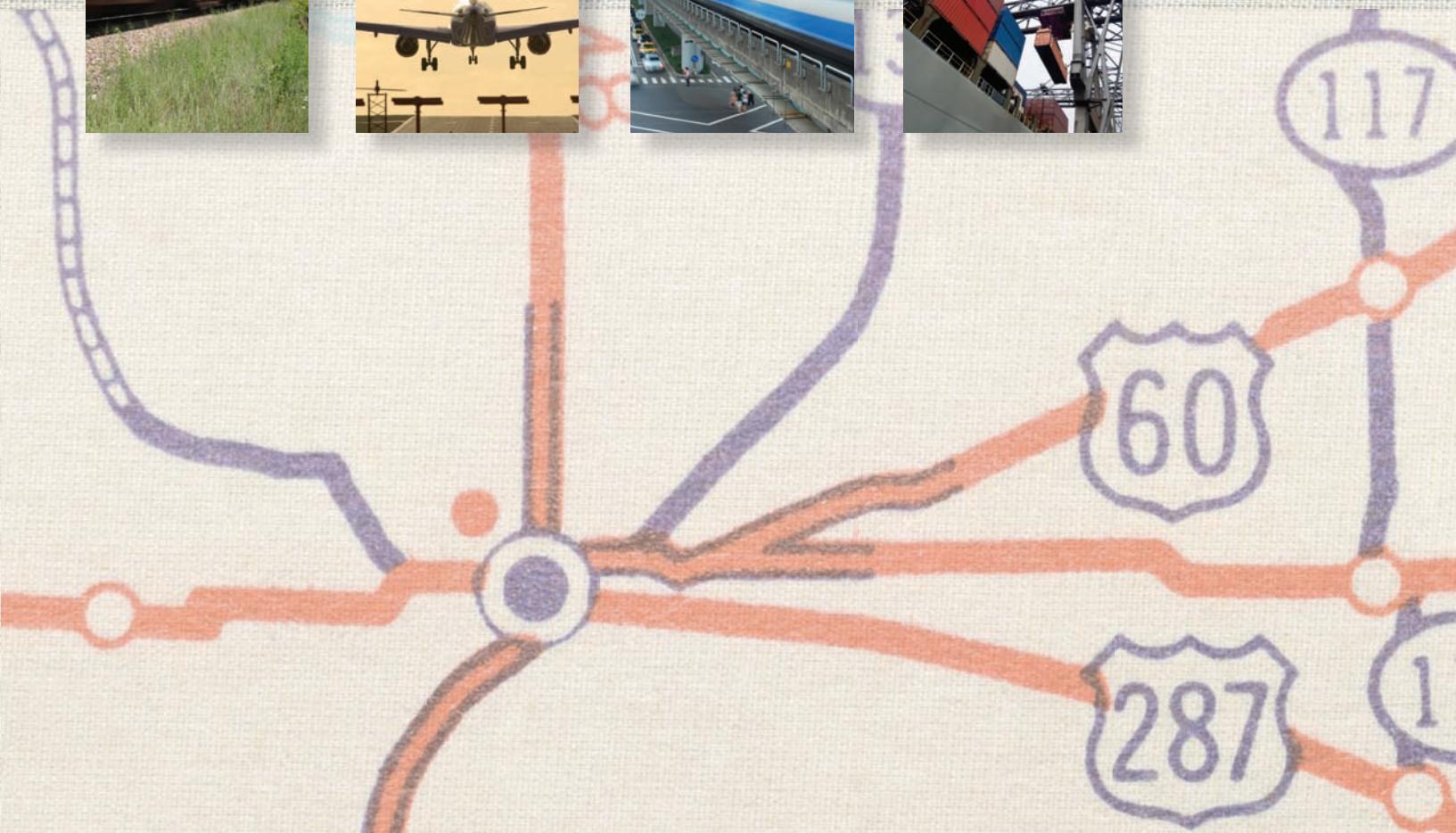


# Transportation Research Board

## 2008 Annual Report



**TRB**

TRANSPORTATION RESEARCH BOARD  
OF THE NATIONAL ACADEMIES

The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

The Transportation Research Board was organized in 1920 and is one of six major divisions of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance. The National Research Council is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

## THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

National Academy of Sciences  
National Academy of Engineering  
Institute of Medicine  
National Research Council

## Dear Supporter of TRB

Most TRB participants know that TRB is part of a larger organization variously referred to as the National Academies, the National Academy of Sciences (NAS), or the National Research Council (NRC). Although they may not know the specific organizational details and may be confused by the variety of names, most participants probably believe that TRB's connection with these institutions is a good thing. They are right—it is a very good thing.

Chartered by the U.S. Congress in 1863 to provide advice and other services to the federal government, NAS comprises the nation's leading scientists. Two similar honorary organizations were established under the same charter—the National Academy of Engineering, in 1964, to recognize distinguished engineers; and the Institute of Medicine, in 1970, to recognize health professionals. Together, these organizations oversee the National Research Council, which includes TRB and is the operating unit that delivers most of the services to the federal government and others. Collectively, all of these organizations are referred to as the National Academies.

In 1920, the founders of TRB were seeking an institutional home for what they initially called the Advisory Committee on Highway Research. They chose NRC, which NAS had established in 1916 to serve government and to expand the scope of scientific and technical talent beyond the honorary members. Since then, the scope and scale of TRB and the National Academies have grown considerably.

Today, the National Academies advise government and others on policy matters involving science and technology, through committee-developed consensus studies, and deliver a diverse array of services, including research management, professional meetings and other convening activities, fellowship and grant programs, and professional publications. To be successful, these activities require independence, credibility, and access to the best technical talent in the nation. These same attributes are crucial to TRB and its programs. The National Academies' safeguards for independence apply to TRB; its rigorous standards for appointments and report review



TRB Executive Director Robert E. Skinner, Jr.; Debra L. Miller, 2008 Chair of the TRB Executive Committee; and Adib K. Kanafani, 2008 Vice Chair.

are our standards; its extensive network of scientific and engineering experts is available to TRB; and accordingly, its reputation of excellence enhances TRB's reputation for excellence. Although these are the most significant benefits that accrue to TRB and its participants, the National Academies extend a host of other practical, operational benefits through the institution's administration, facilities, and services.



Former U.S. Secretary of Transportation, Norman Y. Mineta (*second from left*), welcomes and meets with a special delegation of transportation officials from Iraq at the TRB Annual Meeting in January. Heading the delegation was Iraq's Construction and Housing Minister Bayan Dezei (*right*). Joseph S. Toole, Federal Highway Administration (*left*), served as the group's liaison and guide at the meeting.



This longstanding relationship between the National Academies and the transportation community, through TRB, is approaching 90 years in duration and is worth celebrating. The connection has contributed to TRB's evolution into a vibrant organization, as illustrated by the highlights of another busy and productive year.

## ANNUAL MEETING AND CONFERENCES

With a theme of Partnerships for Progress in Transportation, the 2008 Annual Meeting attracted approximately 10,500 registrants, a slight increase from 2007 and another record. The program offered more than 3,000 presentations organized in more than 500 sessions and 85 workshops. Approximately 200 organizations participated in the first-ever commercial exhibit, which was sold out. Other highlights included the Deen Distinguished Lecture, delivered by Matthew W. Witczak, Professor of Civil and Environmental Engineering at Arizona State University, and the Chairman's Luncheon address by Robert Land, Senior Vice President for Government Affairs and Associate General Counsel of JetBlue Airways Corporation.

During the year, TRB sponsored another 30 conferences and cosponsored 25. More than 40 standing technical committees participated in the 2008 Joint Midyear Meeting in Baltimore, with sessions addressing the impact of globalization on transportation.

TRB continued to expand its international activities by cosponsoring conferences outside the United States, including a first-time cosponsorship of the International Geosynthetics Conference, in Mexico in March; the Southern African Transport Conference, in South Africa in July; and the International Confer-



Robert Land (*above*) of JetBlue Airways Corporation delivered the Chairman's Luncheon address at the Annual Meeting. The Thomas B. Deen Distinguished Lecture featured insights on the implementation of research on pavement performance, by Matthew W. Witczak (*below*) of Arizona State University.



TRB's first-ever commercial exhibit at the Annual Meeting proved a success, serving as a busy concourse for attendees, with interactive exchanges of information, as here at one of the Federal Highway Administration displays.

ence on Integrated Transport for Sustainable Urban Development, in China in December.

In last year's Annual Report, we noted the start-up of a series of webinars, or web-based seminars. During 2008, TRB conducted approximately one webinar per month, with participation averaging more than 400 persons for each session—equivalent to the typical attendance at a large TRB conference. Because of the popularity of the webinars and their ability to reach public agency professionals and others who have difficulty traveling to conferences, TRB plans to increase the frequency of the webinars in 2009.

## SUPPORT FOR TRB'S CORE PROGRAM

TRB's core program consists of 200-plus standing technical committees and task forces, the Annual Meeting, the Transportation Research Information Services and other research databases, the Transportation Record journal series and other publications, and the requisite support staff. The TRB core program is the foundation of our other services and touches the professional lives of tens of thousands of researchers and practitioners worldwide.

In previous Annual Reports, we reported on measures to fill a gap in the core program budget that was created by a reduction in support from the Federal Highway Administration (FHWA) after significant cuts to the agency's discretionary research funding under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). In the past two years, TRB has reduced staff, curtailed staff travel, and taken other steps to reduce costs, and the Annual Meeting and conference fees were in-

creased to levels comparable to those of other professional organizations. At the 2008 Annual Meeting, TRB introduced a commercial exhibit and opportunities for meeting sponsorship. All together, these steps have enabled TRB to keep its core services intact.

In June, the Congress passed a bill with technical corrections to SAFETEA-LU that restores some discretionary funding to FHWA. We are fortunate that FHWA, in turn, has restored the funding for TRB's core programs to the planned levels for the final two years of the SAFETEA-LU authorization, relieving some of the pressures of maintaining core services with fewer resources.

Looking to the future, research funding at the federal level inevitably will be affected by the looming deficit in the Highway Trust Fund and by the authorization of federal-aid programs to replace SAFETEA-LU, which expires at the end of September 2009. This could affect the availability of funding at the federal and state levels to support TRB and could be complicated further by the economic turmoil we have seen this year. As a result, TRB will continue to be cautious with respect to core program funding and services.

## RESEARCH MANAGEMENT

With the second Strategic Highway Research Program (SHRP 2) and five cooperative research programs, TRB is managing more research work than ever before, and 2008 was an active year.

SHRP 2 passed the one-third mark of its seven-year span. By the end of 2008, SHRP 2 had committed \$55 million to 50 research projects in four focus areas. In addition, the program took the first steps in selecting a study site and collecting data for the \$26 million naturalistic study of driving behavior. The first SHRP 2 research reports—on nondestructive testing for



Christopher W. Jenks (center), Director of Cooperative Research Programs, TRB, briefs a peer exchange conducted in October to examine and review aspects of the National Cooperative Highway Research Program. Also shown are Richard C. Long (left), Florida Department of Transportation; and David L. Lippert, Illinois Department of Transportation.

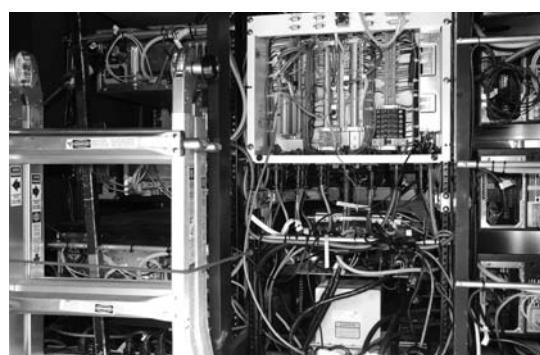
highway renewal, public utility relocation, and case studies in collaborative highway planning—are complete and soon will be available on the TRB website. Summaries of these early reports will be published in the SHRP 2 *First Fruits* information series.

In changing the structure of SAFETEA-LU research funding, the technical corrections bill increased the expected funding for SHRP 2 by approximately \$7 million per year for 2008 and 2009. The 2009 SHRP 2 Program Plan reflects the Oversight Committee's efforts to restore some of the planned research that was eliminated earlier because of the funding shortfall.

TRB's cooperative research programs manage about \$60 million in annual research funding collectively. All of the programs feature stakeholder governance, national competition, and merit-based awards, as does SHRP 2.

During 2008, the cooperative research programs published 125 reports, nearly two-thirds of which originated from the National Cooperative Highway Research Program (NCHRP), the oldest and largest of the programs. NCHRP reports included four new volumes in the NCHRP Report 500 series on improving highway safety. The most recent reports cover bicycle safety, young drivers, freeway head-on crashes, and data sources and analysis techniques to assist agencies in allocating safety funds.

The Transit Cooperative Research Program (TCRP) published more than 25 reports in 2008. Among the major recent TCRP products are seven certification tests for transit bus mechanics, offered twice a year by the National Institute for Automotive Service Excellence. The series ultimately will consist of 10 tests.



Complex circuitry mounted in one of the data-gathering vehicles that participated in the Roadway Measurement System Evaluation Rodeo, conducted by the Strategic Highway Research Program 2, in September near Fairfax, Virginia.



Annual Meeting sessions on energy and environmental issues included a panel on proposed standards and regulations for low-carbon and renewable fuel: (*left to right*) Ian Hodgson, European Commission; Robert Larson, U.S. Environmental Protection Agency; Al Jessel, Chevron Global Downstream; Dan Sperling, University of California, Davis; and Alex Farrell, University of California, Berkeley.

The Airport Cooperative Research Program completed its third year of operation and published more than 20 reports of interest to the airport community in a variety of subject areas. Illustrative topics include common use facilities and equipment at airports, new concepts for airport terminals, preventing aircraft–vehicle incidents during periods of low visibility, and airport economic impact methods and models.

The two newest programs, the National Cooperative Freight Research Program and the pilot Hazardous Materials Cooperative Research Program, have several projects either complete or nearly complete, with results to be published in the coming year. Finally, the Commercial Truck and Bus Safety Synthesis Program issued one report in 2008, with four in process.

### ADVICE TO POLICY MAKERS

TRB's policy work continues to be influential on the national scene. In 2008 TRB completed and released six major reports, including the four highlighted below:

- *Potential Impacts of Climate Change on U.S. Transportation* presents a strategy for beginning to adapt transportation operations and infrastructure to the consequences of sea level rise, flooding, and more intense storms.
- *The Role of Transit in Emergency Evacuation* identifies significant gaps in emergency planning for regional evacuations and emphasizes the involvement of transit providers in planning responses to natural and man-made disasters.

- *Great Lakes Shipping, Trade, and Aquatic Invasive Species* recommends an approach to reduce the risk of releasing invasive species from vessels' ballast water and to maintain maritime trade into and out of the Great Lakes.
- *The Federal Investment in Highway Research 2006–2009: Strengths and Weaknesses* evaluates the highway research programs authorized in SAFETEA-LU according to criteria established by Congress and makes recommendations for strengthening these programs.

In early 2009, TRB will complete a report on financing freight projects of national significance, which will evaluate options for public participation in financing freight infrastructure projects and will make recommendations to Congress. Other studies scheduled for completion in 2009 include congressionally requested studies on the relationship between urban form and vehicle miles traveled and on the implementation of the SHRP 2 research results, as well as a TRB-initiated study on traffic safety lessons from nations that have surpassed the United States in improving road safety.

### CLIMATE CHANGE AND ENERGY

Worldwide concern about the interrelated issues of energy availability, greenhouse gas (GHG) emissions, and climate change has never been greater. As the United States considers the dimensions of these issues, assesses their consequences, and evaluates options to mitigate or adapt to the consequences, a host of technical questions arises. Because transportation figures in consideration of climate change and energy, TRB has initiated several activities to provide information and increase knowledge about these issues.

The recently released study on the likely impacts of climate change on the U.S. transportation system and on the steps to adapt to these impacts is a good example. Another study is under way to assess options for mitigating transportation's contribution to climate change and energy dependence. Yet another study, which began in the fall and is operating on an accelerated schedule, will identify a research agenda to support the technical and policy responses to the challenges of energy and climate change. Both of these studies are scheduled for completion in 2009.

The transportation aspects of energy availability, GHG emissions, and climate change cut across the scopes of many TRB standing technical committees. A Special Task Force on Climate Change and Energy

was created to coordinate the activities of the committees on these issues and to facilitate communication among the committees. The task force has assembled a roadmap for TRB involvement in these areas and has coordinated the development of the spotlight theme sessions on Transportation, Energy, and Climate Change for the 2009 TRB Annual Meeting.

## INTERNATIONAL ACTIVITIES

The International Activities Committee continues to take the lead in—and to help coordinate—TRB's growing number of international initiatives. In addition to the international conferences conducted this year, SHRP 2 cooperated with the Forum of European National Highway Research Laboratories to convene two international research symposia on emerging techniques for nondestructive testing that have application in highway renewal projects. In April, TRB hosted a joint meeting of the SHRP 2 Technical Coordinating Committee on Reliability with the Working Group on Travel Time Reliability of the Joint Transport Research Centre of the Organisation for Economic Co-operation and Development and the International Transport Forum. The Third SHRP 2 Highway Safety Symposium, in July, featured a round-table discussion on possible international naturalistic driving studies, with panelists from Canada, the United Kingdom, and the Netherlands.

TRB's cooperative research programs sponsored six international scans in 2008 to introduce U.S. transportation professionals to innovative practices in other countries. Of particular note was a scan that brought U.S. highway research managers to meet with counterparts in Europe and Asia.

## NATIONAL ACADEMIES UPDATE

The NAS building on Constitution Avenue in Washington, D.C., houses approximately 200 National Academies employees and is a site for meetings and conferences for TRB and other units. The building was dedicated in 1924, and office wings and an auditorium were added in the 1960s. Although the building remains an architectural showpiece, its heating, air conditioning, communication, and other infrastructure are outdated; the building offers limited access to persons with disabilities; and in many cases, the interior space no longer matches the institution's needs. To correct these problems, the National Academies are planning a 22-month restoration project to begin in mid-2009.

During the planned restoration, meeting space will be unavailable in the NAS building, and projected demands exceed the capacity of the Keck Center, where TRB is located. Arrangements are being made with hotels and other institutions to supplement Keck Center meeting space during the restoration.



The National Academy of Sciences building on Constitution Avenue is scheduled to undergo a two-year renovation starting in spring 2009. The building is known for its architectural ornaments and bas-reliefs.

A handwritten signature in brown ink, appearing to read "Debra L. Miller".

Debra L. Miller  
*Chair, Executive Committee*

A handwritten signature in brown ink, appearing to read "Robert E. Skinner, Jr.".

Robert E. Skinner, Jr.  
*Executive Director*



Robert E. Skinner, Jr., opens the program for the International Participants' Reception during the Annual Meeting. International activities and partnerships continue to grow.

# Transportation Research Board

## 2008 Executive Committee\*



**Miller**



**Kanafani**



**Skinner**



**Barker**



**Biehler**



**Bowe**

**Chair:** **Debra L. Miller**, Secretary, Kansas Department of Transportation, Topeka

**Vice Chair:** **Adib K. Kanafani**, Cahill Professor of Civil Engineering, University of California, Berkeley

**Executive Director:** **Robert E. Skinner, Jr.**, Transportation Research Board



**Brown**



**Butler**



**Clark**



**Ekern**

**J. Barry Barker**, Executive Director, Transit Authority of River City, Louisville, Kentucky

**Allen D. Biehler**, Secretary, Pennsylvania Department of Transportation, Harrisburg

**John D. Bowe**, President, Americas Region, APL Limited, Oakland, California

**Larry L. Brown, Sr.**, Executive Director, Mississippi Department of Transportation, Jackson

**Deborah H. Butler**, Executive Vice President, Planning, and CIO, Norfolk Southern Corporation, Norfolk, Virginia

**William A. V. Clark**, Professor, Department of Geography, University of California, Los Angeles

**David S. Ekern**, Commissioner, Virginia Department of Transportation, Richmond

**Nicholas J. Garber**, Henry L. Kinnier Professor, Department of Civil Engineering, University of Virginia, Charlottesville

**Jeffrey W. Hamiel**, Executive Director, Metropolitan Airports Commission, Minneapolis, Minnesota

**Edward A. (Ned) Helme**, President, Center for Clean Air Policy, Washington, D.C.

**Will Kempton**, Director, California Department of Transportation, Sacramento

**Susan Martinovich**, Director, Nevada Department of Transportation, Carson City

**Michael D. Meyer**, Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta (Past Chair, 2006)

**Michael R. Morris**, Director of Transportation, North Central Texas Council of Governments, Arlington

**Neil J. Pedersen**, Administrator, Maryland State Highway Administration, Baltimore

**Pete K. Rahn**, Director, Missouri Department of Transportation, Jefferson City

**Sandra Rosenbloom**, Professor of Planning, University of Arizona, Tucson

**Tracy L. Rosser**, Vice President, Corporate Traffic, Wal-Mart Stores, Inc., Bentonville, Arkansas

**Rosa Clausell Rountree**, Consultant, Tyrone, Georgia

**Henry G. (Gerry) Schwartz, Jr.**, Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, Missouri

**C. Michael Walton**, Ernest H. Cockrell Centennial Chair in Engineering, University of Texas, Austin (Past Chair, 1991)

**Linda S. Watson**, CEO, LYNX-Central Florida Regional Transportation Authority, Orlando (Past Chair, 2007)

**Steve Williams**, Chairman and CEO, Maverick Transportation, Inc., Little Rock, Arkansas



**Garber**



**Hamiel**



**Helme**



**Kempton**



**Martinovich**



**Meyer**



**Morris**



**Pedersen**



**Rahn**



**Rosenbloom**



**Rosser**



**Rountree**



**Schwartz**



**Walton**



**Watson**



**Williams**

\* Membership as of December 2008.



**Allen**



**Brewster**



**Brubaker**



**Bugliarello**



**Connaughton**



**Eby**



**Gishi**



**Hamberger**



**Hill**



**Horsley**



**C. Johnson**



**Kelly**



**Little**



**Madison**



**Millar**



**Sturgell**



**Van Antwerp**

**Thad Allen** (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, Washington, D.C. (ex officio)

**Rebecca M. Brewster**, President and COO, American Transportation Research Institute, Smyrna, Georgia (ex officio)

**Paul R. Brubaker**, Administrator, Research and Innovative Technology Administration, U.S. Department of Transportation (ex officio)

**George Bugliarello**, President Emeritus and University Professor, Polytechnic Institute of New York University, Brooklyn; Foreign Secretary, National Academy of Engineering, Washington, D.C. (ex officio)

**Sean T. Connaughton**, Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)

**Clifford C. Eby**, Acting Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)

**LeRoy Gishi**, Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior, Washington, D.C. (ex officio)

**Edward R. Hamberger**, President and CEO, Association of American Railroads, Washington, D.C. (ex officio)

**John H. Hill**, Administrator, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)

**John C. Horsley**, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)

**Carl T. Johnson**, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington, D.C. (ex officio)

**David Kelly**, Acting Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)

**Sherry E. Little**, Acting Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)

**Thomas J. Madison, Jr.**, Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)

**William W. Millar**, President, American Public Transportation Association, Washington, D.C. (ex officio) (Past Chair, 1992)

**Robert A. Sturgell**, Acting Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)

**Robert L. Van Antwerp** (Lt. General, U.S. Army), Chief of Engineers and Commanding General, U.S. Army Corps of Engineers, Washington, D.C. (ex officio)

# Executive Office



**C. Michael Walton**  
Chair  
Subcommittee  
for NRC Oversight



**Henry G. (Gerry)  
Schwartz, Jr.**  
Vice Chair  
Subcommittee  
for NRC Oversight



**Robert E.  
Skinner, Jr.**  
Executive Director



**Suzanne B.  
Schneider**  
Associate Executive  
Director

The TRB Executive Office provides policy and operational guidance for programs and activities; oversees committee and panel appointments and report review; provides support and direction for human resource issues and staffing needs; develops and directs the Board's communications and outreach efforts; provides staff support to the Executive Committee and its Subcommittee for National Research Council (NRC) Oversight; and maintains liaison with the executive offices of the National Academies, the Board's parent institution. The Executive Office also manages the editing, production, design, and publication of many TRB reports, including its journal series, magazine, and other titles.



Executive Director  
Robert E. Skinner, Jr.,  
reports to the Executive  
Committee in January  
about TRB develop-  
ments and activities  
in 2007 and prospects  
for the coming year.

