

# MARCH REPORT

1994 A monthly report on transportation research, education, and information/outreach activities at the University of Minnesota

## MANUFACTURING LOGISTICS DISCUSSED AT CTS LUNCHEON

Professor **Mark A. Turnquist** of the School of Civil and Environmental Engineering at Cornell University presented "Freight Transportation: Manufacturing Logistics for the Twenty-first Century," at the Center's winter quarter luncheon. Changes in the global economy and in manufacturing will force fundamental change in the freight logistics network, Turnquist asserted. For example, manufacturers are using fewer suppliers and reducing inventory, which raises pressure on carriers and shippers to control costs and improve services. To compete in this new environment, carriers must focus on three goals: (1) coordinated, seamless service; (2) responsiveness (low delay, high reliability); and (3) resource utilization (cost-effective use of people, vehicles, energy, etc.). Turnquist believes the key to all three is making better use of information. Since information costs are falling relative to those of other resources, information technologies—such as bar coding and satellite communication links—will become vital. In closing, Turnquist suggested that the role of the public sector should be to invest in the key connection points in the logistics network, including the information highway and intermodal links. For a paper by Turnquist covering these issues, please call the Center at (612) 626-1077.

## CTS CONFERENCE SPEAKERS ANNOUNCED; BROCHURE / REGISTRATION FORM ENCLOSED

The preliminary program and registration form for the Center's Fifth Annual Transportation Research Conference, to be held May 12-13 at the Sheraton Park Place in Minneapolis, are enclosed with this *Report*. The conference will open with a plenary session featuring **Thomas F. Humphrey**, professor at the Massachusetts Institute of Technology (MIT) and director of the Region One University Transportation Center, who will discuss "Twenty-First Century Challenges for University Transportation Research." Other conference highlights are two luncheon presentations, the first by **Daniel Sperling**, director of the Institute of Transportation Studies at the University of California, Davis, on "Clean Cars and Sustainable Transportation." For the second luncheon, **Grace Crunican**, deputy administrator of the Federal Transit Administration, has been invited to discuss "The Post-ISTEA World: What Comes Next?" The conference will also feature over 75 presentations in a concurrent session format. For further details contact **Lori Graven** at (612) 625-9023.

## CTS SYMPOSIUM FOCUSES ON TRANSPORTATION AND THE COMMUNITY

Over 130 persons attended the CTS Transportation Symposium titled "Transportation and the Community" held in Burnsville on February 23. **Bob Johns** of CTS moderated, with opening remarks by **Sandra Masin**, Eagan city council member. A panel session then followed with Professors **John Adams** of Geography and **Bill Morrish** of the Design Center for the American Urban Landscape; **Matt Huber**, professor emeritus of the Civil and Mineral Engineering (CME) department; and **Larry Laukka**, president of L.A. Laukka Development Company. The panelists gave their impressions regarding the important issues and trends involved in integrating transportation with community development. Next, three case studies were presented of current design efforts in the Twin Cities area: a Chanhassen roadway project intended to complement the local landscape and give residents a feeling of connection with the city's downtown; a Minnesota Valley Transit Authority plan to integrate transit hubs in a mixed-use development; and the revitalization of the Rosedale shopping area, using

transportation as one element. Audiotapes of the symposium are available for loan by calling the Center at (612) 626-1077, and a short written summary of the event is also being developed.

### **ELIZABETH DEAKIN GIVES LUNCHEON SPEECH AT CTS SYMPOSIUM**

The luncheon speaker at the CTS symposium was Professor **Elizabeth Deakin** of the Department of City and Regional Planning at the University of California, Berkeley. Deakin summarized some of the main points of the symposium and presented her observations and recommendations. She advised planners to undertake the following to promote integrated communities: (1) gather good examples of mixed-use, higher density, town-centered, and transit-oriented transit systems, to persuade the public that these types of communities are liveable and workable; (2) revise outmoded zoning ordinances that segregate land use; (3) revise street standards to provide more attention to the pedestrian; (4) change laws so that experienced engineers are able to deviate from project design standards and yet be free of liability concerns; and (5) rethink parking requirements, providing only the space needed so that large lots do not diminish the attractiveness of walking, biking, or transit use. In closing, she declared that the key is to focus on accessibility—by designing better transit systems, considering telecommunications as a means to reduce transportation needs, and designing better urban areas to gain access through proximity, not necessarily through travel.

