

TRB

2002 Annual Report



TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

Dear Supporter of TRB:

TRB marked several significant anniversaries in 2002. The National Cooperative Highway Research Program (NCHRP) celebrated its 40th birthday, and the “new” cooperative research program—the Transit Cooperative Research Program (TCRP)—is 10 years old. Also celebrating a 10th anniversary are the Innovations Deserving Exploratory Analysis (IDEA) programs. In addition, it has been 20 years since TRB began undertaking special studies of transportation policy issues. Included in this annual report are brief text boxes highlighting the history and achievements of these programs.

Celebrating our history and our successes is important, but it is also important to look to our future. Part of TRB’s success is attributable to an ability to adapt a portfolio of services to the changing needs of sponsors and supporters. The scope of what we consider *transportation* is evolving, as evidenced by the emergence of security-related procedures and agencies that we now see, sadly, as integral to the provision of transportation services.

Preparing for the future, the TRB Executive Committee has completed a major revision of its strategic plan. The revised plan does not attempt to micromanage TRB activities but calls for significant reviews of some fundamental organizational issues by staff, the Division A Technical Activities Council, and the Executive Committee. Examples include reviews of international activities and relationships at TRB, opportunities to document the value of research more effectively, a “big issues in transportation” study agenda, the standing technical committee governance and organizational structure, new types of regular summer meetings, partnerships with non-sponsor organizations, and expanded communication and outreach.

We will provide updates on these issues in future reports, but TRB already has begun to introduce activities—such as the electronic newsletter—that are a direct outgrowth of the strategic planning. Summarized below are many of the highlights of 2002.

Annual Meeting and Conferences

Despite post-September 11 concerns about travel to the nation’s capital, more researchers, practitioners, and students attended the Annual Meeting than ever before—registration exceeded



Jonathan Upchurch, Chair, Group 3, Division A Council, (*above*) and Bradley L. Mallory, Pennsylvania DOT, (*below*) contribute to discussion during TRB Executive Committee’s winter meeting in January.



TRB Executive Committee Chair E. Dean Carlson, Secretary, Kansas Department of Transportation (DOT), welcomes U.S. DOT Secretary Norman Y. Mineta, featured speaker at the 2002 Annual Meeting Chairman’s Luncheon. Looking on are (*back row, from left to right*) Bruce Alberts, National Academy of Sciences President; Joseph M. Sussman, JR East Professor, Massachusetts Institute of Technology; and John M. Samuels, Senior Vice President, Norfolk Southern Corporation.



Michael P. Jackson (center), Deputy Secretary of the U.S. DOT, leads discussion at the 2002 Annual Meeting special session, Spotlight on Security and Recovery, about initiatives related to security of the nation's transportation system. Each of the U.S. DOT administrators made presentations.

9,000. Highlights of the meeting included the Chairman's Luncheon Address by Secretary of Transportation Norman Y. Mineta and a special session on security, in which Deputy Secretary Michael P. Jackson and most of the modal administrators of the U.S. Department of Transportation (DOT) participated. Both sessions were broadcast on the C-SPAN and CNN television networks. Altogether 30 sessions at the meeting dealt with security-related themes.

Kudos go to the TRB committee volunteers who conducted peer reviews of the 1,900 submitted papers within a compressed, eight-week schedule, selecting approximately 1,000 for presentation at the Annual Meeting. Most of the papers also were available on the CD-ROM distributed to all registrants.

In addition, TRB organized more than 30 conferences and 45 workshops in 2002, covering such diverse topics as transportation finance, smart growth, the future of aviation, railway maintenance, ports and waterways, remote sensing, safety-conscious planning, access management, transportation law, and environmental research needs.

Transportation Security

In addition to organizing a program of Annual Meeting sessions, the Committee on Critical Transportation Infrastructure Protection maintains a web page, accessible through the TRB home page, to provide security-related information.

Both NCHRP and TCRP have programmed more than \$2 million each for "quick response" research projects and the dissemination of information on security topics. Some of the products already available include guidance for vulnerability assessments, procedures for communicating about threats, and guidance on updating emergency response plans.

Working with other units in the National Academies, TRB contributed to a fast-track report on the role of science and technology in countering terrorism. The report's transportation chapter, authored by a panel of transportation and security experts, also was published separately as TRB Special Report 270, *Deterrence, Protection, and Preparation: The New Transportation Security Imperative*, and is available on the TRB website, www.TRB.org/.

Advice to Policy Makers

TRB completed and published a record number of policy studies in 2002. These included studies requested by the U.S. Congress in the Transportation Equity Act for the 21st Century and in annual appropriations bills, covering diverse topics: school transportation safety; truck size and weight regulations; the Congestion Mitigation and Air Quality Improvement Program; and rollover ratings for motor vehicles. Other completed studies addressed environmental research needs, the NASA Small Aircraft Transportation System concept, future freight demand, and cooperative research models for naval engineering.

TRB committees also reviewed several federal research and statistical programs and issued letter reports to the administering agencies.

Research Management

NCHRP continues to focus on producing guidance for highway practitioners. Recent examples include guidelines for nighttime traffic control during highway maintenance and construction and a report on context-sensitive solutions, identifying best practices for considering natural and manmade environments in the design and construction of highway facilities. Funding for NCHRP totaled \$31.5 million in FY 2002.

TCRP produced several guides and handbooks targeted to the needs of transit industry practitioners. Examples include a toolbox with accompanying CD-ROM documenting principles, techniques, and strategies for developing fatigue-mitigation plans for transit operators, and a guidebook to assist rural and small urban public transportation systems in selecting the technology appropriate to operational needs and characteristics. Funding for TCRP totaled \$8.25 million in FY 2002.



Executive Committee members, sponsors, and special guests tour TRB offices in the new National Academies building.

With support from the Federal Motor Carrier Safety Administration (FMCSA), the Commercial Truck and Bus Safety Synthesis Program has launched its first three studies, with products to be available early in 2003.

The new Transportation Safety Technology IDEA program (Safety IDEA) executed its first research contracts in 2002. The Federal Railroad Administration has joined FMCSA as a sponsor, making Safety IDEA the only multimodal IDEA program.

Electronic Outreach

The scope and dissemination of TRB's electronic newsletter, launched in June 2002, have expanded, with a growing subscriber list of about 7,000.

The number of online publications available through the TRB website (<http://www4.trb.org/trb/onlinepubs.nsf/web/>) has risen to more than 1,500, reflecting our policy of promoting use of the Internet to access TRB material. The total includes all 237 research reports of the Strategic Highway Research Program in text-searchable format.

TRB's New Home

In July 2002, TRB moved into the newly constructed National Academies building at 500 Fifth Street, NW, in Washington, D.C. (see cover photo)—a handsome structure with excellent meeting facilities and convenient access to the Metro system, the MCI Center, and many museums and cultural sites. Reaction by staff and committee members has been favorable. However, the building is not large enough to meet space needs—the National Academies grew more than anticipated after completion of the building designs, and an addition is planned.

National Academies and National Research Council News

Dr. Harvey V. Fineberg, previously Chancellor of Harvard University and Dean of Harvard's School of Public Health, assumed the presidency of the Institute of Medicine in July 2002, succeeding Dr. Kenneth I. Shine, who had completed two terms of service.

TRB's parent organizations—the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council—have agreed to emphasize "The National Academies" as the primary identifier for the overall institution. You will note the incorporation of this identifier into TRB publications, letterhead, and other products.

Sponsor and Staff News

The U.S. Department of Energy became a sponsor in 2002. The American Concrete Pavement Association has suspended its sponsorship of TRB but has indicated intentions to return as a full sponsor.

Rosemarie "Cookie" Culmone retired after 15 years as the Executive Director's Personal Assistant and will be missed, especially by the Executive Office staff and members of the Executive Committee.



E. Dean Carlson
Chair, Executive Committee



Robert E. Skinner, Jr.
Executive Director



E. Dean Carlson, 2002 TRB Executive Committee Chair (left), Genevieve Giuliano, 2002 TRB Executive Committee Vice Chair, and Robert E. Skinner, Jr., TRB Executive Director.



E. Dean Carlson
Chair

Genevieve Giuliano
Vice Chair

Robert E. Skinner, Jr.
Executive Director

Transportation Research Board 2002 Executive Committee

Chair: E. Dean Carlson, Secretary, Kansas Department of Transportation, Topeka

Vice Chair: Genevieve Giuliano, Professor, School of Policy, Planning, and Development, University of Southern California, Los Angeles

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

William D. Ankner, Director, Rhode Island Department of Transportation, Providence

Thomas F. Barry, Jr., Secretary of Transportation, Florida Department of Transportation, Tallahassee

Michael W. Behrens, Executive Director, Texas Department of Transportation, Austin

Jack E. Buffington, Associate Director and Research Professor, Mack-Blackwell National Rural Transportation Study Center, University of Arkansas, Fayetteville

Sarah C. Campbell, President, TransManagement, Inc., Washington, D.C.

Joanne F. Casey, President, Intermodal Association of North America, Greenbelt, Maryland

James C. Codell III, Secretary, Kentucky Transportation Cabinet, Frankfort

John L. Craig, Director, Nebraska Department of Roads, Lincoln

Robert A. Frosch, Senior Research Fellow, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts

Susan Hanson, Landry University Professor of Geography, Graduate School of Geography, Clark University, Worcester, Massachusetts

Lester A. Hoel, L.A. Lacy Distinguished Professor of Engineering, Department of Civil Engineering, University of Virginia, Charlottesville (Past Chair, 1986)

Ronald F. Kirby, Director of Transportation Planning, Metropolitan Washington Council of Governments, Washington, D.C.

H. Thomas Kornegay, Executive Director, Port of Houston Authority, Houston, Texas

Bradley L. Mallory, Secretary of Transportation, Pennsylvania Department of Transportation, Harrisburg

Michael D. Meyer, Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta

Jeff P. Morales, Director of Transportation, California Department of Transportation, Sacramento

David Plavin, President, Airports Council International, Washington, D.C.

John Rebensdorf, Vice President, Network and Service Planning, Union Pacific Railroad Company, Omaha, Nebraska

Catherine L. Ross, Executive Director, Georgia Regional Transportation Agency, Atlanta

John M. Samuels, Senior Vice President, Operations Planning and Support, Norfolk Southern Corporation, Norfolk, Virginia (Past Chair, 2001)

Paul P. Skoutelas, CEO, Port Authority of Allegheny County, Pittsburgh, Pennsylvania

Michael S. Townes, Executive Director, Transportation District Commission of Hampton Roads, Hampton, Virginia



William D. Ankner



Thomas F. Barry, Jr.