## OVERSIGHT ACTIVITIES

The Executive Office supports the work of the TRB Executive Committee, which provides policy direction to TRB programs and activities within the overall policies of the National Academies. Oversight of committee and panel appointments and of report review is the responsibility of the Executive Committee's Subcommittee for NRC Oversight (SNO), which ensures that TRB meets institutional standards and that its activities are appropriate for the National Academies. As part of its oversight function, the subcommittee monitors the Board's progress in expanding the representation of minorities and women on TRB committees and panels. C. Michael Walton, TRB Division Chair for NRC Oversight, heads this subcommittee and represents TRB as an *ex officio* member on the NRC Governing Board. Henry G. (Gerry) Schwartz, Jr., serves as the SNO Vice Chair, a post established in 2006, with oversight responsibilities for the second Strategic Highway Research Program (SHRP 2).

The Executive Office processes the Board's large volume of committee and panel appointments and maintains committee membership records. A hallmark of the National Academies is its institutional process to

ensure the independent, rigorous review of reports. In maintaining these high standards, TRB follows guidelines approved by the NRC that carefully match the review criteria and procedures to the type of report.



C. Michael Walton, Chair of the Subcommittee for NRC Oversight, briefs the Technical Activities Council on National Academies policies for committee appointments and publication review.



The 2008 Subcommittee for NRC Oversight includes (*left to right*) Allen D. Biehler; William A. V. Clark; Linda S. Watson; Vice Chair Henry G. (Gerry) Schwartz, Jr.; Executive Committee Vice Chair Adib K. Kanafani; Executive Committee Chair Debra L. Miller; Suzanne B. Schneider; and Chair C. Michael Walton.

## PUBLICATIONS

To fulfill one of its oldest missions, TRB disseminates transportation research results and technology information through an extensive array of timely publications. The Board has gained national and international prominence for its books and reports assessing the state of the art or practice in specific areas of transportation, presenting the results of transportation research, addressing major national transportation policy issues, and identifying research needs. TRB continues to expand its publishing effort by releasing a growing number of titles electronically, some exclusively in electronic format.

TRB books and reports span the range of transportation functions, disciplines, and modes. The TRB Publications Office produces titles in the following series:

- *Transportation Research Record: Journal of the Transportation Research Board* gathers technical papers that have been accepted for publication through a rigorous peer review process refereed by TRB technical committees. In 2008, the Board published 49 volumes of the journal, containing 702 papers grouped by subject. TRR Online, inaugurated last year, is an online subscription and pay-per-view service for the *Transportation Research Record* series. Record papers are posted simultaneously with the release of each printed volume to a searchable, password-protected section of the TRB website, which also includes all journal papers published since 1996.<sup>1</sup> The TRR Online system now provides access to approximately 9,000 papers that have been published in the Record series since 1996. The service allows all visitors to identify papers of interest and to review abstracts of those papers. Access

to the full papers is available to service subscribers and employees of TRB sponsors and on a pay-per-view basis to the general public.

- The bimonthly magazine *TR News* features timely articles on innovative and state-of-the-art research and practice in all modes of transportation. News items of interest to the transportation community, profiles of transportation professionals, book and journal summaries, meeting announcements, and highlights of TRB activities also are included. Features this year included articles on a pioneering photolog of Connecticut's roadways; lessons and initiatives from domestic and international scanning tours; a history linking the Good Roads Movement with the rise of rural free delivery of the mail; the communications and collaboration contributing to the success of the massive Marquette Interchange reconstruction in Milwaukee; and the



Henry G. (Gerry) Schwartz, Jr., discusses appointments to new Strategic Highway Research Program 2 committees at the Executive Committee business meeting in January.

<sup>1</sup> [www.TRB.org/publications/trr/Login.asp](http://www.TRB.org/publications/trr/Login.asp).





TRB's concerted outreach to expand the involvement of women in committees and panels included the signing of a memorandum of understanding with the Women's Transportation Seminar (WTS) in January 2008, by Robert E. Skinner, Jr.; Ann L. Koby, WTS President; and Miranda Carter, Chair, TRB Women's Issues in Transportation Committee.

prospects and necessary transformations to develop a sustainable transportation system. The July–August issue of the magazine focused on transportation education and training. Selected features of *TR News* are posted on the TRB website, and the full issue is made accessible on the web on a four-month delay.<sup>2</sup>

- *Special Reports* contain the results of TRB policy studies on issues of national importance in transportation. These studies, many conducted at the request of federal agencies or of Congress, focus on a variety of complex, often controversial, topics. Special reports published in 2008 included *Potential Impacts of Climate Change on U.S. Transportation; Great Lakes Shipping, Trade, and Aquatic Invasive Species; Risk of Vessel Accidents and Spills in the Aleutian Islands: Designing a Comprehensive Risk Assessment; The Role of Transit in Emergency*

<sup>2</sup> [www.TRB.org/news/blurb\\_browse.asp?id=14](http://www.TRB.org/news/blurb_browse.asp?id=14).

*Evacuation; and The Federal Investment in Highway Research, 2006–2009: Strengths and Weaknesses. All current and selected out-of-print special reports are posted on the Board's website.<sup>3</sup>*

- *Conference Proceedings* assemble formal papers, presentations, and summaries of discussions from TRB conferences and workshops. *Freight Demand Modeling: Tools for Public-Sector Decision Making; Interagency–Aviation Industry Collaboration on Planning for Pandemic Outbreaks; Innovations in Travel Demand Modeling*, Volumes 1 and 2; and *Key Issues in Transportation Programming* were published this year and posted on the web.<sup>4</sup>
- *Transportation Research E-Circulars* collect research problem statements, reports, and technical information from the work of TRB technical activities committees. Topics of Circulars published this year included the evolving role of statewide transportation planning in an era of regional funding and governance, implementation of an airport pavement management system, surface transportation weather and snow and ice control technologies (more than 50 technical papers), bridge and structure management (more than 30 technical papers), and geophysical methods for geotechnical site characterization. Circulars are available exclusively in electronic format on the TRB website.<sup>5</sup>
- *Miscellaneous Reports* include special publications, such as the *Highway Capacity Manual 2000* and the *Access Management Manual*. The *Highway Capacity Manual 2000* was last updated in 2005 to incorporate corrections and changes as of July 2005 into the two print versions—one for U.S. customary measures and one for metric—and the CD-ROM.

<sup>3</sup> [www.TRB.org/news/blurb\\_browse.asp?id=12](http://www.TRB.org/news/blurb_browse.asp?id=12).

<sup>4</sup> [www.TRB.org/news/blurb\\_browse.asp?id=92](http://www.TRB.org/news/blurb_browse.asp?id=92).

<sup>5</sup> [www.TRB.org/news/blurb\\_browse.asp?id=16](http://www.TRB.org/news/blurb_browse.asp?id=16).



In addition, the Cooperative Research Programs Division produces an array of titles in several publications series. (For a list of all TRB publications, see pages 59–62.)

## COMMUNICATIONS

TRB is committed to improving the communication and public awareness of transportation issues and to enhancing the dissemination of research findings worldwide. Under the direction of the Board's Senior Communications Officer, TRB has been developing and implementing a variety of initiatives intended to improve communications and outreach.

One of the Board's most successful communications initiatives is the weekly *Transportation Research E-Newsletter*,<sup>6</sup> which reports on transportation research and research-related events within TRB and beyond. Circulation of the free newsletter is currently more than 34,000 and growing. About one-fifth of the readership is from countries outside the United States.

<sup>6</sup> [www.TRB.org/news/blurb\\_detail.asp?id=3946](http://www.TRB.org/news/blurb_detail.asp?id=3946). To subscribe, send an e-mail to RHouston@nas.edu with "Subscribe TRB E-Newsletter" in the subject field.



Past Executive Committee Chair Martin Wachs, RAND Corporation, speaks at the Executive Committee policy session on public-private partnerships and social equity. The informational panel was organized by the Executive Office's Senior Communications Officer.



Executive Committee Member Sandra Rosenbloom presents the rapporteur's summary of points from the policy session speakers and discussions. The session led the Executive Committee to initiate a study on the equity implications of alternative forms of transportation finance.

Other communications activities include enhancements to the Board's website; outreach to local government groups, other organizations, and individuals beyond traditional TRB constituencies; and targeting new audiences for specific reports and activities. In one of these efforts, TRB teamed with the National Conference of State Legislatures to create customized web links enabling state legislators and their staffs to access transportation research information on a variety of timely topics.

## STAFF NEWS

- **Glenda J. Beal** joined the staff of the TRB Executive Office as Editor-at-Large.
- **Lisa B. Marflak** came on board as Program Officer, Electronic Dissemination.
- **Paul D. deBruijn** was promoted to Production and Graphics Coordinator.



# Technical Activities



2007–2008 Technical Activities Council Chair Neil Pedersen reviews initiatives to recruit and involve minority and women volunteers and to encourage crosscutting committee activities in a briefing of the TRB Executive Committee in January.

The TRB Technical Activities Division provides a forum for transportation professionals to identify research needs and to share information on research and issues of interest. The Division's staff of specialists in each mode and discipline works with volunteers to carry out activities on behalf of TRB sponsors and the transportation community. This community includes thousands of members and friends of more than 200 standing committees.

The TRB Technical Activities Council oversees the organization and activities of these committees. Robert Johns, Director of the University of Minnesota Center for Transportation Studies, serves as Chair of the Technical Activities Council. The community is supplemented by TRB representatives in each state, in more than 150 universities, and in 25 transit agencies.

Highlights of the 2008 activities of the TRB Technical Activities Division are summarized below.

## FOSTERING A COMMUNITY OF RESEARCHERS AND PRACTITIONERS

### Bringing People Together *TRB Annual Meeting*

A record 10,500 people attended the 2008 TRB Annual Meeting, January 13–17, in Washington, D.C., and ap-



Daniel S. Turner, Robert M. Dorer, and Leland D. Smithson consider points raised at the Technical Activities Council meeting in January.

proximately 200 organizations participated in the sold-out, first-time commercial exhibit. The meeting's theme was Partnerships for Progress in Transportation.

More than 1,500 of the attendees completed a comprehensive survey in February 2008. The responses are helping TRB consider measures to address the growing size and complexity of the Annual Meeting. Respondents gave high marks to the meeting's program and administration. Other highlights included the following:

- Most were satisfied with the length of the meeting and with the number of activities in their areas of interest.
- Opportunity to meet with peers was cited as the most valuable benefit, followed by lectern sessions and committee meetings. The value of meeting with peers and participating in committee meetings increased with the number of Annual Meetings attended.
- Almost 75 percent of the respondents favored replacing the mailed printed meeting Announcement with an e-mail that includes a link to the document on the TRB website. This change was implemented for the 2009 meeting and is in keeping with the goal of conserving resources.



Meet-the-Author poster sessions stimulated peer interchanges, a valued benefit of the Annual Meeting; (above, center) Michael F. Monteleone, Louis Berger Group, explains conclusions from a simulation of pedestrian traffic at the World Trade Center memorial.



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Council Chair  
Technical Activities



**Cynthia J. Burbank**  
Chair  
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**Katherine F. Turnbull**  
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**Mary Lou Ralls**  
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Aviation Group



**Arlene L. Dietz**  
Chair  
Marine Group



**Mark R. Norman**  
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In a separate survey, more than 90 percent of the organizations that exhibited at the 2008 Annual Meeting responded that they plan to return in 2009, citing a positive experience.

A record 3,400 papers were submitted by the August 1 deadline for consideration as presentations at the 2009 Annual Meeting and for publication in the *Transportation Research Record: Journal of the Transportation Research Board* (TRR). The spotlight theme for the 2009 meeting is Transportation, Energy, and Climate Change.

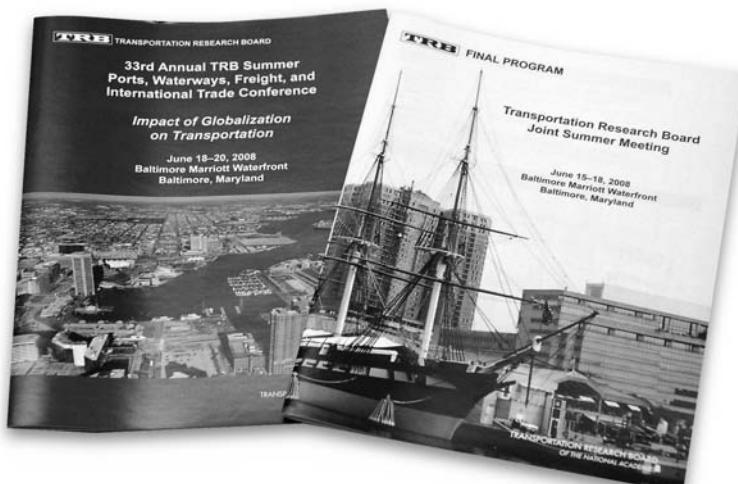
### Conferences

TRB sponsored 30 conferences and cosponsored 25 others in 2008. Some of the highlights from annual conferences included the following:

- More than 40 standing committees participated in the TRB 2008 Joint Midyear Meeting in June in Baltimore. The program theme was the Impact of Globalization on Transportation, with sessions assembled by the Policy and Organization Group, the Marine Group, and the Freight Systems Group.
- Overlapping with the Midyear Meeting in Baltimore and continuing the same theme, the 33rd Annual TRB Summer Ports, Waterways, Freight, and International Trade Conference focused on such topics as the shifting of global trade routes, land-side access, supply chain security, financing, and the environment.
- Participants at the 47th Annual Workshop on Transportation Law not only presented unusual cases but pointed out potential, emerging legal



The TRB Joint Summer Meeting and the Summer Ports, Waterways, Freight, and International Trade Conference overlapped in June in Baltimore and shared a keynote session with Sarah Murray (right, in photo above), author and journalist, congratulated by TRB Freight Systems Group Chair Paul Bingham.





The Welcome Session at the Annual Meeting allowed committee leaders to meet, brief, and recruit young and first-time attendees; (*standing, left to right*) Technical Activities Council Member Katherine Turnbull, Committee Chair Elizabeth B. Rushley, and Group Chair Charles E. Howard, Jr., answer questions.

problems. The forum enables attorneys from federal, state, and local highway and transit organizations to review problems and propose solutions.

### ***Increasing Diversity***

The diversity of participants in TRB standing committee activities continues to increase. A survey of new and young attendees at the 2008 Annual Meeting solicited interest in participation in TRB standing committees, gaining more than 120 positive responses. Of these, one-third were from women, and slightly more than half were from minorities. All responses were forwarded to the appropriate committee chairs, who contacted the volunteers. In addition, at the recommendation of a staff task force on diversity, TRB placed a well-received exhibit at the annual meeting of the Conference of Minority Transportation Officials.

Technical Activities Council Chair Robert Johns initiated a dialogue on attracting new volunteers to



The sold-out exhibit hall offered valuable opportunities to view advanced technologies; here an audience observes a demonstration of a train simulator at the Volpe National Transportation Center booth.

standing committees and on enhancing the experience for all. A survey of standing committee members asked such questions as

- What motivates individuals to volunteer for TRB standing committees?
- What do volunteers value most from their involvement?
- What can be done to enhance the experience?
- How can TRB attract and involve new volunteers, including members of the millennium generation?

More than 1,200 committee members responded—a response rate of almost 30 percent. The Technical Activities Council is using the survey results to identify and implement strategies and next steps.

### ***International Activities***

The International Activities Committee continued efforts to increase research collaboration and technology transfer across borders and to implement the action plans associated with the memoranda of understanding with the European Conference of Transport Research Institutes (ECTRI), signed in 2006, and with the World Road Association (PIARC), signed in 2007. The committee organized eight workshops at the 2008 TRB Annual Meeting on topics from global climate change to bus rapid transit. In addition, working with the Conduct of Research Committee, the International Activities Committee offered a three-part session on opportunities for research collaboration. Speakers included officials from the European Commission, the Transport Research Forum, ECTRI, PIARC, the Forum of European National Highway Research Laboratories (FEHRL), the European Research Area (ERA)-Net Transport, and the Cooperation in Science and Technology Research Program (COST).

TRB expanded its international scope by cosponsoring conferences in other countries, in locations from Athens to Seoul, including a first-time cosponsorship of the International Geosynthetics Conference, in Mexico in March; the Southern African Transport Conference, in Pretoria in July; and the International Conference on Integrated Transport for Sustainable Urban Development, in Beijing in December. TRB Executive Director Robert E. Skinner, Jr., was a keynote speaker at the Transport Research Arena conference in Slovenia and at the Third International Conference on Accelerated Pavement Testing in Madrid.

Also reflecting the growth of international interest in TRB activities is the record number of papers submitted to the Transportation in Developing Countries Committee for 2009.



International Activities Committee Chair Jorge A. Prozzi presents an award of appreciation to George Giannopoulos, past president of the European Conference of Transport Research Institutes (ECTRI), who was instrumental in strengthening ties between TRB and ECTRI.

## Sharing Information

### Webinars

TRB launched its webinar—or web-based seminar—series in late 2007. Approximately 90 minutes long, the webinars include presentations on newly released TRB products and reports and deliver some of the most popular TRB session topics to audiences who were unable to attend. Access is free to employees of TRB sponsor organizations; others must pay a registration fee for most webinars.

Participation has averaged more than 400 persons per webinar, matching the size of a large-scale TRB conference. Webinars were presented once per month in 2008, and in response to the popularity, steps have been taken to increase the frequency.

### Transportation Research Record

After a one-year hiatus, Thomson Reuters Scientific released the 2007 citation impact factor for the TRR. The impact factor of .206 represents a sizable increase from the 2005 impact factor of .145 and the 2004 impact factor of .072. The trend of increases reflects the efforts of the TRR Publication Board, which was established in late 2006, as well as of TRB staff and authors, to improve the status, quality, and recognition of the TRR.

The TRR Publication Board has established measures to enhance the TRR peer review process, including a revision of the guidelines and instructions for peer reviewers.

### Research Needs Statements Database

TRB standing committees are charged with collecting, maintaining, and prioritizing research problem statements in their topic areas. In late 2007, TRB launched the Research Needs Statements

(RNS) database, a central, searchable database allowing the comprehensive collection and sharing of research topics. The RNS database provides a shopping list for those who fund and conduct transportation research, including TRB's cooperative research programs, federal agencies, state departments of transportation (DOTs), university faculty and students, consultants, and others. One or more TRB standing committees review and approve each RNS entry and augment and update the information.

Enhancements to the RNS database in 2008 included a link that allows users to e-mail additional information about a statement; TRB staff then forwards this information to the appropriate committee. Users now can subscribe to e-mail alerts about changes or additions to any of the statements in a specific subject area.



Technical Activities Director Mark R. Norman reviews initiatives to improve the TRB Annual Meeting program and related services in a report to the TRB Executive Committee.

## POLICY AND ORGANIZATION

### Transportation Policy

The TRB Strategic Management Committee and Management and Productivity Committee conducted a two-day conference on Transforming Transportation Organizations: Ingredients for Successful Change. The program addressed issues affecting the transportation agency workforce, including financial challenges, concerns about climate change, the aging of the workforce, and changing demographics. Massachusetts DOT Secretary Bernard Cohen was a featured speaker.

The Taxation and Finance Committee and the Pricing Committee organized workshops at the 2008 sum-

The Research Needs Statements database debuted this year to publish collections of research problem statements gathered by Technical Activities standing committees; the online tool represents the collaborative effort of several TRB divisions.

mer meeting in Baltimore, attracting approximately 100 participants to each session. Featured speakers included commissioners from the National Surface Transportation Policy and Revenue Study and from the National Surface Transportation Infrastructure Financing Study.

The Policy and Organization Group continued to investigate critical and crosscutting issues to guide the development of activities among its 30 committees and within the Technical Activities Division. The group organized seven cross-group sessions for the 2008 Annual Meeting, addressing such topics as partnerships in design, state and local coordination on data programs, transportation organizations' response to major weather events, and the effects of globalization on transportation.

The Major Issues in U.S. Cities Committee partnered with the Ports and Waterways and the Environmental Justice Committees to sponsor a two-part summer session addressing the integration of freight planning and global logistics from the local to the international level.

### Security

Sessions at the 2008 Annual Meeting explored measures to address the safety and security of passenger and freight transport. In addition to workshops, including the fourth annual workshop on bridge and tunnel security, sessions covered such topics as data needs for transportation security, planning for transportation security and infrastructure protection, remote sensing technologies, evacuation planning and operations, emergency response, and the distribution of relief supplies. Mode-specific sessions related to port, airport, and rail hazardous materials security. A meet-the-author poster session highlighted research in such areas as disaster preparedness, intergovernmental cooperation and local government continuity of operations, transportation network risk profiling, and measuring the risk of attacks on bus networks. Many of the high-quality, peer-reviewed research papers on transportation security and on emergency response and recovery were published in TRR No. 2041.

The TRB Summer Ports, Waterways, Freight, and International Trade Conference included presentations on security research and development, global supply-chain security strategy, the trade resumption communications protocols of the U.S. Coast Guard and Customs and Border Protection, the Asia Pacific Economic Cooperation trade resumption protocols, inland waterways security, and the protection of the nation's security information. TRB representatives also contributed to other major programs on security

issues, including the July 2008 Terrorism and Transportation Conference in New York.

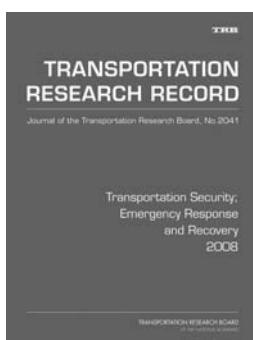
### Data and Information Systems

Two peer exchanges brought together representatives from state DOTs and other transportation agencies in May to share experiences in making information technology more effective in their organizations. Participants in the Open Architecture for Data Integration Peer Exchange also heard from private-sector representatives about the benefits of open structures. The peer exchange on Aligning Data to Support Transportation Decisions identified short- and long-term strategies for states to align transportation data and information programs with business and decision-making needs.

The Highway Economic Requirements Modeling and Data Integration Conference in April provided a forum for participants from transportation organizations to improve the analysis and use of highway economic models. Discussions pointed to research needs for the development of data to support the models, for improvements to the models, and for strategies to improve the use of model results.

The North American Travel Monitoring Exposition and Conference in August continued the biennial forum for the exchange and dissemination of information on the collection, management, and use of monitored traffic data. A program of regional workshops was initiated to reach audiences who are not able to attend national meetings. The Western Traffic Data Workshop: Successful Strategies in the Collection of Data for Corridors and Planning was held in April, and the Northeast Traffic Data Workshop in October.

California DOT and the California Air Resources Board sponsored a March TRB workshop on Data Sources to Measure the Impacts of Goods Movement on Air Quality. The TRB Data Section, the Environ-



Technical committees peer-reviewed 2,800 papers for 2008 and selected 704 for publication in 49 volumes of the *Transportation Research Record*, including a volume on transportation security and emergency response and recovery.



Data and Information Systems Chair Johanna P. Zmud addresses a meeting of the Visualization in Transportation Committee.



Beverly Ward, University of South Florida, speaks at a plenary session of the Impact of Changing Demographics on the Transportation System Conference at the National Academies Keck Center in October.

ment and Energy Section, and the Freight Systems Group cooperated on the workshop to identify current and potential data sources on freight activity in support of initiatives to improve air quality in California. Participants identified research needs to improve the usefulness of data sources and to assemble and assess nontraditional data sources.

In September, the North American Freight Flows Conference reviewed recent work on the use of data sources and highlighted opportunities to improve the availability, accessibility, and use of data for evaluating programs, informing policy development, and making business decisions. The Impact of Changing Demographics on the Transportation System Conference, in October, was the third annual forum encouraging interaction and collaboration among universities, government, private interests, and TRB committees.

A November workshop to develop a Geospatial Information Systems for Transportation Research Roadmap built on a series of research-oriented meetings in the past several years. A follow-on workshop at the 2009 Annual Meeting will solicit research ideas; a subsequent workshop will draft a roadmap prioritizing research initiatives for transportation.

The Data Section retreat in March identified issues that transcend the scopes of individual committees but that could be addressed at the section level. Data to support research on transportation and climate change emerged as the priority.

### **Research and Education**

The Transportation Education and Workforce Committee conducted a second workshop on Building the 21st Century Workforce, on the last day of the 2008 Annual Meeting. More than 120 participants exchanged ideas

and experiences in four breakout sessions, covering

- The development and implementation of an organizational workforce strategy;
- Transportation as a career choice and the retention of engineering students;
- The development and improvement of college programs in all areas of transportation; and
- Preparation of the workforce for evolving organizational needs.

