(November 5)

**Dynamics and Control of Tilting Vehicles**
Lee Alexander, Mechanical Engineering
(November 19)

**Mn/DOT ITS Projects**
Farideh Amiri, Mn/DOT Office of Traffic Engineering
(December 3)

To obtain these resources, please visit us online at [www.cts.umn.edu/publications](http://www.cts.umn.edu/publications) or contact the CTS Library at 612-626-1077.

Electronic newsletters and announcements

CTS began making greater use of electronic communications this year. In February 2003, CTS launched **CTS Research E-News**, a monthly electronic newsletter that communicates the latest research project milestones, published reports, and seminar coverage. More information about **CTS Research E-News** and other CTS electronic publications may be found online at: [www.cts.umn.edu/publications](http://www.cts.umn.edu/publications).

Another new electronic publication was **Freight/Logistics E-News**, which is directed to members of the former CTS Logistics Task Force. The task force decided at its April 2003 meeting to sunset the group and use existing mechanisms within CTS to carry forward its work, including the new e-newsletter and continued updates to the Upper Midwest Logistics Education Resources Web site ([www.cts.umn.edu/education/logistics](http://www.cts.umn.edu/education/logistics)). In addition, CTS now sends electronic announcements of all upcoming events and workshops.

CTS continues to develop its Web site as a mechanism for distributing information to a broader audience. This year, the Center saw the number of visitors grow from 49,339 to 163,447, more than tripling its audience.
By bringing together University scholars, CTS serves as a catalyst for helping the University explore new approaches for strengthening transportation knowledge and human resources.


CTS Faculty and Research Scholars Program

CTS has established a new program to strengthen its relationships with University faculty and researchers. The CTS Faculty and Research Scholars Program brings faculty and staff together to develop transportation research and education opportunities. CTS has worked closely with University faculty and sponsors to create innovations in transportation through the development of scientific knowledge and an educated labor pool. The new scholars program further leverages the skills of CTS staff in providing the initiative and linkages needed to advance transportation research and education. Scholars will have a role in shaping and prioritizing new research directions and in enhancing CTS educational programs such as the graduate certificate in transportation studies.

Under the CTS Faculty and Research Scholars Program, scholars have joint appointments at CTS as well as in their own departments. The program establishes an ongoing forum for faculty and researchers to meet with CTS staff to provide feedback, discuss interdisciplinary research opportunities, develop new education initiatives, and discuss ways to improve expertise in response to external demands. The program also addresses how to provide support and guidance to new faculty.

The scholars (listed below) were selected because of the transportation focus in their research and education activities, their ongoing involvement with CTS, and their successful relationships with transportation research sponsors. Their two-year appointments may be renewed or rotated to other candidates.

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<tr>
<th>John Adams</th>
<th>Max Donath</th>
<th>Andrew Drescher</th>
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<tr>
<td>Gary Barnes</td>
<td>Gary A. Davis</td>
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<td>David Biesboer</td>
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<td>Jerry E. Fruin</td>
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</tbody>
</table>
education and background: ph.d. and m.s. degrees in civil engineering from cornell university (1988, 1985); b.s. degree in mechanical engineering from yale university (1982); and structural engineer position at architectural engineering firm skidmore, owings, & merrill

kathleen a. harder
research associate, center for sustainable building research, university of minnesota

research expertise: design of infrastructure and vehicle components to enhance human performance and safety; effects of roadway features such as rumble strips, centerline treatments, and traffic calming measures; human factors issues in head-up display design

education and background: ph.d. in cognitive psychology from dartmouth and m.s. in experimental psychology from stockholm university, sweden

john hourdakis
research fellow, civil engineering

research expertise: traffic simulation and modeling, incident detection and prevention, including the design and deployment of advanced traffic surveillance stations; evaluation of the minnesota zone ramp metering algorithm

education and background: doctorate focusing on transportation studies currently in progress; m.s. in civil engineering from the university of minnesota; and undergraduate civil engineering degree from the university of patras, greece

lev khazanovich
associate professor, civil engineering

research expertise: aspects of concrete pavement research, design, and evaluation, including performance prediction, non-destructive testing, and finite element modeling

education and background: ph.d. from the university of illinois (1994); b.s. from the leningrad institute of civil engineering, russia (1983); and research at the ers division of applied research associates, inc.