Michael W. Behrens



Jack E. Buffington



Sarah C. Campbell



Joanne F. Casey



James C. Codell III



John L. Craig



Robert A. Frosch



Susan Hanson



Lester A. Hoel



Ronald F. Kirby



H. Thomas Kornegay



Bradley L. Mallory



Michael D. Meyer



Jeff P. Morales



David Plavin



John Rebensdorf



Catherine L. Ross



John M. Samuels



Paul P. Skoutelas



Michael S. Townes



Martin Wachs



Michael W. Wickham



M. Gordon Wolman



Mike Acott



Marion C. Blakey



Rebecca M. Brewster



Joseph M. Clapp



Thomas H. Collins



Jennifer L. Dorn



Ellen G. Engleman



Robert B. Flowers



Harold K. Forsen



Edward R. Hamberger



John C. Horsley



Michael P. Jackson



Robert S. Kirk



Rick Kowalewski



William W. Millar



Margo T. Oge



Mary E. Peters



Jeffrey W. Runge



Allan Rutter



William G. Schubert



Robert A. Venezia

Martin Wachs, Director, Institute of Transportation Studies, University of California, Berkeley (Past Chair, 2000)
Michael W. Wickham, Chairman and CEO, Roadway Express, Inc., Akron, Ohio
M. Gordon Wolman, Professor of Geography and Environmental Engineering, The Johns Hopkins University, Baltimore, Maryland

Mike Acott, President, National Asphalt Pavement Association, Lanham, Maryland (ex officio)
Marion C. Blakey, Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)
Rebecca M. Brewster, President and Chief Executive Officer, American Transportation Research Institute, Atlanta, Georgia (ex officio)
Joseph M. Clapp, Administrator, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)
Thomas H. Collins (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, Washington, D.C. (ex officio)
Jennifer L. Dorn, Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)
Ellen G. Engleman, Administrator, Research and Special Programs Administration, U.S. Department of Transportation (ex officio)
Robert B. Flowers (Lt. Gen., U.S. Army), Chief of Engineers and Commander, U.S. Army Corps of Engineers, Washington, D.C. (ex officio)
Harold K. Forsen, Foreign Secretary, National Academy of Engineering, Washington, D.C. (ex officio)
Edward R. Hamberger, President and CEO, Association of American Railroads, Washington, D.C. (ex officio)
John C. Horsley, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)
Michael P. Jackson, Deputy Secretary, U.S. Department of Transportation (ex officio)
Robert S. Kirk, Director, Office of Advanced Automotive Technologies, U.S. Department of Energy (ex officio)
Rick Kowalewski, Acting Director, Bureau of Transportation Statistics, U.S. Department of Transportation (ex officio)
William W. Millar, President, American Public Transportation Association, Washington, D.C. (ex officio) (Past Chair, 1992)
Margo T. Oge, Director, Office of Transportation and Air Quality, U.S. Environmental Protection Agency, Washington, D.C. (ex officio)
Mary E. Peters, Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)
Jeffrey W. Runge, Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)
Allan Rutter, Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)
William G. Schubert, Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)
Robert A. Venezia, Earth Sciences Applications Specialist, National Aeronautics and Space Administration, Washington, D.C. (ex officio)

* Membership as of December 2002



Lester A. Hoel
Chair, Subcommittee
for NRC Oversight

Robert E. Skinner, Jr.
Executive Director

Suzanne B. Schneider
Associate Executive
Director



EXECUTIVE OFFICE

The TRB Executive Office provides policy and operational guidance for programs and activities; oversees committee and panel appointments and report review; provides personnel support for TRB staff; manages the editing, production, and publication of TRB reports, its journal series, magazine, and other titles; 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.

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, the Board’s parent institution. Oversight of committee and panel appointments and report review is the responsibility of the Executive Committee’s Subcommittee for NRC Oversight, 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 minori-

ties and women on TRB committees and panels. Lester A. Hoel, TRB Division Chair for NRC Oversight, chairs this subcommittee and represents TRB as an *ex officio* member on the NRC Governing Board.

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 carefully matches the review criteria and procedures to the type of report.

Publications

To fulfill one of its oldest missions, TRB disseminates the results of transportation research and technology information through the publication of an extensive array of timely, informative 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 publications electronically; some are published exclusively in electronic format.

TRB books and reports cover 16 broad categories and topics, spanning the full range of transportation functions and modes. The TRB Publications Office produces titles in the following series:

- *Transportation Research Record: Journal of the Transportation Research Board* gathers technical papers, originally presented at TRB Annual Meetings and other conferences, that have been accepted for publication through peer review. Each year, the Board publishes approximately 40 volumes of the journal, containing more than 650 papers grouped by subject. Papers presented at the Annual Meeting and approved for publication are issued within 6 to 12 months. A

CD-ROM collects the entire year's Records, adding a five-year index of authors, titles, and subjects.

- 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, meeting announcements, and highlights of TRB activities are also included. 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.
- *Special Reports* contain the results of TRB policy studies on issues of national importance in transportation. These studies, many of which are conducted at the request of federal agencies or of Congress, focus on a variety of complex, often controversial, topics. All current and selected out-of-print special reports are posted on the Board's website.
- *Conference Proceedings* assemble formal papers, presentations, and summaries of discussions from TRB conferences and workshops.
- *Transportation Research Circulars*, products of the Board's standing technical committees, collect research problem statements and provide other materials considered use-



Members of TRB Executive Committee's Subcommittee for National Research Council Oversight meet during the 81st Annual Meeting. *From left:* John M. Samuels, Suzanne B. Schneider, John L. Craig, Genevieve Giuliano, Lester A. Hoel (Chair), M. Gordon Wolman, and E. Dean Carlson.



A point and a click are all that users need to read current research news from the weekly *Transportation Research E-Newsletter*.

ful for a limited time or to a limited audience. Circulars are posted on the TRB website.

- *Miscellaneous Reports* include special publications like the *Highway Capacity Manual 2000*.

In addition, the Cooperative Research Programs Division produces titles in several publications series (see pages 47–49).

Communications

A major focus for TRB is to improve the communication and public awareness of transportation issues and to increase the dissemination of research findings worldwide. To help accomplish this goal, which is included in the Board's updated Strategic Plan, a new position was created in 2001 within the TRB Executive Office to provide the necessary staff expertise in communications and outreach (see Staff News, this page).

One of the first communications initiatives is the weekly *Transportation Research E-Newsletter*, which reports on transportation research and research-related events within TRB and beyond. Circulation of the free newsletter is currently about 7,000 and growing. Various other efforts are planned or under way, including web page enhancements, outreach to organizations and individuals beyond traditional TRB constituencies, and

STAFF NEWS

- Russell Houston, formerly with the Institute of Transportation Engineers, joined the Executive Office staff in late 2001 as Senior Program Officer with responsibility for coordinating communications and outreach.
- Cindy Baker, longtime NRC and TRB employee, most recently as Administrative Assistant in TRB's Special Programs Division, is the new Executive Assistant to the Executive Director.
- Robert Summersgill, previously a Project Assistant in the Technical Activities Division, also moved to the Executive Office, as Committee Appointments Assistant.
- Linda Frommer has joined the Publications Office as Associate Editor.
- As the result of an organizational restructuring, TRB's publications and personnel functions were transferred from the Administration and Finance Division to the Executive Office. Associate Executive Director Suzanne B. Schneider oversees the work of the Publications Office, and Committee Appointments and Personnel Officer Jewelene Richardson manages all personnel-related activities.

targeting new audiences for specific reports and activities.



Sixteen broad categories and topics, representing the range of transportation functions and modes, are covered in TRB's magazine, books, and reports.



Anne P. Canby
Council Chair
Division A

Michael S. Bronzini
Council Chair
Group 1,
Transportation Systems Planning and Administration

Gale C. Page
Council Chair
Group 2, Design and Construction of Transportation Facilities

Jonathan E. Upchurch
Council Chair
Group 3, Operation, Safety, and Maintenance of Transportation Facilities

Bruce M. Smith
Council Chair
Group 4, Legal Resources

Katherine F. Turnbull
Council Chair
Group 5, Intercity Resources and Issues

Mark R. Norman
Director
Division A

Division A



TECHNICAL ACTIVITIES

The TRB Technical Activities Division (Division A) 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 work with 200 volunteer standing committees to carry out activities on behalf of TRB sponsors and the transportation community. During 2002, these activities included

- Conducting the TRB 81st Annual Meeting in January 2002, attracting a record 9,000 transportation professionals and students from around the world;
- Presenting more than 80 specialty conferences, major meetings, and workshops on topics of interest to the transportation community (see page 46 for a complete listing of conferences and workshops);
- Peer reviewing and publishing 664 papers in 38 volumes of the 2002 series of the *Transportation Research Record: Journal of the Transportation Research Board*, as well as proceedings from conferences, and web circulars (see pages 47–49 for a complete listing of titles published in 2002);
- Visiting every state department of transportation (DOT), as well as selected universities, transit and other modal agencies, and industry organizations, to determine the issues they are facing and how TRB can help in addressing the issues;
- Implementing a quality improvement program to enhance the quality of service to TRB's customers and to participants in Division A activities; and
- Taking steps to increase participation by young people, minorities, and women in TRB committees and activities.

In late 2001, the TRB Executive Committee published a report identifying the most critical



Transportation planners from around the country discussed state department of transportation (DOT)-related experiences and considered critical issues at the Statewide Transportation Planning Peer Review meeting in Woods Hole in July.

issues in transportation (*TR News*, November–December 2001). During 2002, Division A—as an active forum for transportation professionals—surveyed its standing committees to determine recent, current, and planned activities to help the transportation community address these critical issues. Highlights of these activities follow, with summaries of the statements from the *Critical Issues in Transportation* report in italics.

Security

The transportation system is vulnerable to attacks by terrorists and saboteurs.

On September 14, three days after the terrorist attacks on the World Trade Center and the Pentagon, TRB launched a transportation security website (<http://www4.trb.org/trb/homepage.nsf/web/security>) to assist transportation agencies in enhancing system security. Sponsored by the TRB Standing Committee on Critical Transportation Infrastructure Protection, the website includes electronic versions of reports and papers generated by TRB and the National Academies on an array of transportation security topics, providing links to related websites. The resources cover general security, general transportation, aviation, ports and waterways, and surface transportation security.

At the 2002 TRB Annual Meeting, Division A standing committees collectively developed more than 30 events to cast a “Spotlight

on Security and Recovery.” U.S. DOT sponsored a session on security across the modes, featuring presentations by the modal administrators, with Deputy Transportation Secretary Michael P. Jackson presiding. The session was recorded and posted on the web. More than 1,000 people visited this web page in the first month. Other events included a Sunday workshop organized by the Committee on Critical Transportation Infrastructure Protection, as well as several mode-oriented sessions, all of which drew large audiences and, in some cases, live coverage or taped transmission on the cable television services C-SPAN and CNN.

Under the leadership of the Committee on Critical Transportation Infrastructure Protection, TRB and the American Association of State Highway and Transportation Officials (AASHTO) cosponsored a survey of state DOTs to determine the extent that states have addressed infrastructure protection and security in policy and planning activities before and after September 11, 2001. All states responded and results were reported at several sessions during the TRB Annual Meeting. A presentation summarizing the results is available on the transportation security website, along with a presentation recapping security-related activities across all divisions of TRB.

The Committee on Critical Transportation Infrastructure Protection also has established several subcommittees to focus on spe-



U.S. DOT Secretary Norman Y. Mineta’s speech on transportation security attracted a large audience and national coverage by the press and broadcast media at this year’s Annual Meeting Chairman’s Luncheon.

cific aspects of transportation security and to coordinate with other TRB standing committees. Information on the subcommittee is available on the committee's website.