The Conduct of Research and the Technology Transfer Committees conducted midyear meetings in September in Woods Hole, Massachusetts. The committees discussed Annual Meeting plans and strategic plans in separate meetings and held joint sessions to explore topics of common interest, including a report on the international scanning tour on transportation research program administration and discussions on sharing research best practices.

The Transportation History Committee provided a history tour of the Baltimore Inner Harbor at the TRB 2008 Summer Conference—a new feature for the meeting. Offered several times, the tour included examples of Baltimore's earliest infrastructure, Civil War sites, and other points of interest.

## **PLANNING AND ENVIRONMENT**

### **Transportation System Planning**

The Transportation Needs of Small and Medium Communities Committee conducted the 11th Tools of the Trade Conference in Portland, Oregon, in September. The program offered participants practical tools, case studies, and opportunities to network with peers.

Metropolitan and state transportation planners met in Atlanta, Georgia, in September for the TRB Conference on Meeting Federal Surface Transportation Requirements in Statewide and Metropolitan Transportation Planning. Workshops preceding the conference included a well-attended session on Environmental Consultation and Resource Information for Long-Range Planning. SAFETEA-LU requires state and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation to consult in the development of long-range transportation plans. The workshop focused on sources of environmental information, environmental resource plans, how to use the information for transportation planning, and suggestions for effective consultation and collaborative planning. The conference sessions explored agency



Chair Marcy S. Schwartz (*standing at note board*) conducts a meeting of the Special Task Force on Climate Change and Energy in January.

responses to the new requirements for congestion management, safety, finance, environment, and statewide travel demand forecasting.

At the second Innovations in Travel Demand Forecasting Conference, held in Portland, Oregon, more than 200 participants spent two days learning about advanced travel demand forecasting models in use around the country and the world. Sessions covered a range of topics: a tutorial on incorporating climate change into travel models, developing models to evaluate pricing options, and techniques to communicate model results to the public and to decision makers.

The National Parks and Public Lands Committee joined with other TRB committees for a summer meeting in Denver, Into the Rockies: Environmental Sensitivity in Transportation. Experts from all levels of

government, consulting firms, national parks, public lands, and academic institutions explored environmental projects and research. Meeting participants identified environmental research needs and strategies for funding the research. Tours of the historic preservation and environmental projects in Rocky Mountain National Park and Castlewood Canyon Park emphasized the possibility of incorporating resource protection into transportation projects.

#### **Social, Economic, and Environment Climate Change and Energy Task Force**

The Technical Activities Council created the Special Task Force on Climate Change and Energy to coordinate the activities of TRB standing committees in the crosscutting issues of global climate change and energy and to facilitate communication among the committees. The task force developed a roadmap for future TRB activities in these areas and coordinated the development of spotlight theme sessions on Transportation, Energy, and Climate Change at the 2009 TRB Annual Meeting.

The Technical Activities Council reorganized the two standing committees on energy—the Transportation Energy Committee and the Alternative Fuels Committee. With the twin challenges of increased gasoline prices and increased concerns about climate change, other TRB committees have relied on the energy committees as a clearinghouse for energy information and as sources for speakers and research. The energy committees have experienced an increase in the number of papers for peer review and in the number of cosponsored sessions at the Annual Meeting.



Castlewood Canyon Park was one of several Rocky Mountains sites toured by the National Parks and Public Lands Committee, looking at the incorporation of historic preservation and resource protection into transportation projects.

### **Environmental Issues and Sustainability**

The Waste Management and Resource Efficiency Committee met in conjunction with the TRB Summer Conference, holding several sessions on environmental issues related to the theme of globalization. The Environmental Analysis in Transportation Committee and the Ecology and Transportation Committee met with the Transportation Needs of National Parks and Public Lands Committee to discuss transportation issues of environmental sensitivity.

The Historic and Archeological Preservation Committee held a workshop with the Landscape and Environmental Design Committee in Saratoga Springs, New York, in September, on historically significant cultural landscape issues. The Transportation-Related Noise and Vibration Committee met in Key West, Florida, in July for a workshop on multimodal noise issues and new technologies for reducing transportation noise and vibration.

The Transportation and Sustainability Committee cosponsored two conferences: Rethinking Transportation for a Sustainable Future, hosted by the University of Kentucky in Louisville in October; and the International Conference on Integrated Transport for Sustainable Urban Development, held in Beijing in December.

## **DESIGN AND CONSTRUCTION**

### **Design**

Committees in the Design Section conducted an array of meetings, sessions, and workshops at the 2008 TRB Annual Meeting. Following are highlights of other activities in 2008.

The meeting of the Roadside Safety Design Committee in Jackson Hole, Wyoming, in June included a workshop on Recent Advances in Roadside Safety Technology, which summarized the state of the art and practice.

The Pavement Management Systems Committee published *Implementation of an Airport Pavement Management System*.<sup>1</sup> The committee also cosponsored the 7th International Conference on Managing Pavements and Other Roadway Assets in Calgary, Alberta, Canada, in June. Approximately 300 participants attended from around the world.

The Structures Section committees cosponsored the 25th Annual International Bridge Conference (IBC) in Pittsburgh, Pennsylvania, in June, and the 6th National Seismic Conference on Bridges and Highways

in Charleston, South Carolina, in July. This was the first time that the section cosponsored the IBC, conducting a well-attended workshop on Steel Bridges: Evaluation and Rehabilitation for Safety and convening meetings of the General Structures Committee and its Bridge Aesthetics Subcommittee.

Several other Design Section committees met during the summer, often with other TRB committees or in conjunction with an American Association of State Highway and Transportation Officials (AASHTO) or FHWA activity. At these meetings, attendees discussed progress on committee initiatives, recent research advances, progress in implementing research results, and collaborative efforts with stakeholders.

### **Construction and Materials**

The committees in the Construction and Materials Sections sponsored five practice-oriented workshops at the 2008 TRB Annual Meeting on technologies for accelerated bridge construction, construction of concrete unbonded overlays, achieving smoothness in asphalt pavements, highway construction quality assurance, and the promise of nanotechnology for concrete. In addition, a pilot workshop offered doctoral students the opportunity to present their research in asphalt materials and mixtures and to become involved in TRB.

In August, the Concrete Materials Section committees and the Portland Cement Concrete Paving Construction Committee cosponsored the 9th International Conference on Concrete Pavements, in San Francisco. In September, the Construction Management Committee cosponsored the 1st International Conference on Transportation Construction Management, in Orlando.

The Design-Build Task Force has become the Project Delivery Methods Committee. The broadened title and scope includes all methods of project delivery for all modes of transportation.

The Accelerating Innovation in the Highway Industry Task Force sponsored a web circular in conjunction with the Transportation Asset Management Committee, *Transportation Asset Management: Strategic Workshop for State Department of Transportation Executives*,<sup>2</sup> documenting the fourth in a series of senior executive forums for accelerating innovation in the highway industry.

### **Soils, Geology, and Foundations**

The Subsurface Soil-Structure Interaction Committee sponsored a TRB webinar on Installation and Design

<sup>1</sup> Circular E-C 127, <http://onlinepubs.TRB.org/onlinepubs/circulars/ec127.pdf>.

<sup>2</sup> Circular E-C 131, <http://onlinepubs.TRB.org/onlinepubs/circulars/ec131.pdf>.

Considerations for Culvert Rehabilitation, in June. The online session for transportation engineers and maintenance personnel presented design information and the practices for installation. The Soils and Rock Instrumentation and the Engineering Geology Committees prepared a web circular, *Use of Inclinometers for Geotechnical Instrumentation on Transportation Projects: State-of-the-Practice*,<sup>3</sup> developed from a 2008 Annual Meeting workshop.

The committees also sponsored or cosponsored several conferences:

- The Engineering Geology and the Exploration and Classification of Earth Materials Committees sponsored a symposium on Problem Soils and Surficial Deposits in Santa Fe, New Mexico, in May, preceding the 59th Highway Geology Symposium;
- The Geosynthetics Committee organized a special session, showcasing six key papers selected by peer reviewers from the past five years of the TRR, at the 1st Pan American Geosynthetics Conference and Exhibition, in Cancun, Mexico, in March;
- The Physicochemical and Biological Processes in Soils Committee cosponsored GeoCongress 2008: The Challenge of Sustainability in the Geoenvironment, in New Orleans, Louisiana, in March;
- The Soils and Rock Instrumentation Committee sponsored a session on Ground Improvement and Pavement Subgrades, at a conference in Taipei, Taiwan, in April;
- The Modeling Techniques in Geomechanics and the Application of Emerging Technologies in Design and Construction Committees contributed to the 10th International Conference on Application of Advanced Technologies in Transportation, in Athens, Greece, in May;
- The Soil Mechanics and the Geology and Properties of Earth Materials Sections cosponsored the

Sixth International Conference on Case Histories in Geotechnical Engineering, in Washington, D.C., in August; and

- The Exploration and Classification of Earth Materials Committee and its Subcommittee on Geophysics participated in the 2008 Highway Geophysics—Nondestructive Evaluation Conference, in Charlotte, North Carolina, in December.

## OPERATIONS

The June 2008 Conference on Freeway and Tollway Operations, in Fort Lauderdale, Florida, brought together more than 350 operations professionals to discuss issues of common interest and to share views, knowledge, and experience about freeways and tollways. Topics discussed at the conference included expressway and motorway management; tollway and tolling operations; operations and control center technologies; incident management safety; and managed lanes.

In July 2008, a symposium on the Greenshields Fundamental Diagram on Traffic Flow commemorated the 75th anniversary of the publication of the seminal work on traffic flow theory. The symposium covered the history of traffic flow theory, recent developments, and the impact of technologies—for example, real-time measurements and remote sensing.

The 8th National Conference on Access Management, in Baltimore in July, focused on sustainable solutions for transportation with a range of access management topics covering principles, practices, policies, and government coordination.

The 13th International High-Occupancy Vehicle (HOV) and High-Occupancy Toll (HOT) Lanes Conference, held in Minneapolis, Minnesota, in September, highlighted the latest developments in HOV, HOT, and managed lanes projects throughout North America. Information also was presented on complementary

<sup>3</sup> Circular E-C 129, <http://onlinepubs.TRB.org/onlinepubs/circulars/ec129.pdf>.

The Planning Committee for the 10th International Conference on Low-Volume Roads gathers to develop topics for the 2011 program, which will focus on the theme, “Low-Volume Roads: Our Connection to the World.”



elements, such as transit, bus rapid transit, park-and-ride facilities, and ridesharing.

A TRB webinar addressed the issues of Accommodating Pedestrians at Signalized Intersections, attracting an audience of more than 1,200 at more than 250 sites. The webinar presented issues and research related to the recent changes in pedestrian walk times and the increased use of pedestrian countdown timers at signalized intersections.

## MAINTENANCE AND PRESERVATION

The Roadway Pavement Preservation Task Force became the Pavement Preservation Committee. The new committee is charged with identifying and supporting research to quantify preservation activities and their benefits; developing, applying, and evaluating scientific approaches to assess materials, processes, methods, and procedures to extend cost-effectively the performance-life of pavement sections and networks; and sharing effective preservation practices and procedures through dissemination and education activities for practitioners and researchers.

The Surface Transportation Weather Task Force also was elevated to standing committee status. The committee works to exchange information within and between the transportation and meteorological communities on the effects of weather on all modes of surface transportation; identifies and develops research needs and technology transfer to improve the management of surface transportation; and shares efforts to minimize the impacts of weather and maximize safety and mobility.

The maintenance and preservation committees sponsored several conferences in 2008, including the 7th International Symposium on Snow and Ice Control, the 4th National Conference on Surface Transportation Weather,<sup>4</sup> and the 10th International Bridge and Structure Management Conference.<sup>5</sup> The Maintenance and Preservation Section committees are working with the AASHTO Highway Subcommittee on Maintenance to develop the program for the 12th AASHTO-TRB Maintenance Management Conference, to be held in Annapolis, Maryland, in July 2009.

## SAFETY

Safety activities at the TRB Annual Meeting continue to expand; in particular, the Human Factors in Trans-



A cast-in-place box girder bridge was a case study for the nondestructive evaluation of corrosion, discussed in a paper included in web Circular E-C 128, *10th International Conference on Bridge and Structure Management*.<sup>5</sup>

portation Workshop has attracted record attendance to each topical session.

More than six years ago, TRB helped to convene the National Highway Research and Technology Partnership, which in turn formed a Safety Working Group to develop methods for coordinating agendas for safety research. This became the focus for a TRB policy study, released in 2008 as Special Report 292, *Safety Research on Highway Infrastructure and Operations: Improving Priorities, Coordination, and Quality*.<sup>6</sup>

The Roundabouts Task Force conducted its second international conference in May, attracting an attendance of more than 380. In the United States, more than 980 roundabouts are now in operation.

The Subcommittee on Young Drivers held its first midyear meeting to develop research needs in areas of promise beyond graduated driver licensing. The midyear meeting of the Alcohol and Other Drugs in Transportation Committee developed a workshop on Young Impaired Drivers: The Nature of the Problem and Possible Solutions.

In anticipation of the first edition of the Highway Safety Manual (HSM)—developed by TRB and expected to be published by AASHTO in 2009—the TRB Task Force on the Development of the HSM pre-

<sup>4</sup> See conference papers in Circular E-C 126, <http://onlinepubs.TRB.org/onlinepubs/circulars/ec126.pdf>.

<sup>5</sup> See conference papers in Circular E-C 128, <http://onlinepubs.TRB.org/onlinepubs/circulars/ec128.pdf>.

<sup>6</sup> Special Report 292, <http://onlinepubs.TRB.org/Onlinepubs/sr/sr292.pdf>.

Young drivers are the subject of a subcommittee developing and assembling research needs.



pared a Highway Safety Manual Data Needs Guide, published as *Research Results Digest 329*.<sup>7</sup>

## LEGAL RESOURCES

In the 47 years that TRB has conducted the Annual Workshop on Transportation Law, attendance has grown from 15 to 20 chief counsels of state DOTs to nearly 200 federal and state transportation attorneys from highway and transit agencies. Despite the budget problems of many state DOTs, this year's workshop in San Diego attracted approximately 190 participants.

Committees in the Legal Resources Group continue to maximize their effectiveness by cooperating with other standing committees. For example, the Tort and Risk Management Committee provides liaison to the Context-Sensitive Design Task Force; the Transit and Intermodal Transportation Law Committee provides research input to the Transit Cooperative Research Program Project J-5, Legal Aspects of Transit and Intermodal Transportation Law; and the Transportation, Eminent Domain, Contracts, Torts, and Environmental Issues Committees provide research input to the National Cooperative Highway Research Program Project 20-6, Legal Problems Arising from Highway Programs.

In addition, the Emerging Technology Committee cosponsored an Annual Meeting session on Implementing Vehicle Infrastructure Integration; the Transportation, Transit and Intermodal Transportation Law, and Contract Law Committees continued a focus on Disadvantaged Business Enterprise contracting; and a representative of the Environmental Issues in Transportation Law Committee participated in the TRB Special Task Force on Energy and Climate Change.

<sup>7</sup> Research Results Digest 329, [http://onlinepubs.TRB.org/onlinepubs/nchrp/nchrp\\_rrd\\_329.pdf](http://onlinepubs.TRB.org/onlinepubs/nchrp/nchrp_rrd_329.pdf).

<sup>8</sup> [www.TRB.org/legal/naturallaw.pdf](http://www.TRB.org/legal/naturallaw.pdf).

The Environmental Issues in Transportation Law Committee has resumed publication of its newsletter, *The Natural Lawyer*.<sup>8</sup> Posted quarterly on the TRB website, the newsletter features reports and analyses on environmental legal matters.

## AVIATION

The Aviation Group Executive Board and the emeritus members of its nine committees and one task force participated in a focus group supporting the development of strategic planning initiatives for TRB's Airport Cooperative Research Program (ACRP). The focus group was part of an effort to gain insight into issues confronting all facets of the aviation industry and into ways that ACRP can address the issues. A follow-up workshop in November continued discussions of the issues in greater detail.

The Environmental Issues in Aviation Committee met in Toronto, Canada, in May to discuss the critical environmental issues for the aviation industry and to ensure that the issues are highlighted at the 2009 TRB Annual Meeting. In addition, the Aviation System Planning Committee, the Intergovernmental Relations in Aviation Committee, and the subcommittees of the Light Commercial and General Aviation Committees met in June in Washington, D.C., to finalize their TRB Annual Meeting plans.

At the request of the U.S. Government Accountability Office, members of the Aviation System Planning Committee assisted in developing a workshop on the Essential Air Service (EAS) Program. The workshop focused on the status of the EAS and on the implications of a possible reduction or elimination of the program to the aviation industry and to the local communities served by the program.



As part of the Annual Meeting session, Pangs of New York: Reducing Delays at Kennedy, LaGuardia, and Newark Airports, speakers Patty Clark (left), Port Authority of New York and New Jersey, and Michael Ball, University of Maryland, respond to audience questions.

## FREIGHT SYSTEMS

Freight system capacity has remained high on the research agenda, but other critical issues related to the environment—particularly to air quality—as well as to economics and planning, have increased the pressure on private industry shippers and carriers and on public agencies. TRB's 2008 Annual Meeting included a series of sessions featuring industry and government leaders and exploring such critical issues as balancing the benefits and costs of goods movement, addressing environmental concerns, assessing the role of the highway network in the intermodal supply chain, and identifying the effects of land use practices on freight movement. Other sessions examined such topics as the federal role in funding intermodal and rail needs; transportation and energy, with a focus on the growing ethanol market; visualization in goods movement; and balancing public and private management in public–private partnerships.

In March, TRB hosted a two-day workshop that brought together leading researchers and practitioners to identify the data sources needed to measure the impact of freight flows on air quality. Although the workshop focused on California, the findings about data and issues have wide applicability.

Another key topic at the Annual Meeting carried over to the Summer Conference in Baltimore—globalization and its impact on U.S. transportation. Most of the Freight System Group committees held midyear meetings at the Summer Conference and participated in sessions on freight-related topics: integrating freight transport interests at the community, regional, national, and global levels; engaging the private sector in freight transportation planning; and understanding the disconnect between freight industry economics and public-sector transportation funding.

TRB published *Freight Demand Modeling: Tools for Public-Sector Decision Making*, reporting on the proceedings of a 2006 conference.<sup>9</sup> The volume contains five peer-reviewed papers, summaries of conference presentations, and suggested areas for research.

## MARINE TRANSPORTATION

In May, TRB and the Marine Board, together with the U.S. Coast Guard, hosted the 10th Annual Harbor Safety Committee Conference in Seattle, Washington, with the theme of Plan, Prevent, Protect, Recover. Ses-



Frank Busalacchi, Secretary of the Wisconsin Department of Transportation, speaks on Financing Capacity and Growth in the Railroad Industry at the Annual Meeting Workshop, Assessing the Costs of Railroad Freight Service.

sions focused on public–private partnerships to improve communication, small vessel operations and safety, vessel traffic risk assessment, oil spill prevention, the role of the public and private sectors in maritime security and recovery, and good practices. TRB's new Marine Safety and Human Factors Task Force, approved in April, will work to expand research in this area and to complement the activities of the Marine Board and of the Marine Group committees.

In June, the 33rd Annual TRB Summer Ports, Waterways, Freight, and International Trade Conference focused on the impact of globalization on transportation, addressing such issues as shifting global trade routes, landside access, supply chain security, financing, and the environment. A highlight of the conference was a session on expanding global all-water trade routes and the implications for U.S. ports and inland transportation, with featured speakers from the Panama Canal and the Suez Canal. Other sessions examined the conflict between the need for port access and the gentrification of waterfronts, the international air transport of food, global warming, integrating waterborne passenger service into transit systems, a dialogue on public–private partnerships and the financing of port infrastructure, the maritime workforce, and the maintenance and expansion of the marine transportation system infrastructure. Participants also took part in waterside and landside tours of the Port of Baltimore and the Inner Harbor.

The Marine Board held its 2008 Spring Meeting in May at the Tulsa Port of Catoosa, Oklahoma. The program included a focus session on the importance of the McClellan-Kerr Arkansas River Navigation System to the nation's inland waterways network and the national economy. In September, TRB conducted a workshop on marine salvage assets and capabilities in a maritime disaster, focusing on response to and recovery from hypothetical chan-

<sup>9</sup> Conference Proceedings 40, <http://onlinepubs.TRB.org/online-pubs/conf/CP40.pdf>.

Among those attending the 33rd Annual Ports, Waterways, Freight, and International Trade Conference and enjoying the waterside tour of Baltimore Harbor were two representatives from the Suez Canal Authority, El Sayed About-effetouh and Mohamed Emara, who spoke at a plenary session.



Participants at the TRB Marine Board Spring Meeting tour the M/V *Charley Border*, a towboat in service for more than 30 years and the centerpiece of a new inland waterway educational center at the Tulsa Port of Catoosa, May 2008.

nel closures at the Ports of Los Angeles and Long Beach. Participants at this Marine Board–initiated event included individuals from the U.S. Navy Office of the Supervisor of Salvage and Diving, the U.S. Coast Guard, the U.S. Army Corps of Engineers, and the National Oceanic and Atmospheric Administration. The 2008 Fall Meeting in Washington, D.C., focused on issues and activities of greatest concern to the Marine Board's sponsor agencies.



## PUBLIC TRANSPORTATION

The Bus Rapid Transit Workshop: An Introduction to the Euclid Corridor BRT was conducted in Cleveland, Ohio, in July. The TRB Committee on Bus Transit Systems organized the workshop with four cosponsors: the Greater Cleveland Regional Transit Authority, the American Public Transportation Association (APTA), the National Bus Rapid Transit Institute, and the National Transit Institute. The 110 participants learned about the Euclid Corridor and its history, including the corridor design and construction, and about the different approaches taken by the Lane Transit District in Eugene, Oregon, and by the Kansas City Area Transportation Authority. A corridor tour on four bus rapid transit vehicles provided first-hand information about the operations, marketing, branding, public involvement, real estate and economic development, public art, safety plans, and project oversight.

The 18th National Rural Public and Intercity Bus Transportation Conference: Partnerships for Progress in Rural Transportation was held in Omaha, Nebraska, in October. The conference was organized by the TRB Committee on Rural Public and Intercity Bus Transportation and seven cosponsors: the Federal Transit Administration (FTA), the Rural Transit Assistance Program, the National Association of Transportation Providers, the Nebraska Department of Roads, APTA, the Community Transportation Association of America, and AASHTO. More than 300 attendees discussed key issues and experience in planning and design, policy, funding and finance, the operating environment, technology, and special issues in rural transportation. Sessions focused on such topics as environmental justice, mobility for disabled veterans, senior transportation needs, medical transportation, intercity bus operations, and tribal transit, with workshops on cost allocation for rural transit agencies and on FTA's states program.

## RAIL TRANSPORTATION

With growing demand from freight and passenger operations, capacity remains the primary concern for the rail industry, raising a range of technical, economic, and policy issues. Two Annual Meeting workshops addressed some of the issues, including measuring and managing the shared use of rail infrastructure by freight and passenger trains, assessing the costs of rail freight service, and exploring ways to finance increased capacity.

In April, the Intercity Rail Passenger Systems Committee published the online *Intercity Rail Passenger Systems Update, No. 13*, with feature articles on sharing corridor capacity between freight and passenger operations; the High-Speed Rail Summit for the East Coast; and the success of the public–private partnership that delivered the United Kingdom's high-speed rail line linking London and the Channel Tunnel.<sup>10</sup>

The Rail Group Executive Board and four committees held midyear meetings in San Francisco in late May in conjunction with APTA's Rail Conference. Amtrak and the Capitol Corridor Joint Powers Authority hosted a rail inspection trip from Oakland to Sacramento. In July, the Railroad Operational Safety Committee met in Omaha, hosted by Union Pacific Railroad. In August, the Local and Regional Rail Freight Transport Committee met in Milwaukee with the AASHTO Standing Committee on Rail Transport, followed by an inspection trip on the Wisconsin and Southern Railway. The Rail Transit Infrastructure Committee joined the Rail Group to facilitate closer association among railway engineering committees.

<sup>10</sup> <http://onlinepubs.TRB.org/Onlinepubs/irps/IRPSWinter2008.pdf>.



Reinhard Clever, thinkMetric.com, speaks on the Interaction of Air and High-Speed Rail in Japan at the Annual Meeting session on Trends in High-Speed Rail.