### **OVER 300 ATTEND IVHS FORUM**

The Intelligent Vehicle-Highway Systems (IVHS) Information Exchange Forum in Minneapolis last month attracted over 300 persons. Forum sponsors were IVHS AMERICA, the U.S. Department of Transportation, Mn/DOT, Minnesota Guidestar, and CTS and its IVHS Institute. University presenters included **Dennis Foderberg** of the IVHS Institute and **Gary DeCramer** of the Humphrey Institute, who participated in a roundtable discussion moderated by former CTS Director **Dick Braun** on how IVHS is related to various disciplines, including academics/research (Foderberg) and the environment (DeCramer). **James Costantino**, executive director of IVHS AMERICA, spoke on the national IVHS program. Mn/DOT was well represented, with speakers including Commissioner **James Denn**, Assistant Commissioner **Gene Ofstead**, and other staff. Other speakers represented the Federal Highway Administration, Federal Transit Administration, private firms (US WEST, Westinghouse, Hughes Aircraft), the Metropolitan Council, consultants, and other state agencies.

### **RESEARCH PROCEEDS ON HIGH-STRENGTH CONCRETE APPLICATIONS FOR BRIDGES**

The ongoing investigation by CME Professors **Catherine French** and **Roberto Leon** into the applications of high-strength concrete to bridge structures has made considerable progress. Nearly complete, the materials portion of the study is focused on the mechanical properties and durability of concrete mixes with compressive strengths of 12,000 psi and greater. Over 7,000 concrete specimens from 150 mixes have been tested to determine the effects of the following: cementitious composition; aggregate type, gradation, size, and curing on mechanical properties; and higher compressive strengths on long-term performance of concrete under sustained load. Additional specimens are being tested to investigate freeze-thaw durability. In addition, two long-span, full-size prestressed concrete bridge girders have been fabricated to investigate the structural behavior of girders cast with high-strength materials and large-diameter prestressed strands. Under the direction of graduate students **Tess Ahlborn** and **Jeff Kielb**, the girders are being tested at an off-campus facility in Golden

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Valley. Prestress losses, camber, allowable stresses, fatigue, shear, and ultimate strength will be investigated to determine the adequacy of the present AASHTO specifications for designing prestressed girders with high-strength concrete.

### **FHWA FUNDING APPROVED FOR MN/ROAD**

The Federal Highway Administration (FHWA) recently approved a Mn/DOT funding request for research related to the Minnesota Road Research Project (Mn/ROAD). The award is for up to \$1.1 million over the next ten years. An additional \$600,000 of pooled funds from other states will be available over the next two years to conduct Mn/ROAD research. Officials from participating states and the FHWA will meet with **Nelrae Succio**, Mn/ROAD project manager, and other Mn/ROAD staff to complete research plans. Although project work plans are not yet finalized, tasks will include: (1) verifying and improving the FHWA's integrated pavement analysis model, (2) measuring seasonal changes in pavement materials with field sensors or testing, then comparing them with lab results; (3) monitoring pavement responses to various applied loads in order to test mechanistic pavement models; and (4) accumulating data to assess the effects of real-life variability on the changes in pavement performance. In other Mn/ROAD news, a research focus group has been formed to evaluate and prioritize ongoing Mn/ROAD projects. Members of the group include Mn/DOT Physical Research staff and University faculty **Dave Newcomb** and **Mark Snyder** of the Civil and Mineral Engineering department.

### **DULUTH TO HOST NATIONAL CONFERENCE FOR SMALL AND MEDIUM-SIZED AREAS**

"Transportation Solutions for: Today, Tomorrow, and Beyond," the Fourth National Conference for Small and Medium-Sized Areas, will be held May 25-27 at the Duluth Entertainment Convention Center. The conference will focus on transportation relationships among citizens, the environment, and transportation systems, with a special emphasis on the "new way of doing transportation business" under ISTEA. For a brochure and registration materials, please contact **Kathy Biscoe** of Mn/DOT at (612) 296-1614, or **Diane Dzuck** of the Arrowhead Regional Development Commission at (218) 722-5545; fax (218) 722-2335.

### **EXTENSION OFFERS INTRO COURSE ON ENVIRONMENTAL LAW**

The University's Extension Classes department is offering a course titled "Introduction to Environmental Law for Engineers" on Tuesday and Thursday evenings this spring quarter. Updated recently, the course has not been available through Extension for ten years. The class covers subjects of growing interest to transportation professionals, including environmental regulatory law relevant to the work of civil and environmental engineers and specific provisions of federal laws such as the Clean Air Act. The instructor is **Bruce Braaten**, a lawyer in environmental law. The last day to register without a late fee is March 16. For further information and registration materials, please call (612) 625-9001.