The Committee on Intergovernmental Relations in Aviation is working to quantify security facility needs and business procedures, as well as changes to increase security at general aviation airports. The Airport Terminals and Ground Access Committee is focusing on ways that airport terminals and ground access facilities are developing or implementing policy and operational measures in response to increased threats and to new regulations and requirements.

After September 11, 2001, the Committee on Transit Fleet Maintenance initiated a transit security discussion on its web board. As a follow-on, the committee is considering a survey of transit agencies on methods to ensure employee awareness of work-area situations that could constitute security breaches and on techniques to avoid breaches—for example, wearing picture identification cards, challenging strangers, and noting strange or unfamiliar packages.

The Committee on Transportation Network Modeling has organized a subcommittee to address issues related to public- and private-sector fleet management and emergency evacuation and response. The primary focus is on mathematical modeling and optimization.

The subcommittee plans to contact other TRB committees to facilitate dialogue. The Committee also is soliciting papers on methods and algorithms to identify critical infrastructure elements. Static and dynamic network equilibrium models can provide the analytical structure for evaluating the network impact of the destruction of bridges, interchanges, and other major transportation facilities.

The Committee on Freeway Operations has formed a Task Force on Emergency Preparedness and Homeland Security for Freeway Operations and has posted on its website a charter list of key issues and proposed activities.

The committees on Traffic Law Enforcement, on Operator Education and Regulation, and on Alcohol, Other Drugs, and Transportation are examining ways to combine security with safety concerns. For example, the Committee on Operator Education and Regulation deals with driver licensing, which has gained prominence with recent calls for more definitive identification systems. Simi-

larly, the Committee on Traffic Law Enforcement has considered the synergistic possibilities of combining traffic enforcement with crime prevention.

Safety

Fatalities and injuries from transportation crashes are a major public health problem.

Several Division A standing committees are cosponsoring the development of a Highway Safety Manual (HSM)—the safety analog to the *Highway Capacity Manual*. HSM will provide empirically and quantitatively based guidance for improving safety in roadway design and operation. A detailed outline of the manual and a first chapter on two-lane rural roads are in development under a National Cooperative Highway Research Program (NCHRP) contract with involvement from the Joint Subcommittee on the Highway Safety Manual. The NCHRP project will begin research in 2003 to develop a second technical chapter, on arterial roads.

The Joint Subcommittee to Develop Roadway System Human Factors Guidelines is working on a companion manual to provide design guidance for roadway designers and operators. The outline and first chapter also are being developed under an NCHRP contract. The manual will be integratable into computer design systems for ease of use.

The Committee on Roadside Safety Features published a web circular, *Standards for Testing, Evaluating, and Locating Roadside Safety Features*, and sponsored a workshop with the California DOT on "Updating Needs for NCHRP Report 350 Guidelines—Revisited" in July. The workshop continued to promote dialogue among government officials, industry representatives, researchers, academics, and others on future directions in roadside safety.

For more than 10 years, the Committee on Freeway Operations has sponsored and organized an annual Incident Management Conference immediately before the TRB Annual Meeting, to provide guidance on establishing incident management programs. The conference has been updated and refined to offer new perspectives from enforcement personnel, fire fighters, and medical personnel. The committee's Incident Management Conference Task Force will continue the effort, also addressing another critical issue, congestion.



The 81st Annual Meeting's "Spotlight on Security and Recovery" offered more than 30 events showcasing developments in transportation security and critical infrastructure protection. Members of the panel on Security Within the Nation's Aviation System (from left): Anthony Vacchione, Skidmore, Owings, & Merrill Architects; Saleh Mumayiz, The MITRE Corporation, presiding; James A. Wilding, Metropolitan Washington Airports Authority; Billie Vincent, Aerospace Services International, Inc; James Underwood, U.S. DOT; and Paul Busick, FAA.



At the 27th Annual Summer Ports, Waterways, Freight, and International Trade Conference in Pittsburgh, Pennsylvania, a panel of Southern African transport providers, policy makers, and shippers shared challenges and opportunities in managing the efficient movement of cargo within the Southern African region and in trade with the United States.

Many of the committees in the Users and Vehicles Section list the critical issue of safety as a major area of activity. These include the committees on Pedestrians; on Safety Data, Analysis, and Evaluation; on Alcohol, Other Drugs, and Transportation; on Bicycling; and on Motorcycles and Mopeds, plus a new committee working on truck and bus safety issues.

The Committees on Emerging Technology Law and on Contract Law are reviewing contract and insurance requirements to enhance safety on public projects, including the use of railroad property, in the context of new technology.

The Committee on Aircraft–Airport Compatibility has identified a research need for safe area requirements to accommodate the new large aircraft, such as the A380, expected to enter service in a few years. The committee also sponsored a session at the 2002 TRB Annual Meeting on using lidar (laser light radar) and geographic information systems (GIS) technology to improve the survey and management of obstructions around airports.

The Committee on Transit Fleet Maintenance has hosted web-board discussions on brake retarders and antilock brake systems and on safety concerns about alternative fuels and proper brake rebuilding. Maintenance staff also use the web board to post questions about new products that involve safety.

Congestion

The demand for passenger travel and freight movement is straining the capacity of the U.S. transportation system.

Research on congestion is the mainstay of the Highway Capacity and Quality of Service Committee. The committee promotes and develops tools for estimating the magnitude and extent of congestion and is investigating microsimulation to improve estimates of congestion and of its impacts.

The Committee on Passenger Travel Demand Forecasting examines the activity and travel patterns of individuals and households addressing changes in travel patterns due to changes in sociodemographics, land use, and transportation system characteristics. The committee also examines the responsiveness of travelers to transportation policy actions directed at alleviating traffic congestion and improving air quality. The committee sponsored or cosponsored several sessions on travel

forecasting and demand management at the 2002 TRB Annual Meeting.

As congestion becomes a problem in more locations, access management can provide relief, increasing the throughput of traffic by diminishing conflicts, separating turning vehicles from through vehicles, and other strategies. Extensive research has yielded a wealth of techniques for delaying the need to widen highways. The *Access Management Manual*, generated through the work of the Committee on Access Management and scheduled for publication in 2003, describes these techniques in detail.

A recurrent theme in program panels sponsored by the Committee on Emerging Technology Law is the integration of new technology into intelligent transportation systems (ITS), to improve systems operations and capacity management for public and freight transportation. The focus is on using technology to provide data that will enhance incident management, advise travelers about weather and incidents via advance traveler information systems, and assist in the efficient management of urban and rural transportation networks.

The Committees on Environmental Issues in Transportation Law and on Eminent Domain and Land Use also are working on panel presentations covering technology and GIS applications to meet the challenges of environmental and right-of-way issues.

Sponsored by the Committees on Aviation Economics and Forecasting and on Light Commercial and General Aviation, the 12th International Workshop on Future Aviation Activities, September 18–20, 2002, addressed future demand for aviation services. Information from the workshop findings will be presented in a review session after the working group meetings, at the 2003 TRB Annual Meeting, and in a web circular.

Better forecasts of aviation activity are needed to refine infrastructure investment and inform decisions about product development. In the public sector, however, relatively little information is exchanged about alternative forecasting methodologies. Many forecast bibliographies pick up reports from the public domain, most of which describe Federal Aviation Administration (FAA) and other well-documented approaches. The approaches of corporations or consultants are rarely seen by a broader audience. The Committee on Aviation Economics and Forecasting is preparing a web circular, *Review of Aviation Forecasting*

Methodologies, to provide a larger audience with brief descriptions of less visible, predominantly private-sector methodologies.

At the 2002 Annual Meeting, the committees on Intercity Rail Passenger Systems, Electrification and Train Control, Guided Intercity Passenger Transportation, and Commuter Rail Transportation sponsored an all-day workshop on railroad capacity and corridor planning. The workshop provided background and guidance for public-sector planners on railroad corridor planning, including techniques for analyzing the capacity of joint passenger and freight operations. Many public agencies are planning new or expanded intercity and commuter rail operations on privately-owned freight rail lines even as freight traffic increases. Future presentations of the workshop material are likely at other venues, to provide the information to a wider audience. This activity also addresses the critical issue of institutional constraints.

The Committees on Inland Water Transportation and on Ports and Channels cosponsored a 2002 Annual Meeting workshop on the Marine Transportation System (MTS) and are planning a 2003 Annual Meeting workshop on MTS Research Needs, including such topics as harbor and waterways capacity and congestion.

Environment

Worthy environmental goals and values pose serious challenges to the operation and expansion of transportation facilities to meet growing demand.

In March 2002, TRB conducted the Conference on Environmental Research Needs in Transportation in Washington, D.C. For the first time, this conference—the third in a series—was multimodal, producing a series of research needs statements with priorities across a range of environmental topics.

A new Committee on Environmental Impact of Aviation was established in 2002 from a task force that has addressed environmental obstacles to air carrier airport development. The committee has sponsored sessions to consider “footprint” impacts—for example, on wetlands and special-status species—but has focused on operational impacts, such as noise and air quality, as the most technically complex and the most controversial effects of major airport development. The committee has continued regular updates

of the *Environmental Handbook*, a project to collect, inventory, and publish on the committee’s website current topical information on basic and applied research, assessments, environmental documentation required by the National Environmental Policy Act and state statutes, and court cases relating to U.S. airport development.

The Task Force on Transportation Needs for National Parks and Public Lands is planning presentations and discussions at a 2003 midyear meeting at the San Francisco Bay National Wildlife Refuge on issues facing urban parks and public lands, involving environment, congestion, and institutional constraints. The committee is working on articles for *TR News* on transportation innovations in the national parks.

The Marine Board and TRB marine committees—Inland Water Transportation, Ports and Channels, and Ferry Transportation—have hosted events and sessions on marine environmental issues, such as air emissions from vessels, the introduction of nonindigenous species through ballast water, and environmental challenges associated with dredging. In addition to sessions at the Annual Meeting and the Annual Summer Ports, Waterways, Freight, and International Trade Conference, the Marine Board hosted a roundtable on marine recreation and tourism, and is planning a series of regional workshops in 2003, focusing on associated transportation and environmental issues. The Marine Board also is considering cosponsorship of an August 2003 symposium on marine environmental issues, for which a call for papers has been issued.

Aging Infrastructure

The aging transportation infrastructure must be rebuilt, but the costs involved exceed revenues.

The concept of perpetual pavements—extending the life of pavements beyond 50 years—is gaining acceptance in the United States. Only periodic surface restoration is necessary once the pavements are constructed. Recent explorations of this subject include a 2002 Annual Meeting workshop and a circular sponsored by the Committee on General Issues in Asphalt Technology and a web circular synthesizing the latest technology on durable concrete, sponsored by the committees in the Concrete Section. Upcoming pavement conferences include the 6th International Pavement Management Conference in Brisbane, Australia,



Standing committees have promoted innovative approaches to long-lasting pavements. Perpetual asphalt paving is an example: in 1993, after 26 years of service, New Jersey I-287 appeared to be in terminal condition (top); the top 4 inches of surface were replaced and the roadway remained in good condition 7 years later (bottom).