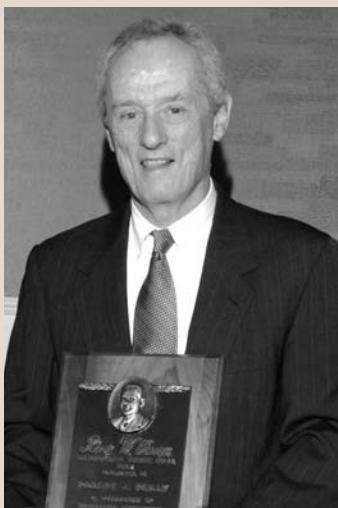


The bus rapid transit service on the Euclid Corridor in Cleveland, Ohio, was the subject of a July workshop that included comprehensive tours of all aspects of the project, as well as comparative case studies from other transit districts. (Photo: L. A. Beabes)

## STAFF NEWS

- **Bruce A. Millar** and **Julie A. Miller** were promoted to Conference Managers.
- Transportation Safety Coordinator **Richard F. Pain** received an Individual Distinguished Service Award from the National Academies in October.
- **Christine Gerencher** was included in a National Academies Group Distinguished Service Award as a member of the Airport Cooperative Research Program Startup Team.
- Joining the Technical Activities Division staff were **Stacy Carr** as Meetings Coordinator, **Angela Johnson** as a Meetings Assistant, and **Matthew Miller** as a Senior Program Associate.

## TRB 2008 Awards



TRB presented three major awards at the 2008 Annual Meeting Chairman's Luncheon.

- **Robert J. Reilly** (*left photo*), who retired in 2007 as Director of TRB's Co-operative Research Programs, received the Roy W. Crum Distinguished Service Award. Reilly guided the growth of the National Cooperative Highway Research Program and helped initiate new cooperative research programs in transit, airports, freight, and hazardous materials transportation.

- Consultant **Alan E. Pisarski** (*center photo*) received the W. N. Carey, Jr., Distinguished Service Award. Pisarski has helped build TRB's portfolio of activities and expertise on data-related issues and has provided volunteer leadership and service to TRB in many other areas for 30 years.
- The Sharon D. Banks Award for Innovative Leadership in Transportation was presented to **Shirley DeLibero** (*right photo*), President, DeLibero Transportation Strategies, LLC, for her ability to lead and motivate people, her commitment to valuing and empowering employees, and her mentoring of transit managers.



Another major TRB award, the Thomas B. Deen Distinguished Lecture, provided occasion for **Matthew W. Witzczak** (*center*), Arizona State University, to share his insights on "Pavement Performance Research Implementation: Its Uniqueness, Complexity, and Recommendations for Acceleration into Practice." Presenting the award are (*left to right*) Neil Pedersen, then-Chair of the Technical Activities Council; TRB Executive Director Robert E. Skinner, Jr.; Thomas B. Deen, past Executive Director of TRB; and Linda Watson, then-Chair of the TRB Executive Committee.

# Studies and Special Programs

The Studies and Special Programs Division conducts policy studies at the request of the U.S. Congress, the executive branch agencies, states, and other sponsors; operates a bibliographic database of completed research and provides library reference services; produces syntheses of current practices in highway, transit, airport operations, and commercial truck and bus safety; and manages Innovations Deserving Exploratory Analysis (IDEA) programs in highway, transit, rail and truck safety, and high-speed rail.

## POLICY STUDIES

With the guidance of committees drawn from the nation's leading experts, the Policy Studies group produces reports examining complex and controver-

sial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. The U.S. Congress and the executive branch have adopted many recommendations from TRB policy reports, attesting to the substantive value of the findings.

The Subcommittee on Planning and Policy Review provides oversight for TRB's policy work, under the leadership of former TRB Executive Committee Chair Michael D. Meyer, Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology. Since 1998, all completed policy study reports are posted on the TRB website.<sup>1</sup> *Informing Transportation Policy Choices*, a web document that provides an overview of all TRB policy studies from 1983 through 2006, is also posted on the Policy Studies page of the website.<sup>2</sup>



**Michael D. Meyer**  
*Chair*  
Subcommittee on  
Planning and Policy  
Review



**Stephen R. Godwin**  
*Director*  
Studies and  
Special Programs



Michael D. Meyer (above center, at microphone) reports to the TRB Executive Committee in January on the agenda and recommendations of the Subcommittee on Planning and Policy Review.

A two-part 2008 Annual Meeting session examined the legacy of TRB Special Report 218, *Transportation in an Aging Society*, on its 20th anniversary; Stephen R. Godwin (right) reviewed research and developments since the publication's release.



## Completed Reports

### *Potential Impacts of Climate Change on U.S. Transportation*

#### SPECIAL REPORT 290

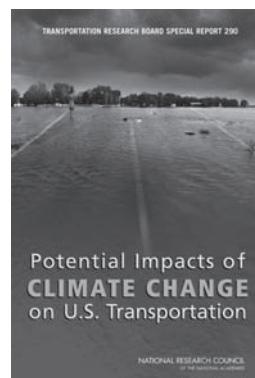
TRB Special Report 290, *Potential Impacts of Climate Change on U.S. Transportation*, explores the consequences of climate change for U.S. transportation infrastructure and operations and outlines strategies for adapting to these changes.<sup>3</sup> The report provides an overview of the scientific consensus on the current and future climate changes that may have an effect on U.S. transportation, including the limits of present scientific understanding as to the precise timing, magnitude, and geographic location of these changes; identifies the potential impacts on U.S. transportation and the options for adaptation; and recommends research and actions to prepare for climate change.

Climate scientists have identified five climate changes of importance to transporta-

<sup>1</sup> [www.TRB.org/news/blurb Browse.asp?id=12](http://www.TRB.org/news/blurb Browse.asp?id=12).

<sup>2</sup> [www.TRB.org/news/blurb\\_detail.asp?id=7968](http://www.TRB.org/news/blurb_detail.asp?id=7968).

<sup>3</sup> [www.TRB.org/news/blurb\\_detail.asp?id=8794](http://www.TRB.org/news/blurb_detail.asp?id=8794).





Henry G. (Gerry) Schwartz, Jr., who chaired the Committee on Climate Change and U.S. Transportation, presents highlights from the policy study, published as TRB Special Report 290, at the Annual Meeting in January.

tion: increases in very hot days and heat waves, increases in Arctic temperatures, rising sea levels, increases in intense precipitation, and increases in hurricane intensity. The report also summarizes previous work on strategies for reducing transportation-related emissions of carbon dioxide—the primary greenhouse gas—that contribute to climate change.

TRB, the U.S. Department of Transportation (DOT), the National Cooperative Highway Research Program (NCHRP), the Transit Cooperative Research Program (TCRP), the Environmental Protection Agency, and the U.S. Army Corps of Engineers sponsored the project. Henry G. (Gerry) Schwartz, NAE, retired from Sverdrup-Jacobs Civil, chaired the study committee. The Board on Atmospheric Sciences and Climate of the National Research Council's (NRC) Division on Earth and Life Studies collaborated on the study.

### ***Great Lakes Shipping, Trade, and Aquatic Invasive Species***

#### **SPECIAL REPORT 291**

Special Report 291, *Great Lakes Shipping, Trade, and Aquatic Invasive Species*, reviews research and efforts to reduce the introductions of aquatic invasive species (AIS) into the Great Lakes and identifies

ways to strengthen these efforts and gain an effective solution.<sup>4</sup> Since 1959, the St. Lawrence Seaway has provided a route into the Great Lakes not only for trade, but also for AIS that have had severe economic and environmental impacts on the region.

<sup>4</sup> [www.TRB.org/news/blurb\\_detail.asp?id=9267](http://www.TRB.org/news/blurb_detail.asp?id=9267).

Despite prevention measures by the governments of Canada and the United States, discoveries of new AIS continue, and only time will tell the impacts that these species may have. Pressure to solve the problem has led to proposals to close the seaway.

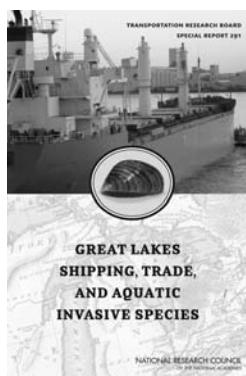
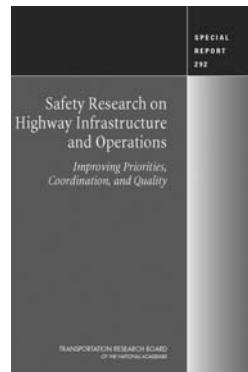
The committee that developed the report recommends that trade should continue on the St. Lawrence Seaway but with a more effective suite of prevention measures to reduce the introduction of AIS. Moreover, the prevention measures should evolve in response to lessons learned and to new technologies. TRB and the NRC Division on Earth and Life Studies collaborated on this report. The study was underwritten by the Great Lakes Protection Fund. Jerry R. Schubel, Aquarium of the Pacific, chaired the study committee.

### ***Safety Research on Highway Infrastructure and Operations: Improving Priorities, Coordination, and Quality***

#### **SPECIAL REPORT 292**

After evaluating highway research needs in preparation for the reauthorization of the Transportation Equity Act for the 21st Century, the American Association of State Highway and Transportation Officials' (AASHTO) Standing Committee on Research and the Federal Highway Administration's (FHWA) Safety Research and Development office requested an analysis of strategies for improving research coordination and research quality in the areas of highway infrastructure and operations. The committee that prepared Special Report 292, *Safety Research on Highway Infrastructure and Operations: Improving Priorities, Coordination, and Quality*, examined the research processes of agencies that are engaged in highway safety research—including FHWA, the National Highway Traffic Safety Administration, the Federal Motor Carrier Safety Administration (FMCSA), and NCHRP—and considered related research funded by the Centers for Disease Control and Prevention and by the American Automobile Association's Foundation for Traffic Safety.<sup>5</sup>

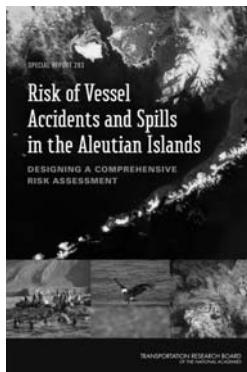
Noting that the practical barriers to improved coordination are substantial, the committee suggests several strategies for overcoming the barriers.



<sup>5</sup> [www.TRB.org/news/blurb\\_detail.asp?id=9151](http://www.TRB.org/news/blurb_detail.asp?id=9151).

A major issue is the lack of a research agenda prioritized to address the most significant problems in highway infrastructure and operations. The committee suggests an option for addressing this problem. The report also outlines ways to improve research quality—for example, by overcoming the methodological and data limitations that often have undermined meaningful conclusions and that have caused many studies to fail.

NCHRP and FHWA funded the study. Forrest Council, University of North Carolina Highway Safety Research Center, chaired the committee.



### **Risk of Vessel Accidents and Spills in the Aleutian Islands: Designing a Comprehensive Risk Assessment**

**SPECIAL REPORT 293**

TRB Special Report 293, *Risk of Vessel Accidents and Spills in the Aleutian Islands: Designing a Comprehensive Risk Assessment*, examines data re-

lated to the risk of oil, chemical, and other hazardous cargo spills from vessel traffic through the Aleutian Islands and identifies key information needed to conduct a comprehensive risk assessment.<sup>6</sup> The State of Alaska's Department of Environmental Conservation and the U.S. Coast Guard requested and funded the study. R. Keith Michel, Herbert Engineering Group, chaired the study committee.

### **The Role of Transit in Emergency Evacuation**

#### **SPECIAL REPORT 294**

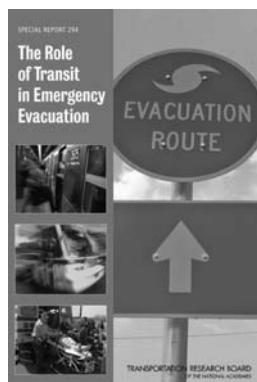
TRB Special Report 294, *The Role of Transit in Emergency Evacuation*, explores the roles that transit systems can play in accommodating the evacuation, egress, and ingress of people from and to critical locations during emergencies.<sup>7</sup> The report focuses on major incidents that could necessitate a partial to full evacuation of the central business district or other large portion of an urban area.

<sup>6</sup> [www.TRB.org/news/blurb\\_detail.asp?id=9209](http://www.TRB.org/news/blurb_detail.asp?id=9209).

<sup>7</sup> [www.TRB.org/news/blurb\\_detail.asp?id=9264](http://www.TRB.org/news/blurb_detail.asp?id=9264).

According to the committee that produced the report, transit agencies could play a significant role in an emergency evacuation, particularly in transporting carless and special needs populations. Few urban areas, however, have plans for evacuation in a major disaster that could involve several jurisdictions or states or that address the role of transit and other public transportation providers.

The report offers recommendations for making transit a full partner in emergency evacuation plans and operations but cautions emergency managers, elected officials, and the general public to have realistic expectations, particularly in a no-notice incident during a peak service period. The U.S. Congress requested the study, which was funded by the Federal Transit Administration (FTA) and TCRP. Richard White, DMJM Harris, served as chair.



### **The Federal Investment in Highway Research 2006–2009: Strengths and Weaknesses**

**SPECIAL REPORT 295**

In Special Report 295, *The Federal Investment in Highway Research 2006–2009: Strengths and Weaknesses*, TRB's Research and Technology Coordinating Committee assesses how well the investments that Congress made in research programs through the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) comply with the principles articulated in the preface to the act's research title.<sup>8</sup>

The committee's report contains findings and recommendations about specific research programs and calls for reliance on competition and merit review in awarding funds through FHWA and in selecting institutions for the University Transportation Centers program of the Research and Innovative Technology Administration (RITA).

FHWA funded the study. E. Dean Carlson, NAE, Carlson and Associates, served as chair.



J. Barry Barker participates in discussions of policy studies under way and under consideration at a meeting of the Subcommittee on Planning and Policy Review.

## **Letter Reports**

### ***Review of the Long-Term Pavement Performance Program***

**DECEMBER 2007**

Originally part of the first Strategic Highway Research Program (SHRP), the Long-Term Pavement Performance (LTPP) studies have been managed by FHWA since 1992. The LTPP program has been guided under a tripartite arrangement among FHWA, AASHTO, and NRC. By agreement of the three parties, and through a contractual arrangement with FHWA, NRC provides advice and assistance on the conduct of the LTPP studies through the TRB LTPP Committee.

In its 23rd letter report, the committee points out that the data collected through the program are the most valuable yet and will yield key findings for decades to come.<sup>9</sup> The committee urges FHWA to maintain and operate a National Pavement Performance Database after the expiration of SAFETEA-LU.

FHWA funds the committee's work. Victor Mendez, New Mexico DOT, serves as chair.

### ***Pavement Technology Review and Evaluation***

**FEBRUARY 2008**

TRB's Committee for Pavement Technology Review and Evaluation provides strategic advice and guidance to FHWA in the conduct of the Pavement Technology Program. The committee's charge includes reviewing the program through an annual public forum. The committee assesses the potential utility of

the technologies that FHWA is investigating, provides guidance on enhancing the effectiveness of the deployment and implementation of successful technologies by users, identifies and prioritizes additional research needs, and suggests future directions for the Pavement Technology Program.

In its second letter report, the committee commends FHWA's organizational plan for deploying pavement technology, urges FHWA to establish more explicit and transparent processes for stakeholder involvement in the identification and delivery of new technologies, expresses support for the strategic plan developed by FHWA, urges more attention to deployment strategies—such as the lead state program—and recommends the expansion of training opportunities.<sup>10</sup>

The committee also recommends that FHWA develop a plan for the LTPP program after the expiration of SAFETEA-LU, to maintain the enormous and invaluable data set and core samples from the program. FHWA funds the work of the committee, which is chaired by Carlos Braceras, Deputy Director, Utah DOT.

### ***Review of Federal Railroad Administration Research and Development Program***

**APRIL 2008**

TRB committees have reviewed the Federal Railroad Administration's (FRA) research and development (R&D) programs for many years. The current focus is on FRA's safety R&D, because FRA's technology programs have not been reauthorized or funded.

In this letter, the committee reviews FRA's procedures for selecting projects, the role of stakeholders in the selection process, and the program's consistency with the research priorities articulated by stakeholders at a workshop organized by the committee in 2006.<sup>11</sup> With help from the Volpe National Transportation Systems Center, FRA has been developing a systematic process for selecting research projects with the greatest potential payoff. The committee urges FRA to implement the process and to make the constituencies for the projects more evident—for example, internal customers, such as FRA's safety office, or external customers, such as railroads or state DOTs.

<sup>9</sup> [http://onlinepubs.TRB.org/Onlinepubs/sp/ltpp\\_letter\\_23.pdf](http://onlinepubs.TRB.org/Onlinepubs/sp/ltpp_letter_23.pdf).



An expert task group meets in Washington, D.C., to provide technical advice to the TRB Long-Term Pavement Performance Committee.

<sup>10</sup> [www.TRB.org/news/blurb\\_detail.asp?id=8722](http://www.TRB.org/news/blurb_detail.asp?id=8722).

<sup>11</sup> Letter report: [www.TRB.org/news/blurb\\_detail.asp?id=9007](http://www.TRB.org/news/blurb_detail.asp?id=9007); research priorities: [www.TRB.org/news/blurb\\_detail.asp?id=7226](http://www.TRB.org/news/blurb_detail.asp?id=7226).



Members of the TRB Committee for Review of FRA's R&D Program visit the Technology Test Center in Pueblo, Colorado, in March.

The committee notes that several of the FRA research initiatives are consistent with stakeholder priorities, such as fundamental research on wheel-rail dynamics, braking technologies, and wayside detection technologies. The committee urges FRA to improve coordination with railroads about positive train control and with industry about the research program on tank car safety. The committee commends the establishment of pilot programs to test a close-call reporting system but expresses disappointment about the lack of funding to complete the Nationwide Differential Global Positioning System network, necessary for positive train control technologies.

Robert Gallamore, retired from Northwestern University, chairs the committee, whose work is funded by FRA.

### ***Review of the Federal Transit Administration's Research and Development Program***

**JUNE 2008**

The Transit Research Analysis Committee (TRAC) was established in 2004 to help FTA develop and implement a strategic research plan for transit R&D. In this letter report, the committee urges FTA to reinvoke its strategic planning process to play a more effective leadership role in directing the transit R&D undertaken by FTA, industry, the university transportation centers, and TCRP. FTA should focus on issues of a national scale to demonstrate to national policy makers the relevance of transit research.<sup>12</sup>

The committee acknowledges that the earmarking of FTA's R&D program has caused many problems and advises FTA to work proactively with Congress to identify and resolve potential problems. The committee recommends that FTA involve stakeholders in developing research priorities and in defining FTA's role

in funding and in carrying out the research.

Michael Townes, Hampton Roads Transit, chaired the committee through August 2008, and has been succeeded by J. Barry Barker, Transit Authority of River City, formerly vice-chair.

### ***Review of a U.S. DOT Study on Changes to the Section 4(f) Process***

**JUNE 2008**

Section 4(f) resources—including historic properties, wildlife refuges, and parks—are protected by legislation, regulations, and legal precedents relating to road and transit improvements. These resources cannot be adversely affected as long as prudent and feasible alternatives are available; moreover, any consequences must be mitigated to the maximum extent possible.

SAFETEA-LU approved provisions to streamline the planning process for evaluating the potential impact of highway and transit projects on 4(f) resources; the legislation also required U.S. DOT to evaluate the consequences of the streamlining. TRB was charged with convening a committee to evaluate the U.S. DOT study design and the study results.

The committee's first letter evaluates the study design.<sup>13</sup> The committee finds the proposed approach is moving in the right direction but suggests different strategies to strengthen the evaluation framework, the data collection, and the survey.

Michael D. Meyer, Georgia Institute of Technology, chairs the committee. The work is funded by FHWA.

### **Ongoing Studies**

In addition to projects that provide ongoing reviews of FHWA's research and technology programs, pavement technology deployment programs, the LTPP program, and the research programs of FRA and FTA, the Policy Studies group includes committees working on a variety of important—and sometimes controversial—topics. Several ongoing studies are described below.

### ***Development Patterns, Vehicle Travel, and Energy***

In response to Section 1827 of the Energy Policy Act of 2005, and with funding from the Department of Energy, a study project will establish the scientific basis for—and make appropriate judgments about—the relationships between development patterns and vehicle miles traveled, as well as the energy conserva-

<sup>12</sup> [www.TRB.org/news/blurb\\_detail.asp?id=9128](http://www.TRB.org/news/blurb_detail.asp?id=9128).

<sup>13</sup> [www.TRB.org/news/blurb\\_detail.asp?id=9188](http://www.TRB.org/news/blurb_detail.asp?id=9188).

Tony Bliss, World Bank, discusses applications of measures yet-untired in the United States during a meeting of the Committee on Traffic Safety Lessons from Benchmark Nations.



tion benefits of denser development patterns. The project is expected to be completed by spring 2009.

#### ***Funding Options for Freight Transportation Projects of National Significance***

The TRB Executive Committee initiated this study to evaluate options for the public sector to share in funding freight projects of national significance. TRB and the UPS Foundation are the study sponsors.

#### ***Traffic Safety Lessons from Benchmark Nations***

Another study initiated by the TRB Executive Committee is examining the experience of nations that have been most successful in reducing traffic fatalities and injuries. The study will determine how these nations built the political will to implement controversial behavioral interventions and which approaches may be transferable to the United States. Funding is provided by TRB.

#### ***Reducing Greenhouse Gas Emissions and Saving Energy in Transportation***

In recognition of the renewed interest in saving energy and reducing greenhouse gas emissions, the TRB Executive Committee has initiated a study that will examine the full array of options for transportation and identify promising strategies for policy makers. The project began in late 2007 and will unfold over an 18-month period.

#### ***Equity Implications of Alternative Forms of Transportation Finance***

Because of the growing interest in alternative finance mechanisms and the inclusion of equity among the *Critical Issues in Transportation* defined by the Exec-

utive Committee in 2005,<sup>14</sup> the Policy Studies group is examining the equity implications of alternative forms of transportation finance. The study began in late 2008 and will continue through 2009.

#### ***Research Program Proposals to Address Transportation's Role in Climate Change and Energy Dependence***

A fast-track project, initiated by the TRB Executive Committee, will develop research program proposals for surface transportation reauthorization in three areas: the costs and effectiveness of strategies to mitigate the contributions of surface transportation to greenhouse gases and to the consumption of energy; appropriate strategies for adapting transportation infrastructure and operations to climate change; and the necessary steps for a transition to fees for vehicle miles traveled, to supplement or replace the fuel tax in financing transportation.

### **INFORMATION SERVICES**

#### **Transportation Research Information Services**

The Transportation Research Information Services (TRIS) database is the world's most comprehensive online bibliographic database of transportation research information. TRIS contains more than 715,000 records of published and ongoing research in all modes and disciplines of transportation. Approximately 32,000 new records were added in 2008.

TRIS continued to expand this year, with thesis records from the Northwestern Transportation Library and the Transportation Library of the University of California, Berkeley. TRIS also is exchanging records with ARRB Group in Australia; ARRB publications are now available in TRIS. Plans are under way to exchange records with VTI in Sweden, adding Swedish transportation research publications. In addition, the Virginia Transportation Research Council is supplying TRIS with approximately 1,000 records from its collection of historic Virginia transportation research material.

Several enhancements were made to TRIS to help users access indexed documents. More than 45,000 records now have direct links to full-text documents. Other new links allow TRIS users to locate libraries that own a document of interest.

Most of the TRIS database is available on the Internet as TRIS Online through the Bureau of Trans-

<sup>14</sup> [www.TRB.org/news/blurb\\_detail.asp?ID=5786](http://www.TRB.org/news/blurb_detail.asp?ID=5786).

portation Statistics' (BTS) National Transportation Library website.<sup>15</sup> TRB produces and maintains TRIS, and BTS makes the database accessible on the web without charge.

TRIS is also available on the Internet for a fee through Dialog, Inc., and as part of the TRANSPORT database, a cooperative effort between TRB and the International Transport Research Documentation database of the Organisation for Economic Co-operation and Development (OECD). TRANSPORT is produced and distributed by Ovid-SilverPlatter.

The TRB Publications Index is a searchable database available on TRB's website that contains all TRB, Highway Research Board (HRB), Strategic Highway Research Program (SHRP), and Marine Board publications since 1923.<sup>16</sup> The TRB Publications Index offers simple and advanced searching and allows users to view results, download the results in a variety of formats, and e-mail the results. The index provides direct web links to available full-text documents and to ordering information.