david kittelson
frank b. rowley distinguished professor of mechanical engineering

research expertise: formation of pollutants and contaminants, particle and nanoparticle emissions from diesel engines, performance of alternative fuels

education and background: ph.d. in chemical engineering from the university of cambridge, england (1972); m.s. and undergraduate degrees from the university of minnesota

kevin krizek
assistant professor, humphrey institute of public affairs

research expertise: transportation, urban, and land-use planning; travel behavior analysis, including cycling, walking, and transit factors

education and background: ph.d. in urban design and planning and m.s.c.e. degree from the university of washington, seattle; and master’s degree in planning from the university of north carolina

taek kwon
professor, electrical and computer engineering director, umd transportation data research laboratory

research expertise: itrs applications, large-scale data management, digital signal processing, sensor networking, road/weather information systems, pavement condition reporting

education and background: doctorate in computer engineering from the florida institute of technology, current board member at the northland advanced transportation systems research laboratories (natsrsl)

david levinson
assistant professor, civil engineering

research expertise: evaluation of transportation technology and policy, modeling travel behavior, transportation infrastructure system financing, freeway congestion and ramp metering

education and background: ph.d. in engineering from the university of california, berkeley (1998); and former transportation planner position in montgomery county, maryland

erland lukanen
director, pavement research institute

research expertise: pavement research, evaluation, and management; structural design and policy

education and background: b.s. in civil engineering from the university of minnesota (1974), position at minnesota department of transportation for 18 years, and consultant for 23 years

barbara lukermann
senior fellow, humphrey institute of public affairs

research expertise: land development; neighborhood planning; links between land use, housing, and transportation policy

education and background: bachelor’s degree in geography from cambridge university, uk; m.a. in geography from the university of minnesota; principal post in a consulting firm for 15 years

michael manser
research associate, humanfirst program

research expertise: role of human perception, cognition, and behavior in typical driving environments; intersection-approach behavior, driver distraction, driver training, driving simulation systems

education and background: ph.d. in kinesiology from the university of minnesota with a cognate in human factors and ergonomics

mihai marasteanu
assistant professor, civil engineering

research expertise: characterization, modeling, and experimental testing of bituminous paving materials; low-temperature behavior of asphalt binders and mixtures

education and background: ph.d. and m.s. degrees in civil engineering from pennsylvania state university and engineering diploma from the civil engineering institute of bucharest, romania

alfred a. marcus
professor, strategic management and organization, carlson school of management

research expertise: transportation logistics and business management, environmental regulation

education and background: ph.d. from harvard university (1977); m.a. and b.a. degrees from the university of chicago (1973, 1971); and research consultant at the national academy of sciences, washington, d.c. (1975–76)

osama masoud
research associate, computer science and engineering

research expertise: vision-based computer software development and monitoring of traffic and pedestrians, algorithms for vehicle classification

education and background: ph.d. in computer science from the university of minnesota, m.s. and b.s. degrees in computer science from king fahd university of petroleum and minerals, saudi arabia

gerard mccullough
associate professor, applied economics

research expertise: industrial organization and transportation economics

education and background: ph.d. from the massachusetts institute of technology (1993), a.b. from
Research reports published in FY 2003

**Economy research**


Anderson, D. and McCullough, G. The Distribution of Transportation Costs in the Twin Cities Region. CTS 03-03.


Johnson, C. Market Choices and Fair Prices: Research Suggests Surprising Answers to Regional Growth Dilemmas (TRG Synthesis). CTS 03-02.*


Rose, D. Power Plant Siting Decisions and Transport Implications. CTS 03-09.

Ward, E. A Systems Thinking Perspective on the Transportation and Regional Growth Study. CTS 03-05.*

* Economy/Environment research

**Infrastructure research**

Altay, A., Arabbo, D., Corwin, E., Dexter, R., French, C. Effects of Increasing Truck Weight on Steel and Prestressed Bridges. Mn/DOT 2003-16.


Seavey, R. Inspection of Timber Bridges. Mn/DOT 2002-34.