Practitioners need more non-destructive testing methods, like ground-penetrating radar, used to locate subsurface obstructions.



AAA Foundation for Traffic Safety

Research on the safety and mobility of older drivers presents approaches to improving signals and signage and increasing visibility of highway infrastructure and vehicles.

October 2004, organized by the Subcommittee on International Conferences on Managing Pavements.

The use of nondestructive testing methods to evaluate subsurface conditions for rehabilitation, maintenance, reconstruction, or new construction of transportation infrastructure is gaining interest in the public and private sectors. To provide a dialogue between practitioners and researchers, Division A has created Subcommittees on Geophysics and on Abandoned Underground Mines along transportation corridors. In addition, TRB cosponsored the Geophysics 2002 conference in April, joining with the Federal Highway Administration (FHWA) and California DOT.

TRB also cosponsored the Third National Seismic Conference and Workshop on Bridges and Highways, April 28–May 1, 2002, in Portland, Oregon. Several of the steering committee members were chairs or members of committees in the Structures Section. The conference and workshop subjects included the retrofit and rehabilitation of structures to meet seismic design requirements. Future structures conferences include the 6th International Bridge Conference in San Antonio, Texas, April 2005, to be organized by a task force of members from committees in the Structures Section.

Research and technology development is essential for protecting transportation substructures from the effects of scour. The Subcommittee on Scour Research is providing a venue for technology transfer. The subcommittee also participated in the First International Conference on Scour of Foundations in November 2002.

Many transportation assets are under local government jurisdiction. To address local concerns and to highlight advances in all aspects of low-volume roads, TRB is organizing the 8th International Conference on Low-Volume Roads, June 22–25, 2003, in Reno, Nevada. Low-volume roads pose different problems from those of high-traffic roads, and this conference provides technology transfer to local governments. In addition to the conference, the Committee on Low-Volume Roads is also planning a session at the 2003 TRB Annual Meeting on Design and Maintenance of Low-Volume Roads and Unpaved Roads.

In January 2001 and 2002, the Committee on Railway Maintenance conducted workshops on track maintenance planning and on railroad infrastructure maintenance management. The workshops introduced the state of

the art in track infrastructure maintenance management, illustrating the applications. The management systems are recent developments in the rail industry but are gaining importance as tools for maximizing access to heavily used rail lines with limited availability for maintenance work. A similar workshop convened in September 2002 during the Annual Conference of the American Railway Engineering and Maintenance of Way Association.

The Committee on Aircraft–Airport Compatibility has a liaison membership on the Airport Subcommittee of the FAA Research, Engineering, and Development Advisory Committee, charged with recommending future research on airports and airport pavements. The committee also cosponsored a 2002 Annual Meeting session with the Subcommittee on Airport Pavement Management to prepare innovative methods for improving the evaluation and management of aging airport pavements.

The Committee on Inland Water Transportation developed the July–August 2002 *TR News* theme issue on inland waterways. The articles collectively serve as a primer on inland waterway infrastructure and related issues.

Aging Population

An aging population poses special safety and mobility challenges.

The work of the committees on Accessible Transportation and Mobility and on Safe Mobility of Older Persons focuses on the needs of elderly and disabled persons. The conclusions in several European publications plus results from conferences and state planning activities—such as the California Task Force on Older Adults and Traffic Safety—inform ongoing discussions about future research needs and implementation in the United States. Conference Proceedings 27, *Transportation in an Aging Society: A Decade of Experience*, scheduled for publication in 2003, includes several papers on a range of older driver issues.

The Committee on Paratransit took the lead in coordinating a Joint TRB Committee Caucus in conjunction with the National Conference on Aging and Mobility, held in Scottsdale, Arizona, in March 2002. More than 40 persons attended the caucus, including members of the four committees: Rural Public and Intercity Bus Transportation, Accessible Transportation and Mobility, Major Activity Center Circulation Systems, and Safe Mobility

of Older Persons, along with representatives of the American Association of Retired Persons, Easter Seals Project Action (ESPA), the Community Transportation Association of America, and the American Public Transportation Association. ESPA provided 10 scholarships for members of the TRB committees to attend the conference and the Joint Caucus meeting. The caucus refined research problem statements aimed at improving public transit access and use by senior citizens, submitting four research problem statements to the Transit Cooperative Research Program and ESPA.

The web board of the Committee on Transit Fleet Maintenance has hosted an active discussion on wheelchair securement and lift maintenance.

The Committee on Visibility has taken the lead in ensuring that the transportation system is prepared for accommodating the special needs of a rapidly growing cohort of older travelers. Engineering and research initiatives have demonstrated that improved visibility treatments can compensate for many of the sensory and cognitive impairments typical of old age. Members of the committee have produced or been involved in much of this work.

Several TRB committees contributed to changes in the *Manual on Uniform Traffic Control Devices* that will improve the legibility of traffic signs for older drivers and pedestrians. These committees are continuing to investigate and promote many additional opportunities for optimizing the safety and mobility of older travelers through improved visibility of highway infrastructure and vehicles.

The Committee on Operational Effects of Geometrics also addresses the need for highway designs that accommodate the limitations of aging drivers. The committee's July 2002 midyear meeting included presentations on geometric design policies adapted to the needs of older drivers.

Institutional Constraints

Current institutional arrangements constrain the orderly development, operation, and coordination of the U.S. transportation system, including facilities, modes, and services.

The Division A Council initiated a revision of its organizational structure to improve the coordination and cooperation of standing committees across modes and disciplines. After examining the traditional alignment of

committees by group and section and considering various options, the Council has advanced a series of recommendations for consideration and action in 2003.

In 2002, the Committee on Transportation Systems Management expanded its scope to include operations. The reconstituted Committee on Regional Transportation Systems Management and Operations addresses ways to maximize transportation system performance in metropolitan areas, including coordinated and integrated decision-making approaches to operations and the harmonization of operations with planning, construction, preservation, and maintenance of transportation facilities.

The committee has established a joint subcommittee with the Committee on Strategic Management to examine regional organizations or entities that could address operations and the coordination of transportation services. Activities included cosponsoring a workshop at the 2002 Annual Meeting on the creation and use of regional operating organizations. In addition, a Subcommittee on Planning for Operations has initiated an effort to develop a list of elements that metropolitan areas should consider in developing a regional concept of operations.

These activities have built on work by the Committee on Strategic Management, leading to an NCHRP Synthesis Project that conducted a scan on partnering and relationship building by organizations across the United States. Findings from the scan were presented at the 2001 TRB Annual Meeting and at the 2001 AASHTO Annual Meeting.

The Statewide Data Committee and ITS Committee are sponsoring a workshop on Data Linkages for Planning and Operations at the 2003 Annual Meeting, to bridge the gap between ITS operators and the transportation data community. The workshop will focus on the use of operations data for other transportation delivery functions from the perspectives of both the operations and the data communities and will establish future opportunities to continue the dialogue.

The committees on Freeway Operations and Traffic Signal Systems have cosponsored a series of conferences on integrated traffic management systems (ITMS), with the most recent in June 2001. ITMS coordinates the operation of freeway management and traffic signal systems as well as other transportation management systems. A planning group that includes TRB, ITS America, FHWA, AASHTO,



Gordon Proctor, Ohio DOT, welcomes participants to 15th National TRB Rural Public and Intercity Bus Transportation Conference, Fundamental Connections: Thinking Outside the Bus, in Huron, Ohio, in October.



The Midwest Regional University Transportation Center at Marquette University hosted the Conference on Issues in Transportation Diversity; the agenda included recruitment strategies.

and the Institute of Transportation Engineers is planning the next ITMS conference, to examine ways to apply the integration that occurs during special events—for example, at the Olympic Games—to day-to-day activities. This conference will convene a larger group of stakeholders, including representatives from nontransportation agencies.

The TRB 15th National Rural Public and Intercity Bus Transportation Conference, “Fundamental Connections: Thinking Outside the Bus,” was held in Huron, Ohio, October 27–30, 2002. Organized by the Committee on Rural Public and Intercity Bus Transportation and cosponsored by Ohio DOT and the Federal Transit Administration, the conference addressed such key topics as small system management, intercity bus transportation, rural transit policy making, quality of service, the changing face of rural America, and managing technology.

Finance

The financing of publicly provided transportation infrastructure is not adequately matched to use or need.

The mission and strategic plan of the Committee on Taxation and Finance directly support solutions to the critical issue of financing publicly provided transportation infrastructure. The committee has taken a lead role in planning a series of National Transportation Finance Conferences, bringing together representatives of the public and private sectors in a national forum to address innovative approaches to financing transportation projects. The first conference was held in Dallas, Texas, in April 1997, and the second in Scottsdale, Arizona, in August 2000. The third national conference met in October 2002 in Chicago.

For five consecutive years, the committee also has cosponsored an Annual Meeting workshop with FHWA on transportation finance. The workshops have focused on innovative approaches to financing the nation’s surface transportation system. The committee has supported and provided input to an NCHRP project panel and a contractor for the rollout of the Innovative Finance Clearinghouse.

In addition, the committee is developing a compendium of research needs in transportation finance and will work with AASHTO’s Transportation Finance Subcommittee to pur-

sue NCHRP funding for the highest-ranked topics. The committee also will align future Annual Meeting sessions to cover the areas identified for research.

After a Chief Executive Officers Conference in 2000 identified critical research needs for state DOTs, the Committee on Strategic Management developed an NCHRP Synthesis project on program financing and the innovative finance mechanisms employed around the nation. The scan was presented at the TRB Annual Meeting and at the AASHTO National Conference in 2001.

The Subcommittee on Pricing, a joint subcommittee of three standing committees, is sponsoring an International Conference on Value Pricing, to be held in Florida in 2003. The conference will address the ramifications of pricing in the political and financial arenas and on traffic congestion.

Human Resources

Transportation organizations are having difficulty attracting and retaining the technically diverse personnel needed in the 21st century.

The Division A Council has undertaken efforts to attract more young and diverse individuals to participate on TRB standing committees. All first-time attendees and those under the age of 30 were invited to a special welcoming session and reception at the TRB Annual Meeting to gain acquaintance with TRB, its leadership, and opportunities for involvement in standing committees. Each attendee received follow-up correspondence from TRB encouraging further involvement. In addition, TRB is working with organizations representing students and minorities in transportation to solicit involvement. One objective is to attract students and others to careers in transportation.

The 2000 Chief Executive Officers Conference also prompted the Committee on Strategic Management to develop an NCHRP Synthesis project on workforce development strategies. The scan was presented at the TRB Annual Meeting and at the AASHTO National Conference in 2001.

Since 1999, the Committee on Transportation Education and Training has sponsored an annual forum to address education and training for a changing transportation workforce. The topics have included responding to the changing needs of the profes-



One of the ways that the Division A Council highlights opportunities for young individuals to become active within TRB is by offering a special welcome session and reception at the Annual Meeting.

sion, innovative tools for identifying and delivering training for transportation practitioners, training that matters, using techniques that work with adults, and e-learning. A fifth forum is planned for the 2003 TRB Annual Meeting on internships and mentoring in transportation. The committee also cosponsored a conference, “Issues in Transportation Diversity,” at Marquette University, Milwaukee, Wisconsin, September 23–24, 2002.