#### **Research Needs Statements Database**

The Research Needs Statements (RNS) Database debuted on the TRB website in late 2007.<sup>17</sup> Developed at the request of the TRB Technical Activities Division, the database is part of the Research in Progress (RiP) Database. The RNS website allows users to search for research needs that have been identified, developed, and prioritized by TRB technical committees and other groups.

#### **Research in Progress Database**

RiP is a searchable database of more than 10,000 records of active or recently completed research projects.<sup>18</sup> The university transportation centers use the RiP as the clearinghouse for research, fulfilling a requirement in SAFETEA-LU. RITA funded the software enhancements that have facilitated this application of the RiP.

Individuals from state DOTs and university transportation centers can add, modify, or delete records of research through a web-based data-entry system. A current awareness service notifies users automatically about new project records in specified subject areas. The RiP contains international project records from OECD's International Transport Research Documen-



tation's Transport Research in Progress (TRIP) Database. The search and data-entry capabilities of the RiP website gained enhancements in 2008. This year, the RiP website received more than 1 million visits from users worldwide.

TRB Information Services Manager Barbara Post answers questions about new features in the online research databases at the TRB Exhibit during the Annual Meeting.

#### **TRB Library**

The TRB Library is a small, specialized library that provides reference and information services to TRB sponsors, committee members, and staff. Many state DOTs regularly request the library's services. The library subscribes to more than 370 serial titles and contains a complete collection of TRB, HRB, SHRP, and Marine Board publications.

The TRB Library is included in the Transportation Library Catalog through the National Transportation Library and the Online Computer Library Center's WorldCat and participates in the Eastern Transportation Knowledge Network.

### **SYNTHESIS OF INFORMATION REPORTS**

#### **Cooperative Research Programs Syntheses**

Under the sponsorship of the Cooperative Research Programs administered by TRB, the Synthesis unit prepares reports on current practice and knowledge for a range of key highway, transit, and airport topics. Practitioners and researchers make extensive use of the reports.

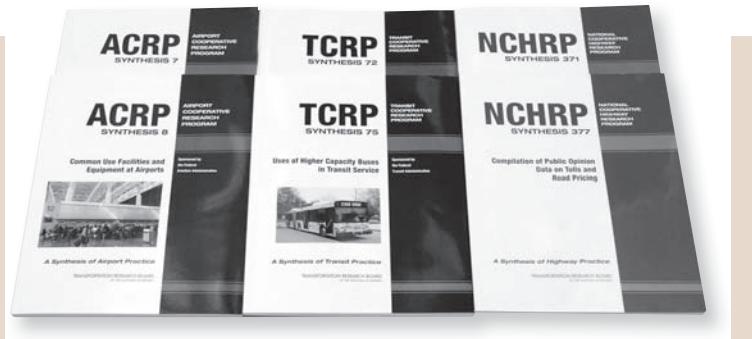
A highway committee, a transit committee, and an airport committee of the Cooperative Research Programs select the study topics each year. In 2008, the committees selected 12 new highway, 6 new transit, and 5 new airport studies. A consultant experienced in the topic area researches and writes each Synthesis report, with guidance from an expert panel.

<sup>15</sup> <http://ntlsearch.bts.gov/tris/index.do>.

<sup>16</sup> <http://pubsindex.TRB.org/>.

<sup>17</sup> <http://rns.TRB.org>.

<sup>18</sup> <http://rip.trb.org/>.



## ILLUSTRATIVE SYNTHESIS REPORTS, 2008

### *Synthesis of Airport Practice*

- 7 Airport Economic Impact Methods and Models
- 8 Common Use Facilities and Equipment at Airports

### *Synthesis of Highway Practice*

- 371 Managing Selected Transportation Assets: Signals, Lighting, Signs, Pavement Markings, Culverts, and Sidewalks
- 377 Compilation of Public Opinion Data on Tolls and Road Pricing
- 384 Forecasting Metropolitan Commercial and Freight Travel
- 385 Information Technology for Efficient Project Delivery

### *Synthesis of Transit Practice*

- 72 Use of Biodiesel in a Transit Fleet
- 75 Uses of Higher Capacity Buses in Transit Service

### *Synthesis of Commercial Truck and Bus Safety Practice*

- 16 Safety Impacts of Speed Limiter Device Installations on Commercial Trucks and Buses

A list of reports published in the past 12 months appears on pages 60–62. Approximately 3,500 copies of each report are published in hard copy, and 3,000 of these are distributed to state DOTs, transit agencies, airport operators, and TRB topic-area subscribers. The reports also are posted on the TRB website.<sup>19</sup>

TRB maintains an inventory of hard-copy Synthesis reports for sale. Illustrative airport, highway, and transit titles published in 2008 are listed in the box on this page.<sup>20</sup>

### Commercial Truck and Bus Safety Synthesis Program

The Commercial Truck and Bus Safety Synthesis Program (CTBSSP) is a cooperative research program

<sup>19</sup> Airport syntheses: [www.TRB.org/news/blurb\\_browse.asp?id=138](http://www.TRB.org/news/blurb_browse.asp?id=138); highway syntheses: [www.TRB.org/news/blurb\\_browse.asp?id=5](http://www.TRB.org/news/blurb_browse.asp?id=5); transit syntheses: [www.TRB.org/news/blurb\\_browse.asp?id=6](http://www.TRB.org/news/blurb_browse.asp?id=6).

<sup>20</sup> Synthesis reports may be ordered from the TRB Online Bookstore, <http://TRB.org/bookstore/>, or by calling 202-334-3213.

sponsored by FMCSA and administered by TRB. The program was authorized in 2001 to support FMCSA's safety research programs. In 2007, FMCSA reauthorized the program through a cooperative agreement providing \$200,000 annually through 2012. This funding supports two new studies each year.

The studies summarize current practice in a specific technical area in commercial truck and bus safety, usually through a literature search and a survey of organizations such as state DOTs, enforcement agencies, commercial truck and bus companies, or other appropriate groups. The program is modeled on the synthesis programs of NCHRP and TCRP. The primary users of the Synthesis final reports are practitioners who are facing the issues or problems addressed, in a variety of settings.

A program oversight panel monitors CTBSSP and the program procedures; selects Synthesis topics annually, after periodic, industrywide solicitations; refines Synthesis scopes; selects researchers to prepare each Synthesis; reviews products; and makes publication recommendations. The program oversight panel has authorized 21 Synthesis topics. One CTBSSP report, listed on page 62, was published in 2008 and is available on the TRB website.<sup>21</sup>

Four additional topics were begun in 2008, and are scheduled for publication in 2009.

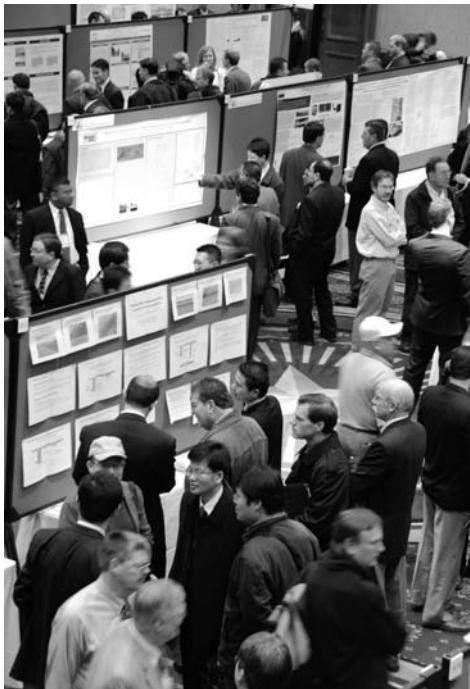
## INNOVATIONS DESERVING EXPLORATORY ANALYSIS PROGRAMS

Innovations Deserving Exploratory Analysis (IDEA) programs fund early-stage investigations of potential

<sup>21</sup> [http://onlinepubs.TRB.org/onlinepubs/ctbssp/ctbssp-syn\\_16.pdf](http://onlinepubs.TRB.org/onlinepubs/ctbssp/ctbssp-syn_16.pdf).



Jon Williams (center), Program Director, IDEA and Synthesis Studies, hears a status report about a Transit IDEA project at a meeting of the oversight panel in August.



A joint poster session for the IDEA programs at the 2008 Annual Meeting drew an active and engaged audience to presentations about projects and findings by inventors.

breakthroughs in transportation technology. Through small projects, researchers investigate the feasibility of innovative concepts that could advance transportation practice. IDEA programs sponsor high-risk research that is independent of the immediate mission concerns of public agencies and of the short-term financial imperatives of the private sector.

The state DOTs collectively fund highway-related research through the NCHRP IDEA program. Research on innovations applicable to transit practice is carried out under the Transit IDEA program, funded by FTA through TCRP. FRA sponsors the High-Speed Rail IDEA program to advance the safety and performance of the U.S. rail system and, with FMCSA, co-sponsors the Safety IDEA program, which funds projects to improve the safety of truck, intercity bus, and rail operations.

Each IDEA program follows a similar administrative model, adapted for sponsorship arrangements and target audiences. Each program operates through a committee or panel of volunteer transportation experts who solicit, review, and select proposals that merit research contracts. Because IDEA projects are high-risk investigations of unproven concepts, funds awarded for any one project are usually less than \$100,000. Frequently, however, IDEA funds are aug-

mented through cost-share arrangements, nearly doubling the amount of research that can be supported through the IDEA programs.

At the 2008 TRB Annual Meeting, the highway, rail, and safety IDEA programs conducted a joint poster session, TRB's IDEA Program: Sparking Innovation in Transportation. The Transit IDEA program held a similar session. The two sessions highlighted 18 of the most promising current projects and received a constant stream of interested visitors, who were able to interact directly with the inventors.

An annual summary of completed and current projects is published for each of the IDEA programs and distributed at the TRB Annual Meeting. These summaries also are available on the IDEA page of the TRB website, along with the IDEA Program Announcement, which contains forms and guidelines for submitting proposals.<sup>22</sup> A less formal publication, *Ignition*, features interviews with IDEA investigators and transportation leaders, plus articles that highlight promising projects.<sup>23</sup> Issues of *Ignition* are archived on the IDEA website.

<sup>22</sup> [www.TRB.org/Studies/Programs/IDEA.asp](http://www.TRB.org/Studies/Programs/IDEA.asp).

<sup>23</sup> [www.TRB.org/news/blurb Browse.asp?id=29](http://www.TRB.org/news/blurb Browse.asp?id=29).



## STAFF NEWS

- Senior Program Officer **Jill Wilson** received an Individual Distinguished Service Award from the National Academies in October.
- **Gail Staba**, Senior Program Officer, was recognized as a member of the Airport Cooperative Research Program Startup Team, which received a National Academies Group Distinguished Award in October.
- Information Services Manager **Barbara L. Post** received the 2007 Professional Achievement Award from the Transportation Division of the Special Libraries Association.
- **Jon Williams** was promoted to Program Director for IDEA and Synthesis Studies.
- **Nikisha J. Turman** joined the staff as Senior Program Assistant.

# Cooperative Research Programs

TRB administers five contract research programs:

- The National Cooperative Highway Research Program (NCHRP), sponsored by the American Association of State Highway and Transportation Officials (AASHTO) in cooperation with the Federal Highway Administration (FHWA);
- The Transit Cooperative Research Program (TCRP), sponsored by the Federal Transit Administration (FTA);
- The Airport Cooperative Research Program (ACRP), sponsored by the Federal Aviation Administration (FAA);
- The National Cooperative Freight Research Program (NCFRP), sponsored by the Research and Innovative Technology Administration (RITA); and
- The Hazardous Materials Cooperative Research Program (HMCRP), sponsored by the Pipeline and Hazardous Materials Safety Administration (PHMSA).

## NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP is an applied research program that responds to the needs of state highway and transportation departments by solving pressing operational problems. Although NCHRP accounts for a small percentage of the nation's annual investment in highway research, its close association with AASHTO and its position with-



Cooperative Research Programs Director Christopher W. Jenks displays a copy of the *2007 NCHRP Summary of Progress* while reporting to the TRB Executive Committee in January on the many successes of the programs.

in the National Academies have enabled the program to carry out important research resulting in practical products.

Since 1962, NCHRP has administered 1,297 research projects. More than 1,042 publications have appeared in the *NCHRP Report* and *NCHRP Synthesis of Highway Practice* series, in addition to 330 volumes of *Research Results Digest* and 50 of *Legal Research Digest*, as well as 181 other deliverables published electronically.

NCHRP projects for federal fiscal year (FY) 2008 were placed under contract as funds became available. Proposal solicitations for 31 research projects in federal FY 2009 (October 1, 2008, through September 30, 2009) were released starting in August 2008; depending on the availability of the funding authorized in federal legislation, contracts should be executed in the first three months of 2009.



**Susan Martinovich**  
*Chair*  
AASHTO Standing Committee on Research



**Robert I. Brownstein**  
*Chair*  
TCRP Oversight and Project Selection Committee



**Cheryl A. Burke**  
*Chair*  
HMCRP Technical Oversight Panel



**Michael P. Huerta**  
*Chair*  
NCFRP Oversight Committee



**James A. Wilding**  
*Chair*  
ACRP Oversight Committee



**Christopher W. Jenks**  
*Director*  
Cooperative Research Programs



**Crawford F. Jencks**  
*Deputy Director*  
Cooperative Research Programs

Under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the Federal-Aid Highway State Planning and Research Funds have been increasing slightly, and NCHRP funding is affected proportionally. Funding available for NCHRP in FY 2005 totaled \$33 million; in FY 2006, \$32.7 million; in FY 2007, \$36.5 million; in FY 2008, \$36.7 million; and in FY 2009, an estimated \$36.7 million.

AASHTO considered 126 new problem statements submitted by states, AASHTO committees, and FHWA for the FY 2009 program. The quantity and quality of the requests ensure optimal use of the authorized funds. In September, AASHTO began to formulate the FY 2010 program and will determine the program content in March 2009.

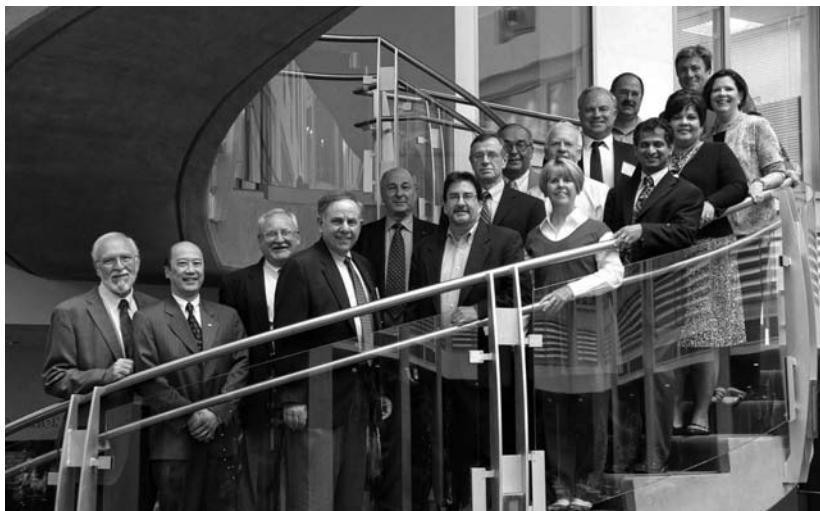
NCHRP reports published during the past 12 months are listed on pages 60–61. A total of 217 projects were under contract as of September 1, 2008, with 91 additional projects under development or awaiting contract.

Each NCHRP study follows an approved research plan under the guidance of a panel of technical specialists and experienced practitioners. The panel defines the scope of work, selects the contractor under a competitive proposal process, and monitors the research from beginning to end. The panel's participation ensures the credibility of the research findings, facilitating adoption by AASHTO, state departments of transportation (DOTs), and other organizations.

NCHRP panels convened for more than 107 project meetings in 2008; panel members contributed more than 1,600 days of volunteer time to attend meetings, plus a comparable amount of time to review materials. NCHRP benefits from more than 2,220 volunteers who expend time and energy primarily for the challenges and the satisfaction of making significant contributions to the field.

Many NCHRP research projects have had a direct impact on practice through products such as recommended specifications, manuals, and guidelines. NCHRP emphasizes working with practitioners who will use the research results. Now posted on the web is a new series, "Impacts on Practice," which highlights successful applications of NCHRP research results and encourages use by others.<sup>1</sup>

The program's close relationship with AASHTO committees is important in achieving the goal of improving practice—approximately 43 percent of the research funds for new projects in fiscal year 2009 is allocated to 18 projects requested by 13 AASHTO



committees. Experience has shown that AASHTO committees are more likely to adopt NCHRP research results when (a) the committee identifies and requests the research, (b) committee members serve on the NCHRP project panel guiding the research, and (c) findings and recommendations are presented to the committee at the conclusion of the study. NCHRP projects frequently incorporate these three steps. NCHRP maintains a tally of products of direct interest to various AASHTO committees on the NCHRP website.

Many NCHRP projects are developing recommended revisions to AASHTO publications at the request of committees. When AASHTO adopts an NCHRP project's recommendations as a guide or specification, practitioners who may not be able to stay abreast of research results benefit from having the best information available through the AASHTO documents. General details for all projects are available in *NCHRP Summary of Progress*, December 31, 2008, and on the web.<sup>2</sup>

NCHRP conducted a peer exchange in October at the National Academies Keck Center, Washington, D.C., to discuss ideas for fine-tuning and improving the program. The peer exchange was organized by Cooperative Research Programs Deputy Director Crawford Jencks and Senior Program Officers Chris Hedges and Nanda Srinivasan.

<sup>2</sup> [www.TRB.org/nchrp](http://www.TRB.org/nchrp).



AASHTO Executive Director John C. Horsley offers guidance at a meeting of the AASHTO Standing Committee on Research (SCOR), which selects research topics.

<sup>1</sup> [www.TRB.org/CRP/NCHRP/NCHRPImpacts.asp](http://www.TRB.org/CRP/NCHRP/NCHRPImpacts.asp).



Wesley S. C. Lum (*left*), California DOT, addresses specific research needs by states, during the SCOR meeting.

NCHRP studies of particular importance to AASHTO that were completed during the past year are summarized in the following sections. All reports are available on the web.<sup>3</sup>

### Planning and the Environment

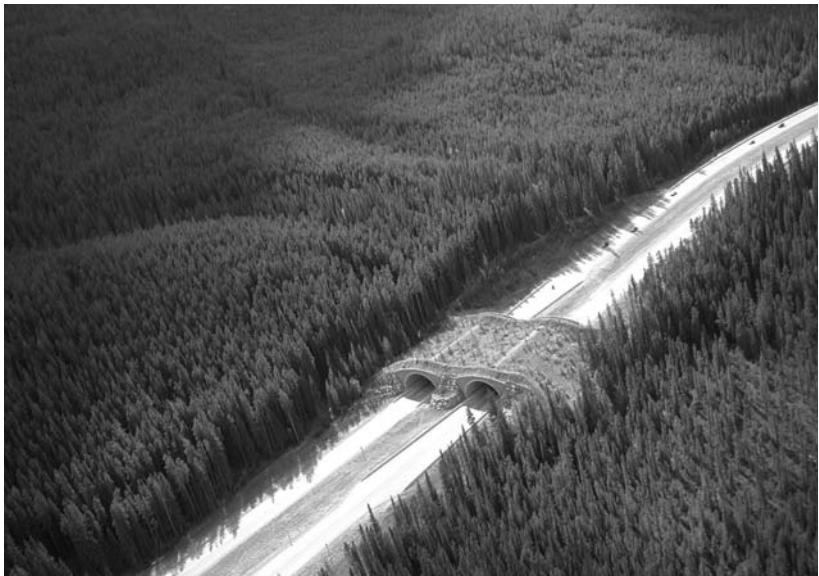
NCHRP Report 571, *Standardized Procedures for Personal Travel Surveys*, explores the aspects of personal travel surveys that could be standardized to improve the quality, consistency, and accuracy of the gathered data.

NCHRP Report 594, *Guidebook for Integrating Freight into Transportation Planning and Project Selection Processes*, explores a framework for incorporating freight needs for all modes into transportation planning and programming by state, regional, metropolitan, local, and special transportation agencies. The report covers technical issues, organizational suggestions, and communication requirements for freight planning and programming.

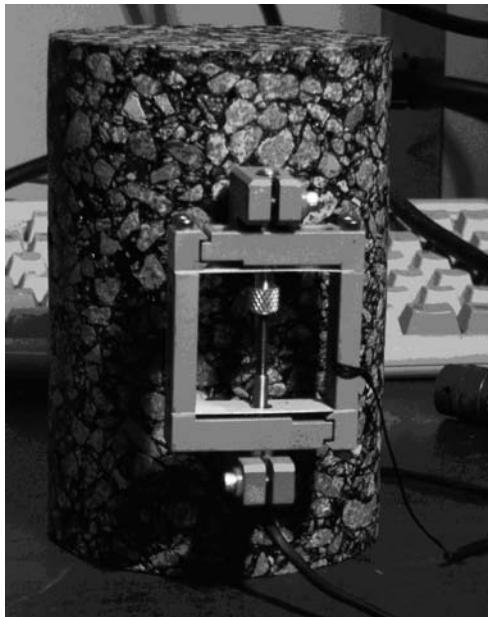
NCHRP Report 606, *Forecasting Statewide Freight Toolkit*, presents an analytical framework for forecasting freight movements at the state level.

NCHRP Report 608, *GASB 34—Methods for Condition Assessment and Preservation*, examines methodologies that integrate infrastructure inventory, condition assessments, acceptable condition levels, and funding decisions with the reporting requirements of Governmental Accounting Standards Board (GASB) Statement No. 34. The report also examines the operational and financial impacts of reporting under GASB 34.

<sup>3</sup> [www.TRB.org/news/blurb\\_browse.asp?id=2](http://www.TRB.org/news/blurb_browse.asp?id=2).



Wolverine Overpass in Banff National Park, Alberta, Canada, from NCHRP Report 615, which presents an interactive, web-based decision protocol for the selection, configuration, and location of wildlife crossings. (Photo: K. Gunson)



NCHRP Report 614 covers refinements to the simple performance tester for use in routine hot-mix asphalt mix design; above, strains for the dynamic modulus test are measured on a pavement specimen with one of two mounted magnetic extensometers.

NCHRP Report 615, *Evaluation of the Use and Effectiveness of Wildlife Crossings*, offers an interactive, web-based decision protocol to guide the selection, configuration, and location of wildlife crossings.

### Pavement Materials and Design

NCHRP Report 598, *Performance-Related Tests of Recycled Aggregates for Use in Unbound Pavement Layers*, examines procedures to test and select recycled hot-mix asphalt (HMA) and portland cement concrete materials for use in unbound layers of highway pavements.

NCHRP Report 602, *Calibration and Validation of the Enhanced Integrated Climatic Model for Pavement Design*, reviews the evaluation, calibration, and validation of the Enhanced Integrated Climatic Model—in incorporated into the original software for the Mechanistic-Empirical Pavement Design Guide (Version 0.7, July 2004)—with measured materials data from pavement sections in the Long-Term Pavement Performance Seasonal Monitoring Program.

NCHRP Report 607, *Specifications and Protocols for Acceptance Tests on Processing Additions in Cement Manufacturing*, recommends changes to the cement specifications and test protocols in the AASHTO standard specifications for transportation materials and methods of sampling and testing (AASHTO M 85). The report also examines a recommended specification for evaluating processing additions for amounts exceeding those stipulated in the cement specification.

NCHRP Report 614, *Refining the Simple Performance Tester for Use in Routine Practice*, describes a practical, economical simple performance tester for routine HMA mix design and for characterizing HMA materials for pavement structural design in accordance with the Mechanistic-Empirical Pavement Design Guide.

### Bridges and Structures

NCHRP Report 584, *Full-Depth Precast Concrete Bridge Deck Panel Systems*, recommends guidelines and AASHTO load and resistance factor design (LRFD) specifications for the design, fabrication, and construction of full-depth precast concrete bridge deck panel systems. The recommended guidelines and proposed revisions to LRFD specifications are available on the web as appendices.

NCHRP Report 593, *Countermeasures to Protect Bridge Piers from Scour*, explores practical selection criteria, guidelines and specifications for design and construction, and guidelines for the inspection, maintenance, and performance evaluation of bridge-pier scour countermeasures. Produced with the report is an interactive version of the countermeasure selection methodology, which defines the conditions for each countermeasure, and a reference document with detailed laboratory test results and translations of three documents from the German code of practice.