### **DISCOVER MAGAZINE SEEKS NOMINATIONS FOR AWARDS PROGRAM**

*DISCOVER* magazine is accepting nominations for its fifth annual awards program. These awards recognize breakthrough technologies in science and honor the people whose creative genius improves our quality of life. Awards are to be made in the following categories: automotive and transportation; aviation and aerospace; computer hardware and electronics; computer software; environment; sight; and sound. Winners will be featured in the October 1994 issue. All finalists and winners will be featured at *Innoventions*, a new attraction opening at Epcot '94 at Walt Disney World Resort in Florida. For a nomination package, please call 1 (800) 637-8509. Nominations must be received by **April 1, 1994**.

## CTS EVENTS; FACULTY AND STAFF ACTIVITIES

Two CTS Transportation Careers Series presentations were held last month, the first with **Robert Benke**, director of Mn/DOT's Office of Research Administration, and the second with **Charleen Zimmer**, principal with Strgar-Roscoe-Fausch. A CTS Faculty Seminar on "Freight Flows and Relationship to Economic Structure" was presented by **Candace Campbell** and **David Braslau** of the Humphrey Institute. CME Professor **Catherine French** made an invited presentation at the NSF-cosponsored International Workshop on Civil Infrastructure—Applications of Intelligent Systems and Advanced Materials on Bridge Systems, held in Taiwan January 9-12. Her presentation, titled "Applications of High-Strength Concrete to Prestressed Bridge Girder Systems," covered research conducted with grad student **Ali Mokhtarzadeh**. **Bob Johns** and **Cheri Trendera** of CTS made presentations at Mn/DOT's research coordinators meeting.

## UPCOMING TRANSPORTATION EVENTS

If you wish to publicize an event, call **Pam Snopl**, Center editor, at (612) 624-0841, or fax your announcement to (612) 625-6381. For other Center information, please call (612) 626-1077.

- Mar. 9 CTS Faculty Seminar: "Remote Sensing of Pollutants from Vehicles," **David Hofeldt**, Mechanical Engineering, 3:30-4:25 p.m., 210 Civil and Mineral Engineering Building, Minneapolis. Contact CTS, (612) 626-1077.
- Mar. 16 Minnesota Safety Council Workshop: "New DOT Drug Testing Issues for Intrastate Drivers & Employers," St. Paul. Contact **Regina Hoffman**, (612) 291-9150.
- Mar. 29 Minnesota Safety Council Workshop: "Federal & State DOT Regulatory Update/Commercial Vehicle Laws," St. Paul. Contact **Regina Hoffman**, (612) 291-9150.
- Mar. 31 "Aligning Business Operations Through Reengineering" Seminar, Holiday Inn Metrodome, Minneapolis. Sponsor: Twin Cities Roundtable of the Council of Logistics Management. Contact **Susan Phillips**, (612) 330-8677, fax 330-2399; or **Stan Ragnes**, (612) 885-7178, fax 888-6137.
- Apr. 8 "Planting on the Edge: And in the Middle Too" Conference, Minnesota Landscape Arboretum, Chanhassen, Minn. Sponsors: Minnesota Landscape Arboretum and the Minnesota Chapter of the American Society of Landscape Architects. Contact **Carol Spandl**, (612) 443-2460, ext. 772.
- Apr. 14-15 Minnesota Safety Council Workshop: "DOT Requirements for Transporting Passengers with Special Needs," St. Paul. Contact **Regina Hoffman**, (612) 291-9150.
- Apr. 17-20 IVHS AMERICA Fourth Annual Meeting, Atlanta Hilton & Towers, Atlanta, Ga. Contact **Bonnie Jessup**, (202) 973-7862.
- May 5-6 "ISTEA Pedestrian-Bicycle Conference: Tools for Planning and Public Input," St. Paul. Sponsors: Center for Urban and Regional Affairs (CURA) and EarthCare Directory. Call CURA, (612) 625-1551.
- May 9-12 State/FHWA Regions 5 & 7 Railroad Conference, Minneapolis/St. Paul Airport Hilton. Call **Dave McKenzie**, (612) 296-0362.
- May 12-13 CTS Fifth Annual Transportation Research Conference, Sheraton Park Place, Minneapolis. Contact **Lori Graven**, (612) 625-9023; fax 626-1632.
- May 18-20 "Transportation in Transition," Women's Transportation Seminar 1994 National Conference, Hyatt Regency, Los Angeles. Call **Robert Cashin**, (213) 244-6441, or **Renee Berlin**, (213) 244-6863.
- May 25-27 "Transportation Solutions for Today, Tomorrow and Beyond," Fourth National Conference for Small and Medium-Sized Areas, Duluth Entertainment and Convention Center. Sponsors: TRB, FHWA, Mn/DOT, NARC, ITE, APA. Contact **Diane Dzuck**, (218) 722-5545; fax (218) 722-2335.