Human resources has been an issue for the Design and Construction of Transportation Facilities Group since the completion of the Interstate system. A task force identified human resources as a high-priority research and development need in the field of engineering almost 25 years ago. As people became unavailable or lost interest in engineering, the committees have searched for ways to work effectively and efficiently with fewer people.

Recognizing that the public and private sectors are having difficulty attracting and retaining technically qualified personnel, the committees on geotechnical engineering have initiated a workshop series showcasing Doctoral Student Research in Transportation Geotechnics at the TRB Annual Meeting. The workshop provides a forum for a new generation to showcase expertise and gain familiarity with opportunities in the transportation arena.

The Committee on Traffic Control Devices has recognized that agency personnel today are not remaining in traffic control positions as long as previous generations had. As a result, traffic control device expertise is more limited than it was in the past, and guidelines and technical information must be more thorough and address an ever-increasing number of situa-

tions. A good example of this expansion is the millennium edition of the *Manual on Uniform Traffic Control Devices*, which expanded to 1,000 pages—a 100 percent increase. Many TRB committee members participated in the manual’s preparation. The greater detail of the expanded documents can reduce the need to rely on engineering judgment in addressing various technical challenges.

The Committee on Transit Fleet Maintenance is drafting a paper on public-sector pay scales as a barrier to recruitment for transit maintenance.

A planning workshop convened by the Marine Board in 2001 provided the groundwork for a fast-track study in 2002 on naval engineering research and education (TRB Special Report 266, *Naval Engineering: Alternative Approaches for Organizing Cooperative Research*), including an examination of the outlook for the marine engineering and naval architecture professions.

Impact of Telecommunications

Telecommunications and information technologies are likely to have significant but uncertain consequences.

The Committee on Telecommunications and Travel Behavior has published papers in recent years expanding its scope beyond the topics of telecommuting and the interrelations of spatial location, energy consumption, and air quality to a range of telecommunications applications—such as online shopping—and the general relationships between travel and communications. Committee members are active in

research in these areas, as well as in practical efforts to expand the use of telecommunications as an alternative to physical travel.

The Committee on Intelligent Transportation Systems conducted a National Conference on Roadway INFOstructure, August 21–23, 2002, at the National Academies' Beckman Center in Irvine, California. Participants explored how the Roadway INFOstructure concept can meet information needs in operating the surface transportation system. The program included a series of invited white papers and presentations from industry experts, as well as intensive, interactive workshop discussions.

The Committee on Highway Capacity and Quality of Service has developed and is refining capacity analysis methodologies that take advantage of field-office telecommunication to improve monitoring and operation of the transportation system.

New spatial data, tools, and technologies are enhancing and streamlining transportation program delivery in many parts of the country. The Committee on Statewide Data sponsored a Peer Exchange on Using Spatial Data, Tools, and Technologies to Improve the Delivery of Transportation Programs, March 23–24, 2002. The peer exchange identified the kinds of spatial data tools and information that are most effective for multimodal transportation programs.

Barriers to Innovation

Transportation faces formidable barriers to innovation, which are compounded by growing constraints on research investments.

The Committee on Intercity Rail Passenger Systems is addressing the lack of funding for research on innovative passenger rail systems. The committee sponsored a planning meeting in April 2001 to explore potential funding sources. Committee members also gave a presentation on the need for passenger rail research at the March 2002 meeting of the AASHTO Standing Committee on Rail Transport (SCORT). The committee will work with

SCORT to improve understanding of the social, economic, and technical dynamics of rail passenger innovation.

The Highway Capacity and Quality of Service Committee has identified a barrier to innovation in its work—a lack of experts on the committee outside the relatively narrow range of the *Highway Capacity Manual*. The committee is launching initiatives to improve access to the expertise of other TRB committees to aid in developing innovative improvements to the *Highway Capacity Manual*. The committee's transit subcommittee is an example of outreach to another committee to fill a gap in expertise.

The Committee on Tort Liability and Risk Management is working with AASHTO and FHWA on a document covering flexibility in design. The prevailing opinion is that engineers avoid design flexibility because of concerns about exposure to lawsuits. Design and signing committees in TRB and AASHTO are continuing outreach to facilitate the removal of barriers raised by the fear of tort liability.

Community Forum

In addition to the initiatives described, most Division A standing committees have sponsored meeting sessions addressing the critical issues in transportation identified by the TRB Executive Committee. The standing committees will continue to provide a forum for the transportation community to identify the research needed to address and resolve these issues and to discuss and disseminate research results and experiences.

STAFF NEWS

- Claire Felbinger has assumed the responsibilities of Administration and Policy Specialist. Previously she was Associate Professor of Public Administration and Chair of the Department of Public Administration at American University, Washington, D.C.



Martin Wachs

Chair
Subcommittee on
Planning and
Policy Review

Stephen R. Godwin

Director
Studies and
Information Services

Division B



STUDIES AND INFORMATION SERVICES

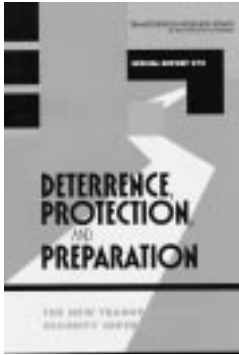
The Studies and Information Services Division (Division B) conducts policy studies at the request of the U.S. Congress, executive branch agencies, states, and other sponsors; operates a bibliographic database of completed research and provides library reference services; and produces syntheses of current practices in highway and transit operations.

Policy Studies

With guidance from committees drawn from the nation's leading experts, TRB's Policy Studies group produces reports examining complex and controversial transportation issues. Studies cover all modes of transportation and a variety of safety, economic, environmental, and research policy issues. Roughly 20 projects are under way at any given time, engaging approximately 300 volunteer experts to serve on the study committees. The Subcommittee on Planning and Policy Review provides oversight for TRB's policy work and is chaired by Martin Wachs, Director of the Institute of Transportation Studies, University of California, Berkeley. All policy study reports completed since 1998 are posted on the TRB website, www.TRB.org/.

The Policy Studies group celebrated its 20th anniversary by producing the largest-ever

number of reports in a single year. Several of these were the culmination of long-term projects in response to Congressional requests in the Transportation Equity Act for the 21st Century (TEA-21). Others were completed within a few months in response to urgent issues. For example, working with other units in the National Academies, TRB contributed to a fast-track, high-visibility report on the role of science and technology in countering terrorism. The transportation chapter, authored by a panel of transportation and security experts chaired by Mortimer Downey, former Deputy Secretary of the U.S. Department of Transportation (DOT), also has been published separately as TRB Special Report 270, *Deterrence, Protection, and Preparation: The New Transportation Security Imperative*.



Special Report 270, *Deterrence, Protection, and Preparation: The New Transportation Security Initiative*, which proposes new strategies for combating terrorism in transportation, was prepared as part of a larger National Academies report delivered to the White House Science Adviser.

Reports for Congress

In 2002, the Policy Studies group delivered four studies requested in TEA-21 by the surface transportation authorizing committees. These reports were completed in time for use in developing reauthorization legislation in 2002 and 2003. Also completed was a report for the appropriations committees, about consumer information on motor vehicle rollover risk.

Special Report 264, *The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience*



A committee chaired by Martin Wachs examined whether projects funded by the Congestion Mitigation and Air Quality (CMAQ) Improvement Program are cost-effective compared with other strategies for reducing pollution and congestion. The evidence was limited and insufficient to support a quantitative nationwide evaluation.

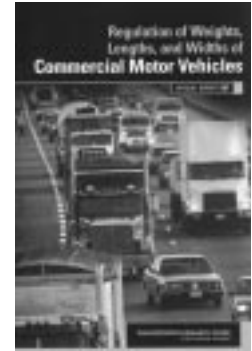
The committee suggests that, in terms of emissions reduced per dollar spent, approaches that aim directly at emission reductions—such as new vehicle emission standards or vehicle scrappage programs—are more successful than most CMAQ strategies, which rely on changes in travel behavior.

Because the program focuses on air quality and has the potential to demonstrate how well different transportation strategies perform to reduce emissions, the committee recommends retaining the CMAQ program with stricter evaluation requirements.

Special Report 267, *Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles*

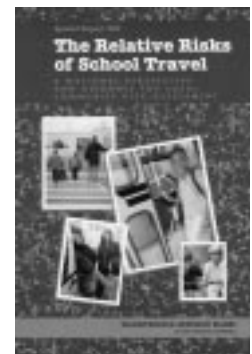
A committee chaired by James Poirot, Chairman Emeritus of CH2M Hill, reviewed federal laws and regulations concerning commercial trucks. The study committee found that a rational approach to vehicle dimensions has been stymied by inadequate information about safety. The committee recommends therefore that Congress charter a new, independent organization to work with industry and government to evaluate new vehicle configurations and highway manage-

ment practices to improve safety. More controversial is the endorsement of recommendations from earlier TRB studies that would allow states to permit the operation of six-axle, 90,000-lb tractor-semitrailers and twin trailers up to 33 ft in length, if the operations are closely monitored and appropriate fees are recovered.



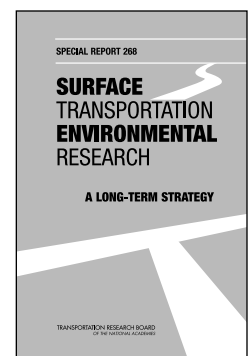
Special Report 269, *The Relative Risks of School Travel: A National Perspective and Guidance for Local Community Risk Assessment*

A committee chaired by H. Douglas Robertson of the University of North Carolina's Highway Safety Research Center examined the risks associated with various modes of transportation for students traveling to and from school. The committee's key finding is that, on a per-mile basis, bicycles are the mode with the highest injury and fatality rate, followed by walking and then by private vehicles with teenage drivers. The rates for private vehicles driven by adults are about one-eighth of those for vehicles driven by teenagers. School buses and other buses have by far the lowest injury and fatality rates.



Special Report 268, *Surface Transportation Environmental Research: A Long-Term Strategy*

In TEA-21, Congress authorized the creation of a surface transportation environmental cooperative research program guided by an independent advisory board. Although the program was authorized, funding was not provided. The Federal Highway Administration and the Federal Transit Administration requested a study to assist in carrying out



POLICY STUDIES PROGRAM

20 Years in the National Arena

In 1982, in response to internal directives and external interest, TRB expanded its activities to undertake policy studies on issues of national importance in transportation. The venture into the policy arena began with five studies mandated by Congress that same year. Since then, the Board has conducted more than 70 policy studies at the request of Congress, executive branch federal agencies, the states, and other organizations, covering an array of complex and often controversial transportation topics.

In the past two decades, TRB policy study reports have provided thoughtful, impartial advice to decision makers on difficult issues—ranging from the economic and safety effects of airline deregulation to increases in truck size and weight—and have offered expert assessments of research efforts, including peer reviews of federal research and development programs in the various transportation modes, as well as strategic overviews of the research needed in key areas. The idea for a Strategic Highway Research Program stemmed from one of TRB's first policy studies, and another study committee's recommendation took shape as the Transit Cooperative Research Program.