NCHRP Report 595, *Application of the LRFD Bridge Design Specifications to High-Strength Structural Concrete: Flexure and Compression Provisions*, recommends revisions to the AASHTO LRFD bridge design specifications to extend the applicability of the provisions for the flexural and compression design of reinforced and prestressed concrete members to concrete strengths greater than 10 ksi.

NCHRP Report 596, *Rotation Limits for Elastomeric Bearings*, examines elastomeric bearing design procedures that are suitable for adoption in the AASHTO LRFD bridge design specifications.

NCHRP Report 603, *Transfer, Development, and Splice Length for Strand/Reinforcement in High-Strength Concrete*, recommends revisions to the AASHTO LRFD specifications for bridges to extend the applicability of the transfer, development, and splice-length provisions for prestressed and nonprestressed concrete members to concrete strengths greater than 10 ksi.

NCHRP Report 619, *Modernize and Upgrade CANDE for Analysis and LRFD Design of Buried Structures*, develops, modernizes, and upgrades CANDE, a culvert analysis and design tool for all types and sizes of buried structures. A CD-ROM includes installation files for CANDE-2007.



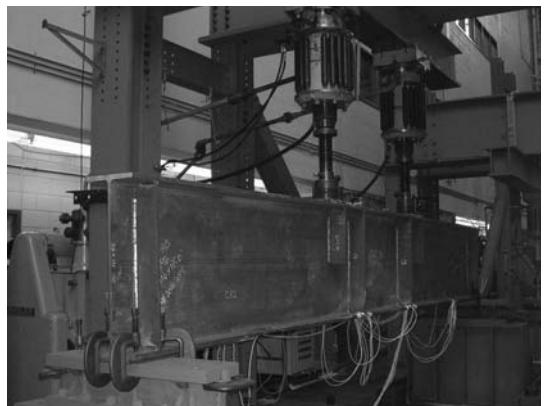
Hydraulics Laboratory at Colorado State University, where tests were performed for aspects of the project described in NCHRP Report 593—developing practical selection criteria for bridge-pier scour countermeasures; guidelines and specifications for the design and construction of the countermeasures; and guidelines for inspection, maintenance, and performance evaluation.

### Construction and Maintenance

NCHRP Report 597, *Development of a Recommended Practice for Use of Controlled Low-Strength Material in Highway Construction*, examines the use of controlled low-strength material (CLSM) for backfill, utility bedding, void fill, and bridge approaches. The research also describes a recommended practice, developed through a series of full-scale field experiments, for the use of CLSM.

NCHRP Report 604, *Heat-Straightening Repair of Damaged Steel Bridge Girders: Fatigue and Fracture Performance*, examines limits to the number of damage-and-repair cycles that apply heat-straightening procedures to damaged steel bridge girders.

NCHRP Report 609, *Recommended Construction Specifications and Process Control Manual for Repair and Retrofit of Concrete Structures Using Bonded FRP Composites*, recommends construction specifications to facilitate highway agencies' use of bonded fiber-reinforced polymer (FRP) composites for the repair and retrofit of concrete structures. The specifications cover the construction of FRP systems as externally bonded or near-surface-mounted reinforcement to enhance the axial, shear, or flexural strength of a concrete member.



The testing equipment for the inspection and fatigue testing of heat-straightened steel girder specimens, for the project that produced NCHRP Report 604, on the limits to the number of damage and repair cycles for steel bridge girders.

### Traffic Operations and Safety

NCHRP Report 599, *Default Values for Highway Capacity and Level of Service Analyses*, examines the selection of default values for analyzing highway capacity and level of service. The report also explores the preparation of service volume tables for planning.

NCHRP Report 600A, *Human Factors Guidelines for Road Systems, Collection A: Chapters 1, 2, 3, 4, 5, 10, 11, 13, 22, 23, 26*, presents human factors principles and findings for consideration in highway design and traffic engineering. Aimed at the nonexpert in human factors, the report explains how to consider the roadway user's capabilities and limitations in the design and operation of highway facilities. Chapter 6 is expected in late 2008 or early 2009. Additional chapters are in development under NCHRP Project 17-41, with priorities established by the project panel, and are expected in late 2010.

NCHRP Report 601, *The Impact of Legislation, Enforcement, and Sanctions on Safety Belt Use*, evaluates the effectiveness of mandatory approaches to increase the use of safety belts.

NCHRP Report 605, *Passing Sight Distance Criteria*, explores methods for determining minimum passing sight distance and examines recommendations to make the design standards consistent with pavement marking practices. The report includes text recommended for inclusion in the next edition of AASHTO's

*A Policy on Geometric Design of Highways and Streets*, known as the Green Book.

NCHRP Report 613, *Guidelines for Selection of Speed Reduction Treatments at High-Speed Intersections*, reports on the effectiveness of geometric design features, as well as signage and pavement markings, to reduce vehicle speeds at high-speed intersections.

NCHRP Report 617, *Accident Modification Factors for Traffic Engineering and ITS Improvements*, develops accident modification factors (AMFs) for traffic engineering and intelligent transportation system (ITS) improvements. Also known as crash reduction factors, AMFs provide a simple and quick way to estimate the safety impacts of a variety of engineering improvements, such as signing, alignment, and channelization.

NCHRP Report 618, *Cost-Effective Performance Measures for Travel Time Delay, Variation, and Reliability*, presents a framework and methods to predict, measure, and report travel time, delay, and reliability from the customer's perspective.

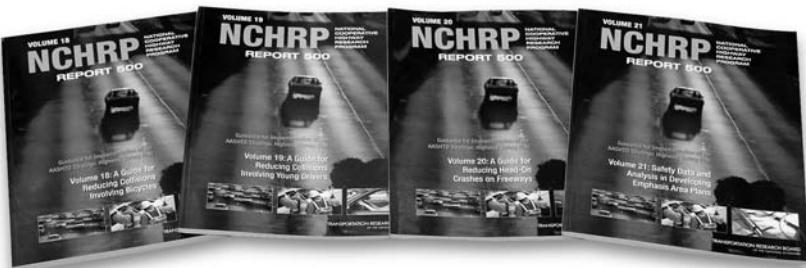
The 23-volume NCHRP Report 500, *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan*, released several new titles:

- Volume 18, *A Guide for Reducing Collisions Involving Bicycles*;
- Volume 19, *A Guide for Reducing Collisions Involving Young Drivers*;
- Volume 20, *A Guide for Reducing Head-On Crashes on Freeways*; and
- Volume 21, *Safety Data and Analysis in Developing Emphasis Area Plans*, which provides guidance on data sources and analysis techniques to assist agencies in allocating safety funds.

### Continuing Projects

NCHRP supports several continuing projects with studies, some completed and some under way:

- Project 20-5, Synthesis of Information Related to Highway Problems, produces state-of-the-practice reports (see Studies and Special Programs Division section, page 33).
- Project 20-6, Legal Problems Arising out of Highway Programs, conducts reviews of case law and publishes the results in the NCHRP Legal Research Digest series.
- Project 20-30, NCHRP IDEA (Innovations Deserving Exploratory Analysis), funds projects to explore innovative concepts and to initiate product development (see Studies and Special Programs Division section, page 34).
- Project 20-36, Highway Research and Technology—



International Information Sharing, provides financial support for state DOT representatives to participate in foreign meetings and to host foreign experts in the United States. The project also shares expenses with FHWA for foreign scanning tours.

- Project 20-68, U.S. Domestic Scan Program, was adopted after a successful pilot test. Three or four domestic scans will be conducted annually.

## TRANSIT COOPERATIVE RESEARCH PROGRAM

Authorized by the Intermodal Surface Transportation Efficiency Act and initiated under TRB management in July 1992, TCRP is supported by annual grants from FTA. The TCRP Oversight and Project Selection (TOPS) Committee chooses research for the program; the committee also serves as the board of directors of the Transit Development Corporation (TDC), a nonprofit educational and research affiliate of the American Public Transportation Association (APTA). A three-way memorandum of agreement by FTA, TDC, and TRB outlines the program's operating procedures. In its 16 years, TCRP has undertaken 535 studies; of these, 454 have been completed and 81 are in progress.

TCRP receives submissions of research problem statements throughout the year and has considered approximately 2,300 since 1992. In early 2008, TCRP issued a call for FY 2009 problem statements to more than 4,000 individuals and organizations in the transit community, emphasizing research consistent with FTA's Strategic Research Goals and the TCRP Strategic Plan. TCRP received and processed 95 problem statements for FY 2009.



TRB submits quarterly progress reports on TCRP to FTA, describing the work accomplished during the quarter and anticipated for the next period. Details of the program's progress since 1992 can be found in the December 2008 TCRP Annual Report.

TCRP panels have the same responsibilities as NCHRP panels for developing requests for proposals, selecting contractors, and monitoring the research. In 2008, TCRP panels held a total of 51 meetings: 15 panel meetings to prepare research problem statements and to select research agencies; 26 interim project meetings to review project status at midcourse; and 10 meetings on special projects. These meetings involved approximately 500 professionals and represented more than 700 days of volunteer time. The TOPS Committee also met twice during the year.

TCRP published 27 project reports in 2008, bringing the total to 474 publications: 168 Reports, 75 Syntheses of Transit Practice, 88 Research Results Digests, 28 Legal Research Digests, 50 IDEA reports, 40 web-only documents, and 25 CD-ROMs.

Robert I. Brownstein (*center*), AECOM Consult, Inc., chairs a meeting of the TCRP Oversight and Project Selection (TOPS) Committee; also participating are (*left to right*) Ann August, Santee Wateree Regional Transportation Authority; Harvey Berlin, TRB; CRP Director Christopher W. Jenks; and TRB Executive Director Robert E. Skinner, Jr.



TOPS Committee members consider possible projects: Clarence W. Marsella, Jr., Denver Regional Transportation District; David Lee, Connecticut Transit; Paul Larousse, National Transit Institute; and Jill Hough, North Dakota State University.

### Research Dissemination

Dissemination of TCRP research results relies on concerted efforts. APTA administers TCRP Project J-1, Dissemination and Implementation of TCRP Research Findings, to distribute research materials to targeted audiences. This outreach includes various forms of promotion, as well as the Internet. APTA also dissemi-

nates TCRP information through *Passenger Transport*, the industry's weekly newspaper, as well as through announcements, press releases, and news reports.

APTA solicits research problem statements; conducts surveys; arranges for workshops, field visits, and training; and oversees other activities to ensure that public transportation industry practitioners receive and implement TCRP research results. The Conference of Minority Transportation Officials also distributes TCRP materials through the TCRP Ambassador Program, which maintains a roster of transit professionals who promote project findings to practitioners.

The J-1 Program has developed a TCRP dissemination website maintained by APTA; has distributed catalogs of publications on general and rural topics; has coordinated industry mailings and surveys to ascertain use and awareness of the program's products; and has produced informational CDs. TCRP reports are available online through APTA's TCRP dissemination website<sup>4</sup> and through TRB's TCRP web page.<sup>5</sup>

The following TCRP activities of particular interest were in progress or were completed during the year.

### Transit Vehicles and Maintenance

TCRP Project E-6, Transit Bus Mechanics: Building for Success—The ASE Transit Bus Maintenance Certification Test Series, is developing tests for the Institute for Automotive Service Excellence (ASE) to certify transit bus mechanics. The tests are similar to those for the automotive, medium- and heavy-duty truck, and school bus industries. The project panel has identified 10 subject areas for testing.

In 2008, ASE administered seven transit bus tests—electrical and electronics; brakes; diesel engines; electronic diesel engine specialist; heating, ventilation, and air conditioning; transmission and drivetrain; and suspension and steering. ASE offers the tests nationwide in the spring and fall of each year.

Subject-matter experts have started work on developing the final three transit bus tests—preventive maintenance inspections, compressed natural gas engines, and transit bus hybrid systems. These tests should become part of the series in 2009. The test development involves coordination with organized labor to ensure the availability of relevant training. In combination



Higher capacity, articulated transit bus operating in the Denver Regional Transportation District is an example of the state-of-the-practice services presented in TCRP Synthesis 75.

with the ASE tests, the training serves as a means for developing the bus maintenance workforce.

TCRP Synthesis 72, *Use of Biodiesel in a Transit Fleet*, provides information on experience with biodiesel, to assist transit agencies in making informed decisions about implementation. Topics covered include engine manufacturer requirements and warranty considerations, maintenance, emissions test results, cold weather operations, fuel specifications, procurement, fuel storage, and delivery.

TCRP Synthesis 75, *Uses of Higher Capacity Buses in Transit Service*, explores the ways that higher capacity public buses are used for trunk, express, long-distance commuter, bus rapid transit, and special services in North America. Higher capacity buses include articulated, double-deck, 45-foot, and other vehicles that have significantly more passenger capacity than conventional 40-foot buses. The synthesis reports on experiences with these buses and examines where and how they are being deployed for regular and flexible public transit.

TCRP Web-Only Document 40, *Development of Crash Energy Management Performance Requirements for Light-Rail Vehicles*, explores potential crash scenarios for various light rail vehicle designs and examines ways to apply the results in developing crash energy management guidelines. The American Society of Mechanical Engineers is using the findings to develop crashworthiness standards for light-rail vehicles.

### Planning

TCRP Report 122, *Understanding How to Motivate Communities to Support and Ride Public Transportation*, presents methods and strategies of public transportation agencies in the United States and Canada to

<sup>4</sup> [www.tcrponline.org/index.cgi](http://www.tcrponline.org/index.cgi).

<sup>5</sup> [www.TRB.org/tcrp](http://www.TRB.org/tcrp).

enhance their public images and to motivate the support and use of public transportation. In addition, the report identifies and describes methods and strategies employed by other, comparable industries. The report examines the perceptions, misperceptions, and use of public transit, and presents effective communication strategies and campaigns to build support, with recommended steps for implementation.

TCRP Report 123, *Understanding How Individuals Make Travel and Location Decisions: Implications for Public Transportation*, explores the social context for individual choices of residential location and travel behavior. The findings can assist in predicting and influencing mode choice through policies, design, education, and communication.

TCRP Report 126, *Leveraging ITS Data for Transit Market Research: A Practitioner's Guidebook*, describes ITS and transit ITS technologies that have the greatest promise for market research. The guidebook documents technologies in use, assesses their potential to provide market research data, and presents methods for collecting and analyzing the data. The guidebook also includes three case studies illustrating the successful use of ITS data in market research.

TCRP Report 128, *Effects of Transit-Oriented Development (TOD) on Housing, Parking, and Travel*, provides information on the mode choices and motivations of TOD residents, employees, and employers. The report also identifies best practices to promote, maintain, and improve TOD-related transit ridership.

## Operations and Safety

TCRP Report 125, *Guidebook for Mitigating Fixed-Route Bus-and-Pedestrian Collisions*, assists small, medium, and large transit agencies and their communities in understanding bus-and-pedestrian collisions and in determining preventive or remedial strategies

for reducing the frequency and severity of these collisions. The guidebook is divided into four parts. Part I addresses mitigation of the four most common collision types and circumstances. Part II presents a variety of strategies, such as operator training and outreach, safety checks, defensive driving techniques and policies, public outreach and education, traffic engineering and roadway design, bus mirror configuration and placement, bus design and modification, and bus stop location, planning, design, and illumination, with more than 80 applications presented in detail. Part III contains 14 case studies, which provide in-depth examples and documentation and include details on the bus-and-pedestrian collision problem, the implementation of mitigating strategies, the costs, and successful and problematic elements. Part IV presents considerations for improving pedestrian safety around transit buses. These include contributing factors identified by transit agencies and other stakeholders. Also discussed are approaches to implementation and ways to combine two or more strategies for reducing bus-and-pedestrian collisions and improving safety.

TCRP Synthesis 73, *AVL Systems for Bus Transit: Update*, documents the state of the practice in computer-aided dispatch and automatic vehicle location (AVL) systems in fixed-route and demand-responsive services, as well as changes in agency practices with AVL systems. An update of TCRP Synthesis 24, published in 1997, the report covers the characteristics of implemented bus AVL systems; agency experiences with designing, procuring, implementing, integrating, and using the systems; and the benefits and costs.

## Paratransit and Demand-Response Services

TCRP Report 124, *Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response*

*Transportation*, focuses on systems in urban areas. The guide includes a typology of demand-response transit (DRT) systems; defines key performance data and performance measures; identifies influences on system performance; provides performance data; identifies policies, procedures, practices, and strategies—or management actions—implemented by DRT systems to improve performance; and documents the quantitative and qualitative effects of each management action. The guide addresses the diversity of DRT systems, service areas, and passengers and includes methods



Computer illustration of Collision Type 3—when a bus pulling into a bus stop strikes a pedestrian—from TCRP Report 125.



TCRP Synthesis 74 surveys policies and practices for meeting paratransit demand in accordance with the Americans with Disabilities Act of 1990.

based on reliable data and meaningful measures that allow assessment of performance over time and across systems. A companion guide for rural DRT systems is in preparation, with completion expected in 2009.

TCRP Synthesis 74, *Policies and Practices for Effectively and Efficiently Meeting ADA Paratransit Demand*, summarizes transit agency paratransit services to persons with disabilities. As demand for paratransit services increases in many communities, transit agencies are looking for innovative ways to serve, while operating more efficiently to contain costs and to increase service. This report highlights policies and practices that agencies can apply, often without having to increase funds, personnel, or other resources. Practices and technologies are identified to improve the effectiveness and efficiency of paratransit services.

TCRP Synthesis 76, *Integration of Paratransit and Fixed-Route Transit Services*, summarizes practice in a variety of operating environments including paratransit feeder services, community bus or circulators, connectors, fixed-route fare incentives, and route deviation. The synthesis focuses on cost savings; efficiency and productivity improvements; operations management; customer satisfaction; ridership; program features; service configuration, including transfers; technology; barriers and opportunities; and service capacity constraints. In addition, information is provided about promoting multimodal awareness; incentives—including fares and amenities—and their effectiveness; and programs that have attempted to serve customers eligible for ADA complementary paratransit with an integrated fixed-route and paratransit service.

### Rural Public Transportation

TCRP Report 127, *Employee Compensation Guidelines for Transit Providers in Rural and Small Urban Areas*, provides transit managers with a resource for wage

and benefit decisions. The report also provides information on attracting and retaining employees and on the challenges faced by managers of rural and small urban transit systems.

Accompanying the report is an interactive computer tool for exploring the salary and benefit characteristics of transit systems in rural and small urban areas. By entering the characteristics of a transit system, service area, and operating environment, transit managers can query a database to compute and report the salary and benefit characteristics for comparable systems.

### Legal Research for Public Transportation Systems

TCRP Project J-5, *Legal Aspects of Transit and Intermodal Transportation Programs*, provides authoritatively researched, specific, limited-scope studies of legal issues and problems that have national significance and application to transit agencies. Publications in 2008 covered four topics:

- TCRP Legal Research Digest 24, *Transit Bus Stops: Ownership, Liability, and Access*, informs transit providers and government officials about the different levels of ownership, liability, and maintenance associated with bus stops and bus shelters; identifies the categories of legal issues associated with ownership and liability; and provides information about the problems and practices, including protective provisions in franchise agreements and service provider contracts.
- TCRP Legal Research Digest 25, *Privacy Issues with the Use of Smart Cards*, examines the acquisition and storage of financial and trip data, including who can have access to the data, what data may be



accessed and under what conditions, and how the information can be used.

- TCRP Legal Research Digest 26, *Resources for Legal Issues Associated with Bus Maintenance*, serves as a resource on federal and state statutes, regulations, and guidance related to bus maintenance.
- TCRP Legal Research Digest 27, *Civil Rights Implications of the Allocation of Funds Between Bus and Rail*, examines Title VI in relation to transit and other agencies, including the various types of Title VI challenges, the responses to each type of challenge, and the record of success; preventive strategies; and the efforts of transit agencies to uphold Title VI protections and to avoid adverse actions.

### Transit Lessons from Abroad

Since 1994, TCRP Project J-3, International Transit Studies Program, has sponsored 29 leadership development missions to expand the horizons of U.S. transit managers, and more than 375 professionals have participated in missions to Europe, Asia, Canada, South America, New Zealand, and Australia. The findings and observations of the participants are published in the TCRP Research Results Digest Series.<sup>6</sup>

### AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP was authorized in the Vision 100: Century of Aviation Reauthorization Act, and a memorandum of agreement was signed in October 2005 to initiate the program. FAA sponsors ACRP, TRB manages the program, and representatives of airport operating agencies provide oversight and governance.

ACRP carries out applied research on problems shared by airport operating agencies but not adequately addressed by federal research programs. A 2003 study sponsored by FAA and published as TRB Special Report 272, *Airport Research Needs: Cooperative Solutions*, identified the need for ACRP. The program undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration.

The Vision 100 Act authorized \$10 million per year for ACRP through FY 2008. To date, federal appropriations have included \$3 million in FY 2005 and \$10 million in FY 2006, FY 2007, and FY 2008. Funding beyond FY 2008 is subject to the Vision 100 Act reau-

<sup>6</sup> TCRP Research Results Digests 20, 22, 27, 31, 33, 36, 42, 47, 49, 53, 54, 58, 62, 64, 66, 68, 70, 71, 77, 81, 85, and 88.



thorization, now under way; the expectation is that a minimum of \$10 million will be authorized and appropriated for FY 2009.

The ACRP Oversight Committee (AOC), appointed by the U.S. Secretary of Transportation, met twice in 2008 and selected research projects for the FY 2009 program. To date, the AOC has authorized 128 projects totaling \$31.7 million in a variety of subject areas of interest to the airport community.<sup>7</sup> The AOC will meet again in early 2009 to review progress.

In 2008, ACRP issued 21 publications (8 Reports, 8 Syntheses, 4 Legal Research Digests, and 1 Conference Proceedings).

More than 400 individuals from the airport community participate on ACRP project panels, which held approximately 70 meetings and 50 conference calls during 2008 to develop scopes of work, select research contractors, and review interim products. This volunteer assistance from project panel members ensures that the research and products are oriented to airport practitioners.

<sup>7</sup> [www.TRB.org/CRP/ACRP/ACRPProjects.asp](http://www.TRB.org/CRP/ACRP/ACRPProjects.asp).



ACRP Synthesis 8 explores common use technology that enables airport operators to transform space that previously was used by a single airline exclusively, to make it available to several airlines and their passengers; international terminals in particular, like the new facility at San Francisco International Airport (above), must support many airlines in a limited amount of space.



ACRP project panels convened more than 400 participants to advise and monitor research in progress in 2008.

The following ACRP activities were in progress or were completed during the year.

### Airport Terminals and Facilities

ACRP Synthesis 8, *Common Use Facilities and Equipment at Airports*, summarizes common use in the United States and around the world, identifying the advantages and disadvantages to airports and airlines, as well as the effects on passengers. To assemble a complete picture of the effects of common use, the synthesis presents the perspectives of airlines and airports.

The results of ACRP Project 10-05, Understanding Common-Use Approaches at Airports, will supplement the synthesis. Scheduled for completion and publication in late 2009, the project will develop a reference guide for airports, airlines, and other stakeholders to identify and understand the financial, operational, liability, safety, customer service, and competitive elements of a common-use approach to airport facilities and services. Under common use, facilities are available to more than one tenant, along with certain airport-provided services.

The guide will provide detailed analyses and information so that airports and airlines can evaluate the feasibility and applicability of implementing common use.

ACRP Report 10, *New Concepts for Airport Terminal Landside Facilities*, is intended to stimulate

Chairs Nadine Jones (left), Tampa International Airport, ACRP Project Panel on Spreadsheet Models for Airport Terminal Planning and Design; and Robin R. Sobotta, Embry-Riddle Aeronautical University, ACRP Project Panel on Updated Terminal Design Guidelines, attend a joint meeting.



design innovations to improve passenger accessibility and level of service between ground transportation and the secure parts of terminals at FAA-designated large- and medium-hub airports.

### Airport Safety

ACRP Report 2, *Evaluation and Mitigation of Aircraft Slide Evacuation Injuries*, provides guidance on reducing injuries and improving safety during slide evacuations from aircraft. The report examines data on commercial aircraft slide deployments, focusing on injuries to crew and passengers. Understanding the types and causes of injuries will help first responders and airport and aircraft operators to prepare for slide deployments and prevent injuries.

ACRP Report 3, *Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas*, examines historical data to help airport operators and planners identify the conditions that contribute to overruns and undershoots. Taking a probabilistic approach, the report analyzes the runway safety area and offers alternatives to mitigate risk. The report also assesses the operational factors that increase the risk and indicates that monitoring and managing these factors can improve airport operations safety significantly. The report recommends the collection and reporting of data from accident and incident investigations for continued improvement of these models.