Stolarski, H. The Effect of Transverse Stiffener Beams on Shear Transfer. Mn/DOT 2003-12.


Wilson, B. The Impact of Roughness Elements on Reducing the Shear Stress Acting on Soil Particles. Mn/DOT 2002-22.

**Environment research**


Neckar, L., Station Urban Design Issues in Red Rock Commuter Rail. CTS 03-07.


Tix, D., Hebberger, J., Vaughan, E., Charvat, I. The Effects of Fire versus Mowing on Prairie Plant Communities. Mn/DOT 2003-20

Vogel, M. St. Paul Central Corridor Study: Pierce Butler Industrial Redevelopment Parkway. CTS 03-08.


**Safety and traffic flow research**

Donath, M. A GPS-Based Head Up Display System for Driving Under Low Visibility Conditions. Mn/DOT 2003-03.


Harder, K. and Bloomfield, J. The Effects of In-Lane Rumble Strips on the Stopping Behavior of Attentive Drivers. Mn/DOT 2002-11.


Papanikolopoulos, N. Managing Suburban Intersections through Sensing. CTS 02-07.
CTS Executive Committee

Chair: Richard T. Murphy Jr.
President, Murphy Warehouse Company

Tom Chaffin
Vice President, Traffic Control Division, 3M

Douglas Differt
Deputy Commissioner, Mn/DOT

Mary Hill Smith
District #3 Member, Metropolitan Council

Colleen Landkamer
Blue Earth County Commissioner

Richard Thomas
Relations Director, Ames Construction

John Anderson
Associate Dean, Carlson School of Management

Fred Corrigan
Executive Vice President, Minnesota Transportation Alliance

Ron Erhardt
Representatives

Dean Johnson
Minnesota House of Representatives

Keith Langseth
Minnesota State Senator

Tom Weaver
Regional Administrator, Metropolitan Council

Terri Barreiro
Greater Twin Cities United Way

Duane Crandall
President and CEO, AAA Minnesota/Iowa

Jeff Hamiel
Executive Director, Metropolitan Airports Commission

Robert Jones
President and Provost, University of Minnesota

Lt. Gov. Carol Molnau
Mn/DOT Commissioner

Donn Wiski
Chair, Transportation Advisory Board

Anne Beers
Chief of Minnesota State Patrol, Department of Public Safety

Steve Crouch
Associate Dean, IT Administration, University of Minnesota

John Hausladen
President and CEO, Minnesota Trucking Association

Robert Kudrle
Professor, Humphrey Institute of Public Affairs, University of Minnesota

Al Steger
Minneapolis Division Administrator, Federal Highway Administration

Charleen Zimmer
President, ZAN Associates

Note: Listings in these appendices are current as of December 2003.
CTS Councils and Advisory Committees

APPENDIX B

CTS Councils and Advisory Committees

**Council Coordinating Committee**
Chair: Charleen Zimmer, ZAN Associates
Bernard Arseneau, Mn/DOT
George Cochran, Mn/DOT (ret.)
Jody Hauer, Office of Legislative Auditor
Ann Johnson, Professional Engineering Services
Connie Kozlak, Metropolitan Council
Gary Thompson, Mn/DOT

**Transportation and the Economy Council**
Chair: Jody Hauer, Office of Legislative Auditor
John Adams, Geography, University of Minnesota
Stephen Alderson, HNTB
Rabindra Bains, Mn/DOT
Gary Barnes, Humphrey Institute of Public Affairs, University of Minnesota
Robert Benke, Community Resource Partnership Inc.
Mark Berndt, Wilbur Smith Associates
David Braslau, David Braslau Associates
Ken Buckeye, Mn/DOT
Dave Christianson, Metropolitan Council
William Craig, Center for Urban and Regional Affairs, University of Minnesota
Norman Foster, Minnesota Department of Finance
Jerry Fruin, Applied Economics, University of Minnesota
Robert Gale, Mn/DOT
William Gardner, Mn/DOT
Kate Garwood, Anoka County
Department
Donald V. Harper, Carlson School of Management, University of Minnesota (ret.)
David Levinson, Civil Engineering, University of Minnesota
Carol Lovro, Association of Minnesota Counties
Jerry Nagel, Northern Great Plains Inc.
Betsy Parker, Mn/DOT
Perry Plank (ret.)
Raymond Rought, Mn/DOT
Charles Sanft, Mn/DOT
Eric Willette, League of Minnesota Cities