TRB has tapped the nation's leading experts in transportation and related fields to conduct the policy studies, which (a) assess the technical bases for policy and regulatory decisions across transportation modes; (b) analyze the potential effects of transportation policy alternatives on mobility, safety, the economy, and the environment; and (c) review specific research and development programs. Topics addressed in individual studies include counterterrorism, speed limits, highway design, truck size-and-weight issues, airport capacity, transit use, high-speed rail, airline deregulation, dredging, environmental policy, school transportation safety, and automotive safety.

Each policy study is conducted by a specially appointed, independent committee. Members are selected to provide appropriate expertise and a balance of perspectives, serving without compensation. The committee process is open to public scrutiny and comment, in accordance with the provisions of the Federal Advisory Committee Act Amendments of 1997. Final reports undergo rigorous institutional review, including examination by outside experts, in accordance with National Research Council guidelines to ensure balanced and fair assessment.

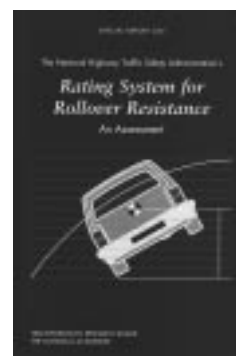
the requirements in TEA-21. The committee, chaired by Elizabeth Deakin of the University of California at Berkeley, identifies research to address and inform vital public policy debates about the impacts of surface transportation facilities and operations on the human and natural environment. The report points out major gaps in knowledge that could be filled through a cooperative program of research involving federal agencies, states, and environmental organizations.

Special Report 265, *The National Highway Traffic Safety Administration's Rating System for Rollover Resistance: An Assessment*

In response to a congressional request, a committee chaired by David Wormley of Pennsylvania State University was formed to

evaluate the rollover resistance rating system developed by the National Highway Traffic Safety Administration (NHTSA). The report endorses use of the static stability factor as a key element in NHTSA's consumer information

on rollover. However, the committee urges NHTSA to use a more rigorous and thorough approach in developing and evaluating revisions to consumer information and recommends that the agency develop dynamic tests to assess transient vehicle behavior leading to rollover.



Reports for the Executive Branch

Full-length studies also were completed for NASA and the U.S. Navy. In addition, letter reports conveyed findings of studies to provide peer review of the research activities of the Federal Railroad Administration (FRA), the Bureau of Transportation Statistics (BTS), the Federal Motor Carrier Safety Administration (FMCSA) and the U.S. DOT's Intelligent Transportation Systems Joint Program Office.

Special Report 263, *Future Flight: A Review of the Small Aircraft Transportation System Concept*



H. Norman Abramson, Executive Vice President Emeritus, Southwest Research Institute, chaired a committee to evaluate the efficacy of the Small Aircraft Transportation System (SATS) concept as a guide for NASA in developing

technology for the next generation of small aircraft. NASA envisions SATS aircraft operating safely at airports that lack air traffic control, in low-visibility conditions, and in complex airspace. SATS aircraft are expected to become an important complement to intercity travel by commercial carriers and by automobile to rural destinations.

Although individual technologies appear promising, the committee finds that the SATS concept relies on implausible assumptions about travel demand and environmental impacts. Therefore the committee encourages NASA to work with other federal agencies and industry to focus the SATS effort on safety-enhancing technologies for general aviation.

Special Report 266, *Naval Engineering: Alternative Approaches for Organizing Cooperative Research*

At the request of the Office of Naval Research (ONR), the TRB Marine Board convened a committee chaired by Richard Seymour of Scripps Institution of Oceanography to investigate and evaluate alternative approaches for structuring cooperative research programs in naval engineering. ONR seeks to stimulate research and products providing “total ship design” and to cultivate designers who can use this approach for complex warships. In a fast-

track study completed within six months, the committee evaluated four approaches to structuring a cooperative research program and provided assessments of each option in terms of ability to (a) balance the perspectives of the various stakeholders—the Navy, the shipbuilding industry, and universities—in developing a research agenda, (b) produce useful research, and (c) attract students into the field.



Review of the Federal Railroad Administration's Research, Development, and Demonstration Programs

At the request of FRA, TRB convened a committee, chaired by Alan Bing of ICF Consulting, to review the agency's research and development programs. In 2002, the study's scope expanded to include review of FRA's management of the Magnetic Levitation (Maglev) Technology Deployment Program, and the committee's initial letter report offers several recommendations.

In research programs, FRA should conduct an ongoing review of emerging issues within the railroad industry; continue to explore the efficacy of performance-based safety regulations; and focus on primary causes of incidents, identifying ways to improve incident data. The highest priority for the incremental high-speed development program should be to complete the work on positive train control systems. According to the committee, FRA should postpone an in-depth environmental impact analysis of the maglev program until completion of investment-grade revenue estimates and refined financial analyses for each project.

Review of the Bureau of Transportation Statistics Survey Programs

A committee chaired by Joseph L. Schofer, Northwestern University, is reviewing the BTS survey programs in the context of transportation data needs for policy, planning, and research and in terms of the characteristics and functions of an effective statistical agency. In its first letter report, the committee reviews the National Household Travel Survey, which combines the former National Personal Trans-

portation Survey on daily travel and the American Travel Survey on long-distance travel within the United States.

The committee identifies opportunities for BTS to increase the value of the personal travel surveys for a range of users and to improve the quality of the data. The committee recommends that BTS consider developing a family of personal travel surveys that differ in content, coverage, methodology, and frequency.

The committee's second letter report reviews the BTS Omnibus Survey program. The report endorses the conduct of regular opinion surveys as a service to U.S. DOT but recommends several measures for BTS to take to safeguard the Omnibus program as an independent source of high-quality data. In 2003, the committee will issue a third letter report on the Commodity Flow Survey, followed by a report on crosscutting issues for the BTS survey programs.

Review of the Large Truck Crash Causation Study

At the request of the FMCSA, a TRB committee chaired by Forrest Council, University of North Carolina Highway Safety Research Center, is reviewing the agency's major, multiyear study on the causes of crashes involving large commercial trucks. Congress required the FMCSA study to develop the most cost-effective strategies for reducing the mortality associated with truck crashes. Approximately 5,000 fatalities and 130,000 severe injuries result each year from crashes involving large trucks.

The committee is advising FMCSA on the study's design, sampling, and data collection; the interpretation of pilot test results; and the conclusions that can be drawn from the preliminary results. The committee's 2002 letter report urges FMCSA to finalize a plan for the analysis and to complete development of procedures and protocols for data collection and interpretation.

Review of the U.S. DOT Intelligent Transportation Systems (ITS) Standards Program

A committee chaired by Jonathan L. Gifford, George Mason University, has been asked to review the ITS Standards Program, particularly the program's role in achieving widespread adoption of standards in practice. In two letter reports completed in 2002, the committee reviews some of the major impediments to the application of standards, such as

(a) the slow migration to new technologies, because state and local governments have invested substantially in earlier, nonstandard systems; (b) lack of tests and criteria to assure that new products meet the standards; and (c) lack of sufficient market demand to encourage rapid adoption of some standards.

The committee recommends establishing a laboratory for independent validation and verification and suggests other mechanisms to develop tests and sample specifications. Program staff also should consider offering incentives for the early adoption of technology that incorporates standards, because early adopters often encounter discrepancies and then bear the cost of trying to correct the problems. A new standard for sending digital short-range communications at 5.9 GHz has made good progress, and the program could facilitate deployment through a marketing plan demonstrating the potential for products and services.

Other Completed Reports

The TRB Executive Committee occasionally initiates a policy study on an important topic that may be neglected otherwise. For example, a study on freight capacity originated from concern that freight transportation needs tend to be neglected at the national and state levels.

Special Report 271, *Freight Capacity for the 21st Century*, presents findings of a committee convened to assess whether public and private infrastructure and proposed additions would be adequate to meet projected trade growth; Benjamin

Allen, Iowa State University, chaired the committee. Despite the worrisome trends, the private freight industry is dynamic and innovative and responds with agility to the inevitable bottlenecks in capacity. Historically, the characteristic American response to growth has been to move workplaces and residences away from metropolitan congestion to less congested regions, but this is no longer optimal for the economy.

The committee identifies several actions that the federal government can and should



take to maximize the efficiency of public investment in freight movement. At the national level, no measure is as consequential as the level of investment in—and the means of raising revenues for—the federal-aid highway system. Highway services are essential to the functioning of the rail, air freight, port, and waterway systems. The committee concludes that federal policy can encourage economic efficiency by maintaining and reinforcing the principles of user financing and by aligning user fees more closely with the costs of use.

Ongoing Projects for U.S. DOT

Expert committees are engaged in several policy studies in the last quarter of 2002, with reports slated for almost all of the modal administrations of the U.S. DOT. Topics include

- The merit and feasibility of an airport cooperative research program;
- The role of BTS in developing a framework for freight transportation data;
- The security of freight transportation information systems;
- A review of the Federal Highway Administration's (FHWA) research program;
- The human resource needs of surface transportation agencies;
- A review of the FMCSA truck crash causation study;

- A review of the FRA research and development programs;
- A review of the ITS Standards Program;
- A review of the Intelligent Vehicle Initiative;
- The shipboard display of Automatic Identification System information; and
- Pipeline safety.

Other Ongoing Projects

At the request of the Transportation Subcommittee of the U.S. House of Representatives Committee on Appropriations, a study has started a review of new technologies to increase safety belt use, with support from NHTSA. In September 2002, TRB received funding from the Robert Wood Johnson Foundation to review, in collaboration with the National Academies' Institute of Medicine, links established in research between physical activity, public health, transportation, and land use.

Other studies starting up include a review of the Long-Term Viability of Fuel Taxes for Transportation Finance, with partial support from FHWA and the American Association of State Highway and Transportation Officials (AASHTO). TRB's Executive Committee identified and initiated this study. TRB also is assisting other NRC units on studies of the transportation of spent nuclear fuel, the effects of road density on ecology, and long-term aeronautical research.

The relationships and interactions of roadways and wildlife ecology are the subject of Synthesis of Highway Practice 305, issued in 2002.



Transportation Research Information Services

TRIS comprises the world's largest online bibliographic database of transportation information, more than 550,000 records of published and ongoing research in all modes and disciplines of transportation. In the past year TRIS added more than 25,000 new records. The service is available on the Internet as TRIS Online through the website of the BTS National Transportation Library. TRB produces and maintains TRIS, and BTS makes TRIS accessible without charge on the World Wide Web.

TRIS Online links records to the full text of electronic documents or to direct ordering information from document suppliers. Approximately 8,100 TRIS records are linked to the full text and an additional 50,000 are linked for direct ordering through the National Technical Information Service or TRB.

TRIS also is available on the Internet for a fee through Dialog, Inc., and as part of the

TRANSPORT database—a CD-ROM product, also available on Web, produced and distributed by SilverPlatter. TRANSPORT is a cooperative effort of TRB and the International Transport Research Documentation database of the Organization for Economic Cooperation and Development.

TRB is completing the development and implementation of a new production system for TRIS, which will provide greater flexibility and improved productivity, as well as expanded services.