ACRP Report 5, *Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs*, describes facility issues, security considerations, and estimated costs that airport operators and policy makers need to consider in planning for the quarantine of air travelers arriving at a U.S. international airport. The laws on quarantine and the nine diseases for which the federal government can order quarantine are addressed, along with examples of symptoms and incubation times. The physical requirements of space, privacy, communications, food, water, and sanitary conditions are presented, along with operational considerations. Cost estimates for establishing a facility for the quarantine of up to 200 people for two weeks are itemized.





Lightning strike at Denver International Airport; ACRP Report 8 examines how lightning detection and warning systems may reduce delays and assesses the operational benefits.

ACRP Report 8, *Lightning-Warning Systems for Use by Airports*, addresses lightning detection and warning systems for aircraft ramp safety at commercial airports. The report includes a quantitative assessment of the operational benefits in reducing delays, as well as the costs and benefits for airports and airlines.

ACRP Synthesis 12, *Preventing Aircraft-Vehicle Incidents During Winter Operations and Periods of Low Visibility*, assembles a compendium of practices, procedures, training, and systems that airport operators use to reduce the risk of vehicle-aircraft incidents during winter and low-visibility operations. The synthesis covers general aviation to large-hub airports with full-time, part-time, or no airport traffic control towers and treats such topics as communication protocols and systems; training for vehicle drivers to avoid conflicts with aircraft; winter operation protocols, such as closing runways, avoiding crosswind runways, and taking measures to limit driver fatigue; and commercial systems to prevent vehicle-aircraft incidents.

TRB Conference Proceedings 41, *Interagency-Aviation Industry Collaboration on Planning for Pandemic Outbreaks*, reports the results of a workshop that convened representatives from the public and private sectors involved in planning and responding to pandemic events. The goals were to examine (a) the action items included in the transportation and borders section of the May 2006 National Pandemic Plan that affect air transportation; (b) the state of the practice in pandemic planning by airports and airlines; (c) coordination among various agencies and the aviation sector to implement these plans; and (d) potential areas for public-private cooperation in pandemic planning. The September 2007 workshop, conducted by TRB's Technical Activities Division, was funded by ACRP.

## Airport Maintenance

ACRP Synthesis 6, *Impact of Airport Pavement Deicing Products on Aircraft and Airfield Infrastructure*, reports

on ways that airports chemically treat pavements to mitigate snow and ice; reviews the effects of pavement deicing products on aircraft and airfield infrastructure; and identifies critical knowledge gaps.

ACRP Synthesis 11, *Impact of Rubber Removal Techniques on Runways*, summarizes industry practices for the removal of rubber from runways. The synthesis contains a review of the literature on rubber removal and damage to grooves, as well as specific rubber removal programs by airports, including the schedule and frequency of removal; detailed methods for removal; the equipment and crew required; the surface area of rubber removal and the duration of the runway closure; potential effects on airport operations and maintenance; damage to runways from rubber removal operations and techniques; and case studies.

## Airport Environmental Challenges

ACRP Report 6, *Research Needs Associated with Particulate Emissions at Airports*, offers guidance on the research needed by the airport community to make more thorough and accurate inventories of aviation-related emissions of particulate matter. The report examines industry research, identifies knowledge gaps, and prioritizes research needs.

ACRP Report 7, *Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis*, provides guidance to the airport community on research into the types, amounts, and impacts of aviation-related hazardous air pollutants, examines the latest research on the emissions, identifies knowledge gaps, and recommends priorities for research.

ACRP Report 9, *Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data*, summarizes, analyzes, and interprets the scientific data from the Aircraft Particle Emissions Experiment (known as APEX) 1-3 and the Unnamed Airport-Unnamed Airline (or UNA-UNA) experiment. The results are pre-



A typical aircraft deicing operation, from ACRP Synthesis 6, which explores chemical treatments to mitigate snow and ice and examines the effects on aircraft and airfield infrastructure, as well as knowledge gaps in the subject.



ACRP Synthesis 9 provides a comprehensive review of research into the effects of aircraft noise.

sented comprehensively to show how the data can contribute to improving air quality assessments in the airport environment.

ACRP Synthesis 9, *Effects of Aircraft Noise: Research Update on Selected Topics*, reviews aviation noise research since 1985, when FAA published the report, *Aviation Noise Effects*. Information is provided on the effects of aircraft noise on health; on annoyance levels; on noise-sensitive, nonresidential facilities, such as schools, hospitals, care homes, and parks; on property values; and on wildlife and domestic animals. Also described are the effects of low-frequency noise and vibration; of meteorological conditions; and of topography and acoustic hard surfaces on noise propagation and human perception.

ACRP Synthesis 10, *Airport Sustainability Practices*, presents a range of practices gathered from a literature review and a web-based survey addressing environmental, economic, and social issues related to airport sustainability.

ACRP Project 2-02, *Managing Runoff from Aircraft and Airfield Deicing and Anti-Icing Operations*, is developing guidelines that incorporate an array of best management practices (BMPs) for the practical, cost-effective control of runoff from aircraft and airfield deicing and anti-icing operations. The guidelines and BMPs are consistent with the laws and regulations for protecting water quality and ensuring flight safety; provide practical technical guidance to airports and local, state, and federal regulators; and support the U.S. Environmental Protection Agency's efforts to gain better information on airport management of stormwater runoff. The report will be published in early 2009.

### Airport Planning

ACRP Report 4, *Ground Access to Major Airports by Public Transportation*, provides tools and information

to assist airport managers in improving ground access to large airports. The report provides information on public transportation services at large airports in the United States and around the world. Chapter 1 summarizes a six-step market-based strategy for improving the quality of public mode services at U.S. airports, focusing on the needs of travelers. The balance of the report addresses the context for public transportation to major airports; explores the attributes of successful airport ground access systems; presents an airport-by-airport summary of air traveler ground access mode share for major U.S., European, and Asian airports; applies market research to planning public transportation services; examines new and evolving information technology to bring airport ground access information and ticketing options to the traveler; and identifies opportunities for research.

ACRP Synthesis 5, *Airport Ground Access Mode Choice Models*, documents the state of the practice, examines the characteristics of the models in use, and discusses issues in the development and application of the models in airport planning and management.

ACRP Synthesis 7, *Airport Economic Impact Methods and Models*, documents the conduct of airport economic impact studies, focusing on the methods and models to define, identify, evaluate, measure, and communicate the different components. The synthesis addresses the applicability of the various methods, models, and tools for analysis that are available for local airport economic studies.

### Legal Aspects of Airport Programs

ACRP Project 11-01, *Legal Aspects of Airport Programs*, provides authoritatively researched, specific, limited-scope studies of legal issues and problems of national significance and application to airports. During 2008, the results of four research topics were published:

- ACRP Legal Research Digest 1, *Compilation of Airport Law Resources*, indexes legal topics and issues that airport attorneys encounter and includes a comprehensive bibliography of online and print resources.
- ACRP Legal Research Digest 2, *Theory and Law of Airport Revenue Diversion*, describes the issue and its manifestations, Congressional action to address the issue, and the enforcement of the prohibition against revenue diversion.
- ACRP Legal Research Digest 3, *Survey of Laws and Regulations of Airport Commercial Ground Transportation*, compiles and synthesizes available guidance—including regulations, statutes, policies, and decisions—pertaining to commercial



Baggage transfer system at the rail station at Newark Airport, which allows bags to be carried by truck to the terminal, is one of many solutions presented in ACRP Report 4, on ground access from public transportation to airports.

ground transportation. The digest focuses on the 67 busiest and most-regulated U.S. airports, including all airports designated by FAA as large- or medium-sized hubs.

- ACRP Legal Research Digest 4, *Compilation of DOT and FAA Airport Legal Determination and Opinion Letters Through December 31, 2007*, synthesizes Parts 13 and 16 determinations and related documents, including opinions by the FAA chief counsel and the U.S. DOT general counsel relating to airports. The report is a searchable document that contains the full text of each subject indexed, as well as a summary of the outcome. The database allows searches by topic, date, author, type of proceeding, FAA region, and key words.

## NATIONAL COOPERATIVE FREIGHT RESEARCH PROGRAM

Congress recognized the need for more research focused on freight transportation and, in 2005, authorized NCFRP in the SAFETEA-LU legislation. NCFRP is sponsored by RITA and managed by TRB, with program guidance provided by an oversight committee comprising a representative cross-section of freight stakeholders. On September 6, 2006, RITA and the National Academies executed a contract to begin work.

The total available funds in FY 2006 were \$2.65 million; in FY 2007, \$2.9 million; in FY 2008, \$2.93 million; and in FY 2009, another \$2.93 million is expected to be available.

NCFRP conducts applied research on freight industry problems that are not being adequately addressed by other research programs. The NCFRP strategic plan has five objectives:

- 1. Analyze the business of freight transportation.** Trends in the global and national movement of freight and business logistics are likely to place greater demands on the nation's freight transportation system. NCFRP research will improve information and provide clearer insight into the market-driven factors that lead and respond to current and future freight demand.
- 2. Develop reliable data and tools for the analysis of freight transportation.** Successful decision making depends on credible and reliable analysis, which requires high-quality data. NCFRP research will identify improvements in collecting, analyzing, and using data and will develop tools for analyzing and managing the economic, safety, security, environmental, health, energy, and community impacts of freight transportation decisions.
- 3. Explore operational improvements for freight transportation.** Enhancing the system performance should not focus only on providing new infrastructure but should include operational strategies and more efficient management of capacity. NCFRP research will provide guidance on implementing improvements in operational and system management.
- 4. Evaluate investment decisions for adding physical capacity to the freight transportation system.** Quantifying benefits—including the return on the investment—is a key input for decision making. NCFRP research will provide information and guidance on making sound decisions for adding capacity when the investment makes economic sense.
- 5. Identify ways to strengthen the institutional framework for the freight transportation system.** Institutional capacity is often a prerequisite for successful planning and implementation of freight-oriented strategies. NCFRP research will identify institutional barriers, organizational capacity issues, and innovative solutions to freight transportation challenges. Of particular interest is the evolving concept of public-private partnerships that often does not conform to jurisdictional boundaries or to the traditional dividing line between government and business.

At its inaugural meeting in December 2006, the Freight Research Oversight Committee discussed organizational issues that affected the operation of NCFRP. The committee selected 10 research topics to be funded with FY 2006 and FY 2007 funds. One project dealing with exclusive truck lanes is jointly funded by NCHRP, and seven NCFRP technical panels will manage the other nine.<sup>8</sup> Contracts for research are under way.

The Oversight Committee met again on December 13 and 14, 2007, to select projects for the FY 2008 program. Eight new projects were selected and requests for the continuation of two projects were approved. Technical panels were formed, requests for proposals were posted, contractors were selected, and contracts are being initiated.

Three projects are nearing completion, and the reports are scheduled for publication in early 2009:

- NCFRP-01, Review and Analysis of Freight Transportation Markets and Relationships, is producing a primer to provide public agencies with a basic understanding of decision making in the private sector.
- NCFRP-09, Institutional Arrangements in the Freight Transportation System, will describe successful and promising institutional arrangements for improving freight movement.
- NCFRP-18, Synthesis of International Freight Scans, will summarize three international scans on

freight transportation, emphasizing potential applications to U.S. practice.

## HAZARDOUS MATERIALS COOPERATIVE RESEARCH PROGRAM

SAFETEA-LU authorized a pilot cooperative research program on hazardous materials transportation. HMCRP is sponsored by PHMSA, and a contract to begin work on the pilot went into effect in September 2006. HMCRP complements other U.S. DOT research programs as a stakeholder-driven, problem-solving program, funding research on real-world, day-to-day operational issues with near-term to midterm time frames. The total available funding in FY 2006 was \$0.88 million; in FY 2007, \$0.97 million; in FY 2008, \$0.98 million; and another \$0.98 million is expected for FY 2009.

The Hazardous Materials Technical Oversight Panel held its inaugural meeting November 30–December 1, 2006, and discussed the program's operation. With the funds provided for FY 2006 and FY 2007, the panel selected four research projects that were assigned to four technical panels.<sup>9</sup> Contracts are under way; final reports are expected in early 2009.

The Oversight Panel met again on November 27, 2007, to select two additional projects for the FY 2008 program, and in December 2008 to formulate the program for 2009—the final year authorized under SAFETEA-LU.

<sup>8</sup> [www.TRB.org/CRP/NCFRP/NCFRPProjects.asp](http://www.TRB.org/CRP/NCFRP/NCFRPProjects.asp).

<sup>9</sup> [www.TRB.org/CRP/HMCRP/HMCRPProjects.asp](http://www.TRB.org/CRP/HMCRP/HMCRPProjects.asp).

## STAFF NEWS

- **Michael R. Salamone**, an ACRP Senior Program Officer for the past two years, was named Manager of ACRP in August.
- Senior Program Officer **David B. Beal** retired at the end of November, after 12 years. He was responsible for all bridge- and structures-related research under NCHRP.
- **Waseem Dekelbab** joined NCHRP as a Senior Program Officer in November, succeeding David Beal.
- The National Academies presented a Group Distinguished Service Award to the Airport Cooperative Research Program Startup Team in October, including Cooperative Research Programs Division staff **Joseph J. Brown-Snell**, **Cynthia E. Butler**, **Lawrence Gold-**
- stein
- **Christopher W. Jenks**, **Michael R. Salamone**, and **Charlotte Thomas**.
- Joining the ACRP staff as Senior Program Officers were **Marci Greenberger**, in September, and **Theresia Schatz**, in October.
- **Adrienne Blackwell** was promoted to CRP Administrative Coordinator in February, **Megan Chamberlain** was promoted to NCHRP Senior Program Assistant in July; and **Joseph J. Brown-Snell** was promoted to CRP Program Associate in November.
- Joining the NCHRP staff as a Senior Program Assistant in April was **Emily Greenwood**.
- **Tom Van Boven** joined the CRP staff as a Senior Program Assistant in December.

# Strategic Highway Research Program

## SHRP 2

Congress authorized the second Strategic Highway Research Program (SHRP 2) in August 2005 to investigate the underlying causes of high traffic fatality rates and of intensified congestion and to find methods for renewing the nation's aging transportation infrastructure rapidly, without contributing to traffic fatalities or congestion. To meet these charges, SHRP 2 has developed research plans in four integrated focus areas to

- Reduce crash risk,
- Identify and develop innovative methods for rapid highway renewal,
- Improve highway and transportation planning through collaborative decision making, and
- Address the causes of congestion and delay.

Little more than one-third of the way into the expected 7-year span of the program, approximately 75 percent of the research projects planned for SHRP 2 are active. As of December 2008, SHRP 2 had committed \$55 million to 50 research projects in the four focus areas. With the design phases of the \$26 million naturalistic study of driving behavior nearly complete, the Safety program is focusing on study site selection and on preparations for data collection.



Computer monitors on board a mobile data collection van participating in the September 2008 SHRP 2 rodeo, which evaluated the precision and accuracy of mobile roadway measurement and pavement data collection systems for Project S-04: Aquisition of Roadway Information.

The program's first research reports have been completed and will be available soon on the TRB website. Summaries of the early results will be reported online in the SHRP 2 First Fruits information series.

Progress in each focus area is briefly described in the following sections. Also highlighted are program outreach activities, including international conferences and the third SHRP 2 Safety Symposium. More detailed information about projects is available on the SHRP 2 website.<sup>1</sup>



**Allen D. Biehler**  
Chair  
SHRP 2 Oversight Committee



**Neil F. Hawks**  
Director  
SHRP 2



**Ann M. Brach**  
Deputy Director  
SHRP 2

## FOCUS AREAS

### Safety

Safety research in SHRP 2 applies advanced technologies to understand how drivers interact with and adapt to a variety of factors—the vehicle, the traffic, the roadway characteristics, traffic control devices, and the environment—and to assess the changes in collision risk associated with each factor.

A vast array of data is being collected continuously to support a study of the entire driving process, including near-collisions, critical incidents, traffic conflicts, and event-free driving. The goal is to measure crash margin factors from which surrogate risk estimates can be developed for specific traffic maneuvers. The study of driving behavior will gather data with a sophisticated instrumentation package installed in the vehicles of approximately 4,000 volunteer drivers over a two-year period. In addition, SHRP 2 will develop a roadside video system to record the movement of all vehicles at a specific site. Nine safety projects are now active, and at least five others are anticipated to start up during the course of the program.



<sup>1</sup> [www.TRB.org/SHRP2](http://www.TRB.org/SHRP2).



The third SHRP 2 Safety Symposium attracted an international audience to the National Academies Keck Center in Washington, D.C., in July.

### **Renewal**

SHRP 2 renewal research aims to develop a systematic approach to the renewal of highways and to ensure the durability of facilities with rapidly applied and minimally disruptive techniques. The task involves identifying and developing materials and methods for design, construction, and inspection that reduce life-cycle costs, extend useful life, improve constructability, and decrease onsite construction times.

The research plan supports the need to “get in, get out, and stay out” by addressing strategies such as prefabrication, modular construction, standardized components, and roll-in technologies for bridges and pavements. Fourteen projects are active and eight requests for proposals that were issued in July will be under contract soon. Final reports for two renewal projects—on locating underground utilities and on nondestructive testing procedures—soon will be available online.



Hans Jeekel (*right*) of the Netherlands' Rijkswaterstaat discusses goals for travel time reliability in Europe at a combined meeting of the Joint Transport Research Centre (JTRC) Reliability Working Group and the SHRP 2 Reliability Technical Coordinating Committee. Also shown is Jari Kauppila, JTRC.

### **Reliability**

SHRP 2 reliability research addresses the causes of uncertain travel times by focusing on highway system operations. Travelers and shippers value the reliability of travel time, which can be compromised by unexpected, nonrecurring congestion. By reducing nonrecurring congestion, transportation agencies can make significant gains in addressing reliability even as travel demand increases.



Reliability research projects will identify effective operations strategies; improve the means of integrating operations activities into planning, modeling, and decision making; and aid in the implementation of operations strategies. Eight reliability projects are active, two others are in contract negotiation, and another five projects are anticipated.



### **Capacity**

Capacity research within SHRP 2 is developing approaches and tools for integrating environmental, economic, and community requirements systematically into the analysis, planning, and design of new highway capacity. At the core of the research program is a framework for collaborative decision making, designed to yield better solutions to capacity problems. Supporting the framework are projects that focus on system-based performance measures, on the regional economic impact of new highway capacity, on reflecting the capacity gains from highway management in the planning process, and on assessing the effects of congestion and pricing on highway users’ behavior. Results and insights from the early projects will allow the development of tools that target the most critical barriers to success.



The final report for the project that developed the framework for collaborative decision making (Project C01) and the collection of case studies gathered as background will be available soon on the TRB website. Seven capacity projects are active, and two others have entered contract negotiation. Eight additional projects are included in the research plan.

## **BUILDING A GLOBAL NETWORK**

The third SHRP 2 Safety Symposium convened nearly 100 members of the international highway safety community in July. Presentations focused on the work in progress, including site selection. Dis-

cussion during the one-and-a-half-day meeting contributed both to the current projects and to the development of similar studies that are taking shape in Europe and Canada. The fourth symposium will be held July 23–24, 2009.

SHRP 2 renewal research on nondestructive testing has been the focus of two international symposia organized in collaboration with the Forum of European National Highway Research Laboratories. One symposium was held in conjunction with the TRB Annual Meeting in January 2008 and the other took place in Ljubljana, Slovenia, in April.

## PARTNERSHIP OPPORTUNITIES

As methods and technologies take shape from SHRP 2 research projects, transportation agencies will have opportunities to participate in evaluations and trials of potential solutions to challenging transportation problems. For example, host sites will be sought for a fall 2010 demonstration project to develop standardized approaches to the design, construction, and reuse of complete bridge systems. A capacity project will provide funding for a state or a metropolitan planning organization to implement an advanced travel-demand model linked with a time-sensitive network. Descriptions of these and other partnership opportunities are accessible from the SHRP 2 home page.



TRB Executive Director Robert E. Skinner, Jr. (*above, left*); Joris Al, Director of the Rijkswaterstaat, the national transportation agency of the Netherlands; and SHRP 2 Director Neil Hawks (*right*) sign an agreement in January for senior-level loan staff to assist SHRP 2 for one year.

In April, Skinner and Chang-se Kim, President, Korean Institute of Construction and Transportation Technology Evaluation and Planning (KICTEP), signed a memorandum of understanding to initiate and maintain a regular exchange of information between SHRP 2 and KICTEP on projects of mutual interest in construction and transportation research.

## STAFF NEWS

Four new staff members and two staff on loan from other organizations joined SHRP 2 in 2008:

- In August, **Kizzy Anderson** took on the position of Senior Program Assistant for the safety focus area;
- Senior Program Officer **Jerry DiMaggio** joined the team in September to help shape SHRP 2 implementation activities;
- **David Plazak** joined the staff as Senior Program Officer in August to take on projects in the capacity and reliability focus areas;
- **Patrick Zelinski** started in July as Communications Specialist to assist with electronic and print communications;
- **Ralph Hessian**, a visiting professional on loan from the Canadian Council of Deputy Ministers Responsible for Transportation and Highway Safety, is working on safety and reliability projects for SHRP 2 and serves as liaison to Canada's transportation community in planning and designing a Canadian naturalistic driving study; and
- In September, **Hans van Saan** joined SHRP 2 on loan from the Rijkswaterstaat, his home organization in the Netherlands.

# Administration and Finance



**Michael P. LaPlante**  
Director  
Finance and  
Business Operations

The TRB Administration and Finance Division provides financial, technological, and administrative support for the work of TRB staff; financial oversight of the contracts and grants related to TRB activities; expenditure controls; administration of publications sales and distribution; maintenance of the benefits and services for sponsor and affiliate organizations; and liaison to the administrative and financial offices of the National Academies.

## FINANCIAL MANAGEMENT

The division manages the contracts and grants that support TRB's work, prepares budgets for continuing operations and individual projects, and controls expenditures. TRB's total income and expenditures have increased consistently each year to approximately \$80 million (see graph below). A statement of income and expenditures is provided on pages 56–57.

## SPONSOR AND AFFILIATE SERVICES

TRB's core technical activities have five main levels of support: sponsors, sustaining affiliates, organizational

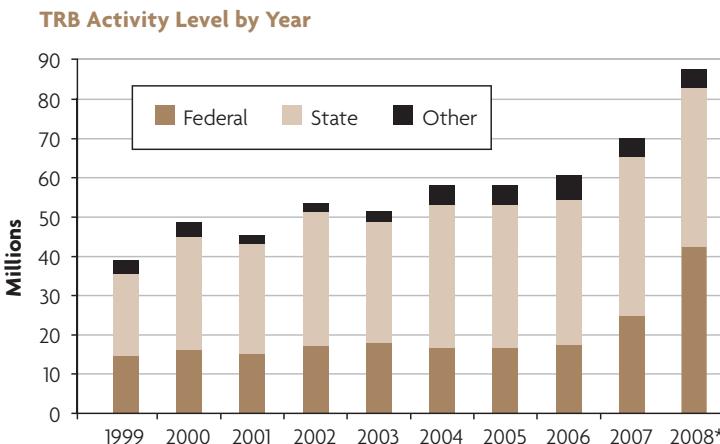


Affiliate Services Manager Andrea Kisiner and Senior Membership Assistant Kelvin R. Jordan review affiliate benefits packages for the coming year.

affiliates, individual affiliates, and student affiliates. All sponsors and affiliates contribute to the support of TRB activities through annual fees based in part on the level of services selected.

Sponsors are the major source of financial support for TRB's core technical activities. Federal, state, and local government agencies and professional societies and organizations that represent industry groups are eligible to be TRB sponsors. Fees and services are negotiated to serve each sponsor's needs and to provide fundamental support for the Board's programs and activities of interest to the entire transportation community. The minimum annual sponsor fee will increase from \$60,000 to \$65,000 on July 1, 2009. Sponsors are accorded ex officio representation on the TRB Executive Committee. (See pages 63–64 for a list of TRB sponsors and sustaining affiliates.)

Sustaining affiliates are agencies and organizations—including individual corporations and businesses—that, like sponsors, are committed to advancing knowledge about transportation and that support TRB at a level considerably higher than the direct cost of all of the services and publications received. The minimum annual contribution is \$15,000.



\* CY 2008 data use actual data for the first three quarters and an estimate for the fourth quarter.