**Transportation Infrastructure Council**
Chair: George Cochran, Mn/DOT (ret.)
Ron Bray, WSB & Associates
David Dexter, Civil Engineering, University of Minnesota
Dan Dorgan, Mn/DOT
Andrew Drescher, Civil Engineering, University of Minnesota
Glenn Engstrom, Mn/DOT
Donald Flemming, URS/BRW Inc.
Alan Forsberg, Blue Earth County
Catherine French, Civil Engineering, University of Minnesota
Theodore Galambos, Civil Engineering, University of Minnesota
Jim Grube, Hennepin County
Bojan Guzina, Civil Engineering, University of Minnesota
Jerome Hajjar, Civil Engineering, University of Minnesota
Patrick Hughes, Mn/DOT
Joe Labuz, Civil Engineering, University of Minnesota

**Transportation Safety and Traffic Flow Council**
Chair: Gary Thompson, Mn/DOT
Bernard Arseneau, Mn/DOT

Mike Asleson, Minnesota State Patrol
Dharam Bobra, Hennepin County
David Burns, 3M
Gary Davis, Civil Engineering, University of Minnesota
Max Donath, ITS Institute
Rob Ege, Mn/DOT
Dave Kopacz, FHWA
Eil Kwon, Mn/DOT
Richard Larson, Mille Lacs County
James McCarthy, Federal Highway Administration
Panos Michalopoulos, Civil Engineering, University of Minnesota
Durga Panda, Image Sensing Systems, Inc
Nikos Papanikolopoulos, Computer Science and Engineering
Howard Preston, CH2M Hill
Steve Ruegg, PB Consult Inc.
Robert Sands, Edwards and Kelsey
Brian Scott, SRF
Shashi Shekhbar, Computer Science and Engineering, University of Minnesota
Al Smith, Minnesota State Patrol
Kathryn Swanson, Minnesota Department of Public Safety/Traffic
Linda Taylor, Mn/DOT
Michael Wade, Kinesiology, University of Minnesota
Nic Ward, HumanFIRST Program, University of Minnesota

Sue Lodahl, Mn/DOT
Mihai Marasteanu, Civil Engineering, University of Minnesota
Mike Marti, SRF Consulting
Joe Meade, Mn/DOT
Linda Pieper, Things With a Twist, Inc.
Robin Schroeder, FHWA
Arturo Schultz, Civil Engineering, University of Minnesota
Keith Shannon, Mn/DOT
Michael Sheehan, Olmsted County
Carol Shield, Civil Engineering, University of Minnesota
Gene Skok, Civil Engineering, University of Minnesota
Mark Snyder, Concrete Paving Association of Minnesota
Vaughn Voller, Civil Engineering, University of Minnesota
Richard Wolters, Minnesota Asphalt Pavement Association

**Transportation and the Environment Council**
Chair: Connie Kozlak, Metropolitan Council
John S. Adams, Geography, University of Minnesota
Darryl Anderson, Mn/DOT
David Biesboer, Plant Biology, University of Minnesota
John Carmody, Architecture and Landscape Architecture, University of Minnesota
Dick Elasky, Mn/DOT
John Gulliver, Civil Engineering, University of Minnesota
Chris Hiniker, SEH
David Kittelson, Mechanical Engineering, University of Minnesota
Kevin Krizek, Humphrey Institute of Public Affairs, University of Minnesota
Susan Moe, Federal Highway Administration
Steve Morris, Ramsey County Regional Railroad Authority
Lance Neckar, Landscape Architecture, University of Minnesota
Ann Perry, Resource Strategies Corporation
Peter Raynor, Environmental Health and Safety, University of Minnesota
Peggy Reichert, Mn/DOT
Robert Sykes, Landscape Architecture, University of Minnesota
Mary Vogel, Landscape Architecture, University of Minnesota