Research in Progress

TRB recently launched a new Research in Progress (RiP) website, rip.TRB.org/, which provides a searchable database of all 6,600 records of ongoing or recently completed research projects. Each month approximately 150 new projects are added. State DOTs can add, modify, or delete records of research through a web-based data entry system developed under National Cooperative Highway Research Program (NCHRP) Project 20-39. An awareness service—which notifies users automatically of newly posted project records in various subject areas—is also available for the RiP website.

TRB Library

The TRB Library is a small, specialized library that provides reference and information services for TRB sponsors and staff. The library contains a complete collection of TRB, Highway Research Board, Strategic Highway Research Program (SHRP), and Marine Board publications. The library maintains three searchable databases on TRB's website: the PATH Database, the RiP database, and the TRB Publications Index.

The TRB Publications Index contains 22,000 records of all authored papers, articles, and reports published by TRB and SHRP since 1974. The index allows browsing, searching via several data fields, and links from individual records to TRB's online bookstore or to the full-text electronic publication. Plans are to integrate the TRB Publications Index and the TRB Bookstore, allowing users to search and order TRB documents.

Synthesis of Practice Reports

Under the sponsorship of the Cooperative Research Programs administered by TRB, the Synthesis unit prepares reports on current practice and knowledge in key highway and

transit topics. Many practitioners and researchers rate these reports among TRB's most valuable products.

A highway committee and a transit committee of the Cooperative Research Programs annually select topics for study. Each Synthesis report is researched and written by a consultant experienced in the topic area, under the guidance of an expert panel. At any given time, more than 50 synthesis panels and their consultants are at work on individual projects. All new Synthesis reports are published electronically on the TRB website, as well as in hard copy.

Reports published during the past 12 months are listed on page 47. Examples of recently published Syntheses include

- NCHRP 301, *Collecting, Processing, and Integrating GPS Data into GIS*;
- NCHRP 305, *Interactions Between Roadways and Wildlife Ecology*;
- NCHRP 306, *Long-Term Pavement Marking Practices*;
- NCHRP 309, *Impact of Red-Light Camera Enforcement on Crash Experience*;
- TCRP 44, *Training for On-Board Bus Electronics*; and
- TCRP 45, *Customer-Focused Transit*.

The TRB website includes information on Synthesis topics under study and provides links to published Syntheses at <http://www4.trb.org/trb/synthesis.nsf/>. The website also may be used to propose new topics for study or to nominate potential topic consultants and panel members.



Jessica Fomalont, TRB Associate Librarian, fulfills research requests for TRB sponsors and staff.

STAFF NEWS

- Kris Hoellen, who had managed studies dealing with environmental regulation of dredging and environmental research, has accepted the position of Director of Environmental Programs at AASHTO.
- Susan Garbini, who managed studies in the maritime area and supported the Marine Board, is starting a new career as a teacher in California.
- Jon Williams, formerly Transportation Environmental and Management Specialist in TRB's Technical Activities Division, is now Manager of Synthesis Studies.
- Michelle Crowder is a new Program Officer in the Policy Studies group.



Dwight M. Bower
Chair
AASHTO Standing
Committee on
Research

Linda S. Watson
Chair
TCRP Oversight and
Project Selection
Committee

Robert J. Reilly
Director
Cooperative Research
Programs

Division D



COOPERATIVE RESEARCH PROGRAMS

TRB administers three cooperative 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); and
- The Commercial Truck and Bus Safety Synthesis Program, sponsored by the Federal Motor Carrier Safety Administration (FMCSA).

As of December 2002, the programs have a total staff of 35.

The Cooperative Research Programs document projects through several publications series:

- *Reports* contain the formal findings of contractor research conducted under the programs.
- *Syntheses* present state-of-the-practice information on selected topics and practices.
- *Research Results Digests* provide news of research project results.
- *Legal Research Digests* contain the findings from studies on selected legal topics.
- *Web documents*, exclusively available on the TRB website, present research results as well as material supplementing publications.
- *CD-ROMs and software* include practical tools and information in electronic media.

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 within the National Research Council (NRC) of the National Academies have enabled the program to carry out important research resulting in practical products.

Since 1962, NCHRP has administered 908 research projects. A total of 784 publications have appeared in the *NCHRP Report* and *NCHRP Synthesis of Highway Practice* series, in addition to 270 volumes of *Research Results Digest* and 47 of *Legal Research Digest*, as well as 60 other documents published electronically.

NCHRP projects for federal fiscal year 2002 were placed under contract as funds became available. Proposal solicitations for 38 research projects in federal fiscal year 2003 (October 1, 2002, through September 30, 2003) were released starting in July 2002; depending on the availability of the funding to be appropriated in federal legislation, the contracts should be executed in the first three months of 2003.

The increase in state planning and research funds under the Transportation Equity Act for the 21st Century (TEA-21) brought proportional increases in NCHRP funding. Funding available for NCHRP in fiscal year 2002 totaled more than \$31.5 million. The amount available for fiscal year 2003 is not yet known.

AASHTO considered 138 problem statements for the fiscal year 2003 program. This strong response from the states and the AASHTO committees—in terms of both quantity and quality—ensures optimal use of the authorized funds. In June 2002, AASHTO began formulating the fiscal year 2004 program and will determine the program content in March 2003.

NCHRP reports published during the past 12 months are listed on pages 47–49. A total of 187 projects were under contract as of September 1, 2002, with 94 additional projects under development or awaiting contract.

Each NCHRP study follows an approved research plan under the guidance of an advisory panel of technical specialists and experienced practitioners. The panel ensures the

credibility of the research findings, facilitating adoption by AASHTO, state departments of transportation, and other organizations. NCHRP panels convened for more than 100 project meetings in 2002; panel members contributed more than 2,000 days of volunteer time attending meetings and a comparable amount of time reviewing materials. NCHRP benefits from more than 1,700 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 specifications, manuals, and guidelines. NCHRP emphasizes working with the practitioners who will use the research results. NCHRP's close relationship with AASHTO committees is important in carrying out this goal—approximately 34 percent of the research funds for fiscal year 2003 is allocated for 23 projects requested by 11 AASHTO committees.

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

Many NCHRP projects are developing revisions to AASHTO publications at committee requests. When AASHTO adopts an NCHRP project's recommendations as a guide or specification, practitioners who might not be able to stay abreast of research results benefit from having the best information available through the AASHTO documents.

Details on the program from 1962 through 1988 can be found in *NCHRP Summary of Progress Through 1988*. Details on work since 1988 are available in *NCHRP Summary of Progress, December 31, 2002*, and on the web at www4.national-academies.org/trb/crp.nsf/.



Members of the AASHTO Standing Committee on Research meet at the National Academies Beckman Center in Irvine, California, to consider modifications to NCHRP procedures.

NCHRP studies of particular importance to AASHTO that were under way or completed during the past year include the following:

Transportation Asset Management

Under NCHRP Project 20-24(11), Asset Management Guidance for Transportation Agencies, an Asset Management Guide is nearing completion. According to the guide, asset management

begins with the top level of management working to improve decision making and the allocation of resources to address the preservation, operation, and improvement of the transportation infrastructure.

Security

Security tops the agenda of transportation agencies. The NCHRP budget has allocated

NCHRP

40 Years of Problem-Solving—and Still Going Strong

On June 19, 1962, a new program of highway research was established to address pressing problems facing state highway administrators and engineers. A three-way agreement among the National Academy of Sciences, the American Association of State Highway Officials (now the American Association of State Highway and Transportation Officials, or AASHTO), and the Bureau of Public Roads (now the Federal Highway Administration) implemented an idea conceived when work on the Interstate highway system was beginning. By pooling funds for cooperative research, states could cost-effectively find solutions to common problems through applied research.

The independence and credibility of the institution chosen to administer the new program—the Highway Research Board (now TRB)—promised that the effort would be carefully designed to ensure objective, authoritative research. The close ties to AASHTO, which has sponsored the National Cooperative Highway Research Program (NCHRP) since 1962, have ensured continued relevance and practical focus. The AASHTO Standing Committee on Research annually selects NCHRP projects, and many projects in turn provide input to the work of other AASHTO committees.

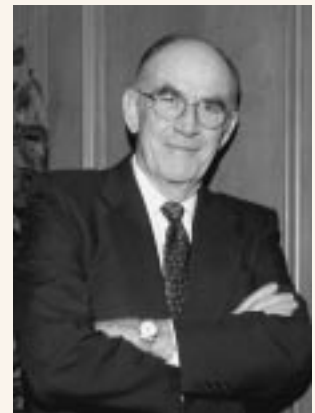
At the heart of this successful program is the project panel—a small group chosen to develop the project scope and the request for proposals, evaluate proposals, select a contractor, guide the research, and review the products. More than 1,700 volunteers currently serve on NCHRP project panels. Panel members are selected through an open, flexible process that draws on internal and external recommendations and that balances relevant expertise, striving for diversity in background, in organizational affiliation, and in geographic location.

The 1985 and 2000 editions of TRB's well-known Highway Capacity Manual incorporate the results of NCHRP research. Other examples of

NCHRP products now in widespread use include the AASHTO Guide for Design of Pavement Structures; the 2001 AASHTO "Green Book," A Policy on Geometric Design of Highways and Streets; the internationally recognized Procedures for Safety Performance Evaluation of Highway Features; and the new seismic design section of the AASHTO LRFD Bridge Design Specifications, as well as many other improvements to AASHTO bridge specifications.

At NCHRP's 25th anniversary in 1987, Thomas D. Larson, former Federal Highway Administrator and Secretary of the Pennsylvania Department of Transportation—and author of the first NCHRP report—noted that the program had become "probably the preeminent source of information for practitioners in the bridge and highway professions. . . . It derives its materials from the grass roots, from the AASHTO people in the field, and produces results in a timely way. It has earned enough credibility to place it at the top of all the research agencies in the country."

Funding for NCHRP is by annual agreement—each state contributes 5.5 percent of its State Planning and Research funds. Program funding has grown from \$2 million in FY 1962 to \$31.5 million in FY 2002. NCHRP begins its 41st year with almost 200 active projects on topics as diverse as cement manufacturing, safety, long-range planning, transportation asset management, Superpave mix protocols, and freight movement by rail.



Thomas D. Larson authored NCHRP's first report.

\$2.25 million for security research on a variety of topics. Early efforts have produced *A Guide to Highway Vulnerability Assessment for Critical Asset Identification and Protection* and *A Guide to Updating Highway Emergency Response Plans for Terrorist Incidents*. Both guides are available on the AASHTO website.

Bridges and Structures Research

NCHRP and the AASHTO Highway Subcommittee on Bridges and Structures have enjoyed a close working relationship over the years—the Subcommittee suggests problems for research and then makes use of the results. Recent publications of interest to the Subcommittee and the structural engineering community include the following:

- NCHRP Report 467, *Performance Testing for Modular Bridge Joint Systems*, presents recommended specifications for performance tests, as well as materials, fabrication, and construction guidelines and an example of anchorage design.
- NCHRP Report 469, *Fatigue-Resistant Design of Cantilevered Signal, Sign, and Light Supports*, contains guidance on design, installation, inspection, and maintenance, with recommended specifications for anchor rods.
- NCHRP Report 472, *Comprehensive Specification for the Seismic Design of Bridges*, presents recommended load and resistance factor design (LRFD) specifications for the seismic design of bridges.
- NCHRP Report 473, *Recommended Specifications for Large-Span Culverts*, includes criteria for design, construction, and installation, along with recommended specifications for flexible and rigid large-span culverts.