Organizational affiliates include government agencies, academic organizations, private organizations, and consultants. In addition to the range of benefits for individual affiliates, noted below, organizational affiliates receive most publications at no cost, as well as complimentary registrations for the TRB Annual Meeting. Organizational affiliate contributions range from \$3,950 to \$9,700, depending on the level of benefits selected.

Individual and student affiliates' benefits include reduced registration fees for the TRB Annual Meeting; a complimentary subscription to *TR News*; discounts on most TRB books and reports—including access to the new TRR Online, the web posting of papers from TRB's journal; use of the TRB library; and assistance with TRB computer-based information services. Individual and student affiliates also may subscribe to publications at a substantially reduced rate through a selective distribution program.

## PUBLICATION SALES AND DISTRIBUTION

TRB's timely distribution of publications disseminates the results of transportation research and technology worldwide. TRB also releases selected publications—some exclusively—in electronic format. A list of TRB publications issued from January 1 through December 31, 2008, appears on pages 59–62.

In 2008 TRB launched a new online bookstore with a more customer-friendly interface.<sup>1</sup> Improvements include searchability, a streamlined shopping cart, and a "my account" feature that retains a customer's address and ordering data.

## WEB AND STRATEGIC APPLICATIONS

The information technology (IT) unit develops and supports many of the applications essential to the work of TRB's program divisions and is the liaison for computer network infrastructure to the Information Technology Services office of the National Academies. The IT unit's major project this year was the selection

<sup>1</sup> <http://books.trbbookstore.org>.



The TRB Bookstore, accessible online year-round in a new user-friendly format, materializes at the Annual Meeting every January.

and purchase of a content management system (CMS) for TRB's presence on the Internet. When fully implemented, the CMS will enhance TRB's ability to create, edit, organize, and publish content on its website—key tasks as the Board fulfills its mission of promoting transportation research and facilitating information exchange. The CMS will improve website visitors' access to information by clustering items by topic or by audience interest, by establishing consistency in the organization of information on the site, and eventually by allowing website visitors to build customized web pages—that is, a personal "My TRB" portal.

In addition, a Really Simple Syndication (RSS) feed will make new information added to the CMS available automatically. RSS subscribers will receive immediate notices of the new information of interest posted on TRB's website.

## STAFF NEWS

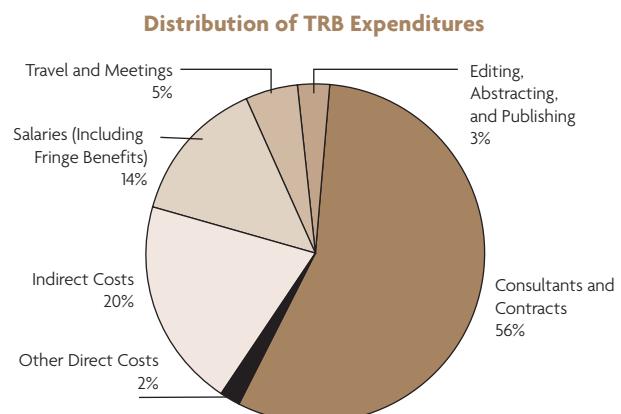
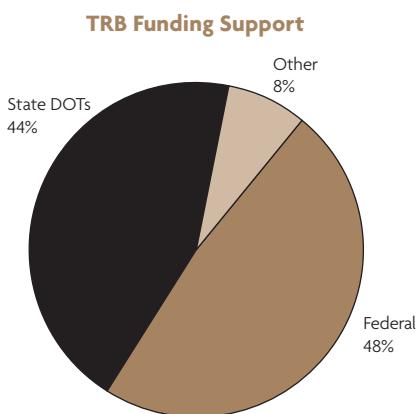
- Two staff received promotions: **Jessica Wu**, to Supervisor, Publications and Subscription Sales, and **Dionna Green**, to Web Analyst.
- **Gary T. Greene, Jr.**, joined the IT unit as Programmer/Analyst, and **Eric Collins** came on board as Accounting/Financial Assistant.

## STATEMENT OF ACTIVITIES

### FUNDING SUPPORT BY PROGRAM AND EXPENDITURES

Calendar Years 2007 and 2008

	2007 (Actual)	2008 (Projected)*
<b>Core Technical Activities</b>		
<b>State Highway and Transportation Departments (State DOTs)</b>	\$7,400,000	\$7,400,000
<b>Federal Government</b>		
Federal Highway Administration (FHWA)	1,300,000	1,632,000
Research and Innovative Technology Administration	300,000	300,000
Federal Transit Administration (FTA)	200,000	200,000
National Highway Traffic Safety Administration	188,000	198,000
Bureau of Indian Affairs	35,000	80,000
Federal Motor Carrier Safety Administration (FMCSA)	70,000	70,000
U.S. Army Corps of Engineers	60,000	60,000
Federal Aviation Administration (FAA)	60,000	60,000
Federal Railroad Administration (FRA)	60,000	60,000
<b>Subtotal, Federal Government</b>	<u>\$2,273,000</u>	<u>\$2,660,000</u>
<b>Other</b>		
Association of American Railroads	60,000	60,000
American Transportation Research Institute	60,000	60,000
American Public Transportation Association	60,000	60,000
Fees and Sales	4,472,210	5,051,131
<b>Subtotal, Other</b>	<u>\$4,652,210</u>	<u>\$5,231,131</u>
<b>Total, Core Technical Activities</b>	<b><u>\$14,325,210</u></b>	<b><u>\$15,291,131</u></b>
<b>Marine Board Core Program</b>		
U.S. Coast Guard	83,508	100,000
U.S. Army Corps of Engineers	25,000	30,000
Maritime Administration	20,000	10,000
Minerals Management Service	30,000	30,000
U.S. Navy	0	25,000
Office of Naval Research	40,000	40,000
National Oceanic and Atmospheric Administration	30,000	30,000
<b>Total, Marine Board Core Program</b>	<b><u>\$228,508</u></b>	<b><u>\$265,000</u></b>
<b>Cooperative Research Programs</b>		
National Cooperative Highway Research Program (State DOTs)	27,385,273	28,700,000
Transit Cooperative Research Program (FTA)	6,403,142	7,650,000
Airport Cooperative Research Program (FAA)	5,461,485	10,750,000
HazMat Cooperative Research Program (PHMSA)	123,563	620,000
Freight Cooperative Research Program (FMCSA)	362,846	1,310,000
<b>Total, Cooperative Research Programs</b>	<b><u>\$39,736,308</u></b>	<b><u>\$49,030,000</u></b>
<b>Strategic Highway Research Program 2 (SHRP 2)</b>	<b><u>\$7,185,053</u></b>	<b><u>\$13,567,670</u></b>



	2007 (Actual)	2008 (Projected)*
<b>Continuing Programs</b>		
<b>Pavement Research Program Review (FHWA)</b>	\$186,092	\$270,000
<b>Research and Technology Coordinating Committee (FHWA)</b>	167,455	190,000
<b>Innovations Deserving Exploratory Analysis (IDEA)</b>		
NCHRP IDEA (State DOTs)	856,156	1,340,000
ITS/High-Speed Rail IDEA (FRA)	442,638	460,000
Transit-IDEA (FTA)	485,744	540,000
Safety IDEA (FRA and FMCSA)	261,038	170,000
<b>Subtotal, IDEA Program</b>	<u>\$2,045,577</u>	<u>\$2,510,000</u>
<b>Synthesis Programs</b>		
NCHRP Synthesis (State DOTs)	1,205,003	1,300,000
TCRP Synthesis (FTA)	493,546	530,000
Commercial Truck and Bus Safety Synthesis (FMCSA)	154,440	130,000
ACRP Synthesis (FAA)	613,650	540,000
<b>Subtotal, Synthesis Programs</b>	<u>\$2,466,638</u>	<u>\$2,500,000</u>
<b>Legal Programs</b>		
NCHRP Legal (State DOTs)	212,213	210,000
TCRP Legal (FTA)	176,779	205,000
ACRP Legal (FAA)	90,370	210,000
<b>Subtotal, Legal Programs</b>	<u>\$479,361</u>	<u>\$625,000</u>
<b>Total, Special Continuing Programs</b>	<b><u>\$5,345,123</u></b>	<b><u>\$6,095,000</u></b>
<b>Policy Studies</b>		
<b>Conferences and Workshops</b>	<b><u>\$2,411,689</u></b>	<b><u>\$2,520,000</u></b>
<b>TRB TOTAL</b>	<b><u>\$70,971,052</u></b>	<b><u>\$89,488,801</u></b>
<b>Sources of Funds</b>		
Federal	26,988,588	43,317,670
State DOTs	37,414,872	38,950,000
Other	6,569,897	7,221,132
<b>Subtotal, Sources of Funds</b>	<b><u>\$70,973,357</u></b>	<b><u>\$89,488,802</u></b>
<b>Expenditures by Major Cost Category</b>		
Salaries (including fringe benefits)	11,718,040	12,507,825
Travel and Meetings	4,613,156	4,675,716
Editing, Abstracting, and Publishing	2,233,616	2,459,720
Consultants and Contracts	32,719,643	48,034,279
Other Direct Costs	2,210,720	2,168,089
Indirect Costs	15,463,571	16,948,942
<b>Total Expenditures</b>	<b><u>\$68,958,747</u></b>	<b><u>\$86,794,571</u></b>

#### TRB Reserve Fund

Fund balance, end of previous fiscal year	\$5,353,464	\$7,365,769
Plus (minus) current fiscal year income over (under) expenditures	<u>2,012,305</u>	<u>2,694,231</u>
Balance, current fiscal year	<b><u>\$7,365,769</u></b>	<b><u>\$10,060,000</u></b>

In 1965, the TRB Executive Committee approved a reserve fund to provide for orderly adjustments in the event of a temporary shortfall in anticipated revenues for TRB Technical Activities. This fund, built up over the years from surplus income in excess of expenditures from nonfederal sources for any one fiscal year, is reserved for expenditures in excess of income for any later fiscal year under a fixed budget approved triennially by the TRB Executive Committee.

\* CY 2008 data use actual data for the first three quarters and an estimate for the fourth quarter.

# TRB Conferences and Workshops

January 1, 2008–December 31, 2008

## JANUARY

- 13–17 TRB 87th Annual Meeting
- 18 International Symposium on Nondestructive Testing for Design Evaluation and Construction Inspection

## FEBRUARY

- 27 Fast Lanes on the Transportation Information Superhighway Webinar

## MARCH

- 2–5 1st Pan American Geosynthetics Conference\*
- 9–12 GeoCongress 2008\*
- 17–18 Data Sources to Measure the Impacts of Goods Movement on Air Quality
- 18 Recent Advances in Managed Lanes Networks Webinar
- 28 Climate Change, Impacts on U.S. Transportation, and Adaptation Strategies Webinar

## APRIL

- 1–4 Ground Improvement and Pavement Subgrades\*
- 8–9 Highway Economic Requirements Modeling and Data Integration Conference
- 10–11 Western Traffic Data Workshop

## MAY

- 8 Accommodating Pedestrians at Signalized Intersections Webinar
- 12–14 10th Annual Harbor Safety Committee Conference
- 15–16 Aligning Data to Support Transportation Decisions
- 18–21 National Roundabouts Conference
- 19–22 International Conference on Heavy Vehicles\*
- 27–31 10th International Conference on Application of Advanced Technologies in Transportation\*

## JUNE

- 2–4 25th Annual International Bridge Conference\*
- 3–4 Alcohol, Other Drugs, and Transportation Workshop
- 15–18 Joint Summer Meeting: Impact of Globalization on Transportation
- 15–19 2nd Freeway and Tollway Operations Conference\*
- 16–18 6th RILEM International Conference\*
- 16–19 7th International Symposium on Snow Removal and Ice Control Technology
- 16–19 4th National Conference on Surface Transportation Weather
- 18–20 33rd Annual Summer Ports, Waterways, Freight, and International Trade Conference
- 20 Installation and Design Considerations for Culvert Rehabilitation Webinar
- 22–24 Innovations in Travel Demand Forecasting 2008
- 23–28 7th International Conference on Managing Pavements and Other Roadway Assets\*

## JULY

- 6–9 47th Annual Workshop on Transportation Law\*
- 7–10 Southern African Transport Conference\*
- 8–10 The Greenshields Fundamental Diagram: 75 Years Later
- 13–16 8th National Conference on Access Management\*

- 13–17 4th International Conference on Bridge Maintenance, Safety, and Management\*
- 21–22 Bus Rapid Transit Workshop
- 23 World Trade Center Memorial Pedestrian Simulation Modeling Study Webinar
- 27–30 6th National Seismic Conference on Bridges and Highways\*

## AUGUST

- 6–8 NATMEC 2008
- 7 Great Lakes Shipping, Trade, and Aquatic Invasive Species Webinar
- 11–16 6th International Conference on Case Histories in Geotechnical Engineering\*
- 17–21 9th International Conference on Concrete Pavements\*

## SEPTEMBER

- 3–5 Meeting Federal Surface Transportation Requirements in Statewide and Metropolitan Transportation Planning
- 4–5 Maritime Disaster Workshop: Response to and Recovery from Channel Closures at the Ports of Los Angeles and Long Beach
- 7–10 13th International Conference on High-Occupancy Vehicle Systems, Pricing, and Managed Lanes\*
- 8–11 International Conference on Construction Management\*
- 11–12 Transportation Finance and Economics\*
- 17–19 11th National Conference on Transportation Planning for Small and Medium-Sized Communities
- 22–23 North American Freight Flows
- 24–26 Highway Asset Inventory and Data Collection Workshop\*

## OCTOBER

- 1–3 3rd International Conference on Accelerated Pavement Testing\*
- 6–7 Northeast Traffic Monitoring Workshop
- 6–8 European Transport Conference\*

## NOVEMBER

- 10 Airport Cooperative Research Program (ACRP) Industry Outreach Workshop: West Coast
- 11–14 Gulf Coast Hurricane Preparedness, Response, Recovery, and Rebuilding\*
- 13 ACRP Industry Outreach Workshop: East Coast
- 20 Developing a Theoretical Understanding of Highway Crash Causation\*

## DECEMBER

- 1–4 2008 Highway Geophysics–Nondestructive Evaluation Conference\*
- 2–3 2nd International Summit on Agricultural and Food Transportation\*
- 7–9 Transportation Finance Summit\*
- 9–11 Strategic Highway Safety Plan and State DOT Safety Engineer Peer Exchange
- 10–12 Advancing Regional Traffic Operations and Management
- 15–17 International Conference on Integrated Transport for Sustainable Urban Development\*

\* TRB is cosponsor of the meeting.

# TRB Publications

## TRANSPORTATION RESEARCH RECORDS

- 2041 Transportation Security; Emergency Response and Recovery 2008  
2042 Transit: Intermodal Facilities and Capacity; Light Rail, Commuter Rail, and Rail Transit; and Major Activity Center Circulation Systems  
2043 Railways 2008  
2044 Infrastructure Maintenance  
2045 Soil Mechanics 2008  
2046 Performance Measurement, Demand Management, and Issues of Major U.S. Cities  
2047 Freeway Operations 2008  
2048 Developing Countries 2008  
2049 Data Systems and Travel Survey Methods  
2050 Structures 2008  
2051 Components of Bituminous Paving Mixtures 2008  
2052 Aviation 2008  
2053 Geology and Properties of Earth Materials 2008  
2054 Activity and Time Use Analysis 2008  
2055 Work Zones and Maintenance Operations  
2056 Traffic Control Devices, Visibility, and Highway—Rail Grade Crossings 2008  
2057 Bituminous Paving Mixtures 2008  
2058 Environment and Energy 2008  
2059 Geomaterials 2008  
2060 Highway Design 2008  
2061 Statistical Methods  
2062 Ports and Waterways  
2063 Transit: Management, Technology, and Planning  
2064 Information Systems, Geographic Information Systems, and Advanced Computing  
2065 Regional Transportation Systems Management and Operations; Managed Lanes 2008  
2066 Freight Systems 2008  
2067 Societal and Economic Aspects  
2068 Pavement Monitoring, Evaluation, and Data Storage; Strength and Deformation Characteristics; and Surface Properties—Vehicle Interaction 2008  
2069 Human Performance: Infrastructure, Information Systems, and Simulation  
2070 Concrete Materials  
2071 Highway Capacity and Quality of Service 2008  
2072 Transit: Marketing; Bus and Paratransit  
2073 Pedestrians 2008  
2074 Bicycles; School Transportation; and Motorcycles and Motor Scooters

- 2075 Operational Effects of Geometrics and Access Management 2008  
2076 Travel Demand 2008  
2077 Crosscutting Techniques for Planning and Analysis 2008  
2078 Highway Safety: Planning; Young Drivers; Older Drivers; Indian Nations; Roundabouts; Traffic Law Enforcement; and Trucks and Buses  
2079 Pricing, Economics, and Finance  
2080 Traffic Signal Systems  
2081 Construction 2008  
2082 Travel Behavior Analysis 2008  
2083 Safety Data, Analysis, and Modeling  
2084 Pavement Management Systems and Rehabilitation 2008  
2085 Network Modeling 2008  
2086 Intelligent Transportation Systems and Vehicle—Highway Automation 2008  
2087 Pavement Testing and Design 2008  
2088 Traffic Flow Theory and Characteristics 2008  
2089 Network Analysis for Policy and Logistics

## SPECIAL REPORTS<sup>1</sup>

- 290 Potential Impacts of Climate Change on U.S. Transportation  
291 Great Lakes Shipping, Trade, and Aquatic Invasive Species  
292 Safety Research on Highway Infrastructure and Operations: Improving Priorities, Coordination, and Quality  
293 Risk of Vessel Accidents and Spills in the Aleutian Islands: Designing a Comprehensive Risk Assessment  
294 The Role of Transit in Emergency Evacuation  
295 The Federal Investment in Highway Research 2006–2009: Strengths and Weaknesses

## CONFERENCE PROCEEDINGS<sup>1</sup>

- 40 Freight Demand Modeling: Tools for Public-Sector Decision Making  
41 Interagency—Aviation Industry Collaboration on Planning for Pandemic Outbreaks  
42 Innovations in Travel Demand Modeling:
  - Vol. 1: Session Summaries
  - Vol. 2: Papers  
43 Key Issues in Transportation Programming  
44 U.S. and International Approaches to Performance Measurement

## LETTER REPORTS (ONLINE)

Committee for Pavement Technology Review and Evaluation,  
February 4, 2008

Committee for Review of the Federal Railroad Administration (FRA) Research and Development Program, April 29, 2008  
Transit Research Analysis Committee, June 4, 2008  
Committee for a Review of the U.S. Department of Transportation Study on Implementation of Changes to the Section 4(f) Process, June 9, 2008

#### TRANSPORTATION RESEARCH E-CIRCULARS (ONLINE)

- 125 Evolving Role of Statewide Transportation Planning in an Era of Regional Funding and Governance  
126 Surface Transportation Weather and Snow Removal and Ice Control Technology: Fourth National Conference on Surface Transportation Weather and Seventh International Symposium on Snow Removal and Ice Control Technology  
127 Implementation of an Airport Pavement Management System  
128 10th International Conference on Bridge and Structure Management  
129 Use of Inclinometers for Geotechnical Instrumentation on Transportation Projects: State of the Practice  
130 Geophysical Methods Commonly Employed for Geotechnical Site Characterization  
131 Transportation Asset Management: Strategic Workshop for Department of Transportation Executives

#### TR NEWS

Nos. 254–259

#### ONLINE NEWSLETTERS

Intercity Rail Passenger Systems, No. 13  
TRB E-Newsletter

#### NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORTS<sup>2</sup>

- 500 Guidance for Implementation of the AASHTO Strategic Highway Safety Plan:
  - Vol. 18: A Guide for Reducing Collisions Involving Bicycles
  - Vol. 20: A Guide for Reducing Head-On Crashes on Freeways
  - Vol. 21: Safety Data and Analysis in Developing Emphasis Area Plans
  - Vol. 22: A Guide for Addressing Collisions Involving Motorcycles  
525 Surface Transportation Security, Vol. 13: A Guide to Traffic Control of Rural Roads in an Agricultural Emergency  
571 Standardized Procedures for Personal Travel Surveys  
596 Rotation Limits for Elastomeric Bearings  
597 Development of a Recommended Practice for Use of Controlled Low-Strength Material in Highway Construction  
598 Performance-Related Tests of Recycled Aggregates for Use in Unbound Pavement Layers  
599 Default Values for Highway Capacity and Level of Service Analyses  
600 Human Factors Guidelines for Road Systems: Collections A and B

- 601 The Impact of Legislation, Enforcement, and Sanctions on Safety Belt Use  
602 Calibration and Validation of the Enhanced Integrated Climatic Model for Pavement Design  
603 Transfer, Development, and Splice Length for Strand/Reinforcement in High-Strength Concrete  
604 Heat-Straightening Repair of Damaged Steel Bridge Girders: Fatigue and Fracture Performance  
605 Passing Sight Distance Criteria  
606 Forecasting Statewide Freight Toolkit  
607 Specifications and Protocols for Acceptance Tests on Processing Additions in Cement Manufacturing  
608 GASB 34—Methods for Condition Assessment and Preservation  
609 Recommended Construction Specifications and Process Control Manual for Repair and Retrofit of Concrete Structures Using Bonded FRP Composites  
611 Seismic Analysis of Retaining Walls, Buried Structures, and Embankments  
612 Safe and Aesthetic Design of Urban Roadside Treatments  
613 Guidelines for Selection of Speed Reduction Treatments at High-Speed Intersections  
614 Refining the Simple Performance Tester for Use in Routine Practice  
615 Evaluation of the Use and Effectiveness of Wildlife Crossings  
616 Multimodal Level of Service Analysis for Urban Streets  
617 Accident Modification Factors for Traffic Engineering and ITS Improvements  
618 Cost-Effective Performance Measures for Travel Time Delay, Variation, and Reliability  
619 Modernize and Upgrade CANDE for Analysis and LRFD Design of Buried Structures (includes supplemental CD-ROM CRP-CD-69)  
620 Development of Design Specifications and Commentary for Horizontally Curved Concrete Box-Girder Bridges  
621 Acceptance Tests for Surface Characteristics of Steel Strands Used in Prestressed Concrete  
622 Effectiveness of Behavioral Highway Safety Countermeasures  
623 Identifying and Quantifying Rates of State Motor Fuel Tax Evasion  
624 Selection and Application of Warning Lights on Roadway Operations Equipment  
627 Traffic Safety Evaluation of Nighttime and Daytime Work Zones  
629 Ruggedness Testing of the Dynamic Modulus and Flow Number Tests with the Simple Performance Tester

#### NCHRP SYNTHESES OF HIGHWAY PRACTICE<sup>2</sup>

- 376 Quality Assurance in Design-Build Projects  
377 Compilation of Public Opinion Data on Tolls and Road Pricing  
378 State Highway Cost Allocation Studies  
379 Selection and Evaluation of Alternative Contracting Methods to Accelerate Project Completion  
380 Applications of Illuminated, Active, In-Pavement Marker Systems

- 381 Falling Weight Deflectometer Usage  
 382 Estimating Stiffness of Subgrade and Unbound Materials for Pavement Design  
 383 Changeable Message Sign Displays During Non-Incident, Non-Roadwork Periods  
 384 Forecasting Metropolitan Commercial and Freight Travel  
 385 Information Technology for Efficient Project Delivery  
 386 High Speed Weigh-in-Motion System Calibration Practices  
 387 LED Traffic Signal Monitoring, Maintenance, and Replacement Issues

#### **NCHRP RESEARCH RESULTS DIGESTS<sup>2</sup>**

- 326 State Public Transportation Division Involvement in State Emergency Planning, Response, and Recovery  
 327 Transportation Implications of Emerging Economic Development Trends  
 328 Color Effectiveness of Yellow Pavement Marking Materials  
 329 Highway Safety Manual Data Needs Guide  
 330 Temporary Bridging to Avoid or Minimize Impacts to Waters and Wetlands During Highway Construction

#### **NCHRP LEGAL RESEARCH DIGESTS<sup>2</sup>**

- 50 Current Practices in the Use of Alternative Dispute Resolution

#### **NCHRP WEB-ONLY DOCUMENTS (ONLINE)**

- 93 Technical Appendix to NCHRP Report 571: Standardized Procedures for Personal Travel Surveys  
 116 Corrosion Study and Implementation Plan for NCHRP Report 597  
 117A Accessible Pedestrian Signals: A Guide to Best Practice  
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