* Completed term as chair in 2003
CTS Councils and Advisory Committees

Education/Outreach Council

- James Klessig, Mn/DOT
- Connie Kozlak, Metropolitan Council
- Chair: Ann Johnson, Professional Engineering Committee
- Adeel Lari, Mn/DOT Services, Ltd.
- Chair: Julie Skallman, Mn/DOT
- Cecil Selness, Mn/DOT
- Jerry Baldwin, Mn/DOT
- Tom Colbert, City of Eagan
- James Benshoof, Benshoof and Associates
- Tom Scott, Center for Urban and Regional Affairs, University of Minnesota
- Philip Forst, Federal Highway Administration
- Trisha Collopy, Civil Engineering, University of Minnesota
- Dave Fricke, Minnesota Association of Townships
- Jim Solem, Center for Urban and Regional Affairs, University of Minnesota
- Dave Daubert, Search...
- Robert Johns, CTS Research Committee
- Jan Ekern, Mn/DOT
- Dave Johnson, Mn/DOT
- John Adams, Geography, University of Minnesota
- John Gulliver, Civil Engineering, University of Minnesota
- Consulting
- Sandy McCully, Mn/DOT
- Tom Struve, City of Eagan
- Clark Moe, Mn/DOT
- Gary Davis, Civil Engineering, University of Minnesota
- Catherine Ploetz, College of Continuing Education, University of Minnesota
- Robert Johns, CTS

AirTAP Steering Committee

- Barbara Lukermann, Humphrey Institute of Public Affairs, University of Minnesota
- Chair: Peter Buchen, Mn/DOT
- Micky Ruiz, Mn/DOT (ret.)
- Gerard McCullough, Applied Economics, University of Minnesota
- Daniel Wegman, Koch Materials Company
- Dave Beaver, Owatonna Municipal Airport
- University of Minnesota
- Glenn Burke, South St. Paul Airport
- Lance Neckar, Landscape Architecture, University of Minnesota
- Kurt Claussen, Rochester International Airport
- ITS Institute Board

- Jack Eberlein, Metropolitan Airports
- Barry Ryan, Applied Economics, University of Minnesota
- Chair: Robert Johns, CTS Commission
- Mike Asleson, Minnesota State Patrol
- Mark Kallhoff, Canby Airport
- Laurie McGinnis, CTS
- Tom Scott, Center for Urban and Regional Affairs, University of Minnesota
- Ron Boenau, Federal Transit Administration
- Rebecca Brewster, American Transportation Research Institute
- Nancy Nistler, FAA
- Tom Stinson, Applied Economics, University of Minnesota
- Ted Davis, IT Administration, University of Minnesota
- Brian Ryks, Duluth International Airport
- Carol Swenson, Design Center for the American Urban Landscape, University of Minnesota
- Bill Towle, St. Cloud Municipal Airport
- Randy Halvorson, Mn/DOT
- Duane Wething, Detroit Lakes Airport
- Mark Hoisser, DARTS
- Dave Johnson, Mn/DOT
- Anthony Kane, AASHTO
- Vince Magnuson, University of Minnesota
- Transportation and Regional Growth Study

Program Management Team

- Marthand Nookala, Mn/DOT
- Gina Baas, CTS
- Richard Rovang, Metro Transit
- Shannon Beaudin-Klein, Mn/DOT
- Rich Sanders, Polk County
- Kenneth Buckeye, Mn/DOT
- Al Steger, Federal Highway Administration
- Eli Cooper, Metropolitan Council
- Anthony Strauss, University of Minnesota
- Natalio Diaz, Metropolitan Council
- Kathryn Swanson, Minnesota Department of Public Safety Board
- Don Theisen, Washington County
- Randy Halvorson, Mn/DOT
- Toni Wilbur, Federal Highway Administration
- Tim Henkel, Mn/DOT
- Bob Winter, Mn/DOT
- Robert Johns, CTS

Note: Listings in these appendices are current as of December 2003.
## Affiliated researchers and departments

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# APPENDIX D

## Staff Directory

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<th>Title</th>
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<th>Phone 2</th>
<th>Email</th>
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- Brad Martin
- Kari Seppanen
- Shannon Fiecke
- Michelle Mennicke
- Brendon Slotterback
- Katie Gerbensky
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