Economics and Congestion

Transportation has a dramatic and positive effect on the national economy, but traffic con-



Traffic signal mast-arm of the type detailed in NCHRP Report 469, *Fatigue-Resistant Design of Cantilevered Signal, Sign, and Light Supports*.



Nighttime construction and maintenance, subjects of NCHRP Reports 475 and 476, are now common on heavily traveled roads.

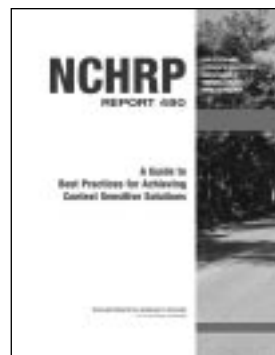
gestion can have a negative effect, especially in urban areas. NCHRP Report 463, *Economic Implications of Congestion*, examines the effects of urban traffic congestion on the business costs, productivity, and output for producers of economic goods and services.

Nighttime Construction

Preserving and upgrading the nation's infrastructure is a critical responsibility of transportation agencies. Much of this work must be performed on heavily traveled highways and can be extremely challenging. More and more work is being done at night when traffic is lighter. However, nighttime work presents new and different challenges, addressed in NCHRP Report 475, *A Procedure for Assessing and Planning Nighttime Highway Construction and Maintenance*, and NCHRP Report 476, *Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance and Construction*.

Context-Sensitive Design Solutions

In improving the safety or increasing the capacity of highway facilities, design and construction must incorporate an awareness of the surrounding natural and man-made environments and of local community values. NCHRP Report 480, *Context-Sensitive Solutions: Best Practices Guide*, highlights good practices with case-study examples.



NCHRP Report 480 contains examples of applying context-sensitive design and solutions to highway improvements.



Test apparatus described in NCHRP Report 465, *Simple Performance Test: Research Results and Provisional Recommendations*.

Pavement Design and Performance

NCHRP is completing a major effort in pavement design. Under Project 1-37A, the *AASHTO Guide for Design of New and Rehabilitated Pavement Structures* is nearing completion, assembling the best available knowledge on pavement design in a single, cohesive package of guidance and software.

Recent publications of interest to the pavement engineering community include the following:

- NCHRP Report 455, *Recommended Performance-Related Specifications for Hot-Mix Asphalt Construction: Results of the WesTrack Project*, published jointly with FHWA, provides comprehensive documentation from the WesTrack project.
- NCHRP Report 465, *Simple Performance Test: Research Results and Provisional Recommendations*, offers an evaluation of tests that measure hot-mix asphalt response characteristics.
- NCHRP Report 468, *Contribution of Pavement Structural Layers to Rutting of Hot-Mix Asphalt Pavements*, presents a recommended method for estimating the relative contributions of pavement layers to total rutting.

Transportation and the Environment

NCHRP has several projects addressing the interrelationships of transportation improvements and operations with the environment. Publications released in 2002 include the following:

- NCHRP Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, with a companion slide presentation (available online as NCHRP Web Document 43), provides practitioners with guidance and a framework for defining, analyzing, and identifying tools for estimating the indirect effects of proposed projects.
- NCHRP Report 474, *Assessing the Impacts of Bridge Deck Runoff Contaminants in Receiving Waters*, contains a process to identify, assess, and manage bridge deck runoff that may adversely affect the beneficial use of receiving waters.
- NCHRP Report 479, *Short-Term Monitoring for Compliance with Air Quality Standards*,

describes a monitoring procedure for air quality dispersion models.

Traffic Safety

NCHRP has several projects to assist in implementing the AASHTO Strategic Highway Safety Plan. Much of the work is under way through NCHRP Project 17-18, AASHTO Strategic Highway Safety Plan Implementation Support. Recent publications include the following:

- NCHRP Report 470, *Traffic-Control Devices for Passive Railroad–Highway Grade Crossings*, evaluates the effects of traffic-control devices on the behavior of drivers approaching and crossing a railroad–highway grade crossing that has no signals or gates.
- NCHRP Report 471, *Evaluation of Roadside Features to Accommodate Vans, Minivans, Pickup Trucks, and 4-Wheel Drive Vehicles*, documents the performance of widely used highway safety features and modified versions when struck by vehicles in the light-truck subclasses.

Earth Reinforcement

Concerns about the durability of the metal tensioning strips common to many earth reinforcement systems—particularly older installations—prompted NCHRP research. NCHRP Report 477, *Recommended Practice for Evaluation of Metal-Tensioned Systems in Geotechnical Applications*, provides procedures for estimating the design life of metal-tensioned systems in new geotechnical installations and for determining the condition and remaining service life of systems in place.

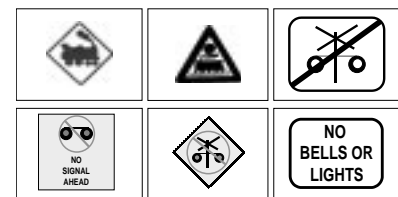
Selected Studies in Transportation Law

An update of the four-volume *Selected Studies in Highway Law* is nearing completion. The new compendium, titled *Selected Studies in Transportation Law*, will include two additional volumes on transit law. *Volume 4, Tort Liability* is the first volume to be completed and available on CD-ROM.

Continuing Projects

NCHRP supports several continuing projects that include studies both completed and under way:

- Project 20-5, *Synthesis of Information Related to Highway Problems*, produces state-of-the-practice reports.



Experimental railroad-grade crossing signs examined in NCHRP Report 470.

- Project 20-6, Legal Problems Arising Out of Highway Programs, conducts reviews of case law and publishes results in the *NCHRP Legal Research Digest* series.
- Project 20-30, NCHRP IDEA (Innovations Deserving Exploratory Analysis), funds projects to demonstrate innovative concepts or products.
- 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 international scanning tours.

Transit Cooperative Research Program

Authorized by the Intermodal Surface Transportation Efficiency Act (ISTEA) and initiated under TRB management in July 1992, TCRP was reauthorized in 1998 under TEA-21 and is supported by annual grants from FTA. The TCRP Oversight and Project Selection Committee selects 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 first 10 years, TCRP has undertaken 346 studies; of these, 283 have been completed and 63 are in progress.

TCRP receives submissions of research problem statements throughout the year and has considered approximately 1,600 since 1992. The first 121 research projects advertised by TCRP attracted a total of 882 proposals from 449 different groups—an average of 7.3 proposals per project. In late 2001, TCRP issued a call for fiscal year 2003 problem statements to more than 4,000 individuals and organizations in the transit community, emphasizing research consistent with FTA's Research and Technology Five-Year Plan and TCRP's Strategic Plan. TCRP has received and processed 81 problem statements for fiscal year 2003.

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



Ron Barnes, President and Chief Executive Officer, Central Ohio Transit Authority (*left*), and Paul Toliver, Vice President, Computer Intelligence², attend a meeting of the Transit Cooperative Research Program Oversight and Project Selection Committee. Barnes serves as Vice Chair of the committee.

progress since 1992 can be found in the December 2002 TCRP Annual Report.

TCRP panels held 42 meetings during calendar year 2002, involving approximately 500 professionals and representing more than 700 days of volunteer time. Among these were 20 panel meetings to prepare research project statements and select research agencies; 15 interim project meetings to review mid-course project status; and 7 meetings on special projects. The TCRP Oversight and Project Selection Committee also met twice.

In 2002, TCRP published 33 project reports and 1 web document. TCRP has produced a total of 234 publications: 89 *Reports*, 46 *Syntheses of Transit Practice*, 55 *Research Results Digests*, 18 *Legal Research Digests*, 21 web documents, and 5 stand-alone CD-ROMs.

Research Dissemination

Dissemination of research results remains a priority. APTA is responsible for Project J-1, Dissemination and Implementation of Research Findings; the project's mission is to disseminate TCRP materials directly to people in the transit industry. The mission has expanded to include outreach in many forms

with emphasis on the Internet and electronic communications. APTA also has expanded its outreach within the industry through the Transit Research Innovation Program (TRIP), managed by the Conference of Minority Transportation Officials; TRIP's volunteer ambassadors reach industry practitioners through personal contact in the field.

APTA also disseminates TCRP information through *Passenger Transport*, the industry's weekly newspaper, and has increased media coverage in the past year through press releases and other means. In addition, APTA

solicits research proposals; arranges for workshops, training, and field visits; conducts surveys; announces new reports and program news in *Passenger Transport*; and oversees other activities to ensure that public transportation industry practitioners receive and implement research results.

Recent initiatives include a TCRP publications catalog, distributed at conferences and other forums; a TCRP Rural Publications Catalog, describing the many rural public transportation-related TCRP projects published or under way; and a transit industry

TCRP

10 Years of Practical Research in Support of Transit

Born May 13, 1992, the Transit Cooperative Research Program (TCRP) is starting its second decade with a strong record of accomplishment. Its portfolio of new projects includes security-related research for public transportation, a human resources study of workforce development in the North American transit industry, and a geometric design guide for accommodating transit vehicles and facilities on highways and streets.

Modeled after the National Cooperative Highway Research Program (NCHRP), TCRP undertakes research and other technical activities in response to the needs of the nation's transit service providers. The vital need for the program was identified in TRB Special Report 213, *Research for Public Transit: New Directions* (1987), and TCRP was authorized under the Intermodal Surface Transportation Efficiency Act of 1991. The program was established through a tripartite agreement among the National Academy of Sciences, the Federal Transit Administration, and the Transit Development Corporation, Inc., a nonprofit educational and research organization created by the American Public Transportation Association (APTA).

Similar to the NCHRP model, an independent committee of industry representatives identifies the highest-priority projects for TCRP's research program. The TCRP Oversight and Project Selection (TOPS) Committee selects research problems, sets funding levels, and specifies expected products.

Research agency proposals compete on the basis of technical merit in an open process ensuring that all are treated fairly and that the program has access to the best talent available for each project. As in

NCHRP, TCRP panels develop project scopes and research statements, evaluate proposals, select contractors, oversee the research, and review the final products. To date, more than 230 panels have convened approximately 1,500 members—a diverse and accomplished group of professionals from transit agencies, universities, government, and the private sector.

Valued products of TCRP's first decade cover a range of subjects, including low-floor light rail vehicles, fare policies and technologies, livable metropolitan communities, track for light rail, managing the transit workforce, management of rural and small systems, bus and rail standards and specifications, and welfare to work. Research products include video presentations, software, and manuals. APTA plays a key role in disseminating the results of TCRP research and in encouraging implementation in the transit industry.

Funding for TCRP, which has been at a level of about \$8 million since the program's inception, derives from federal appropriations. TCRP is up for reauthorization in 2003 as part of the forthcoming congressional legislation to reauthorize federal surface transportation programs.



Special Report 213, *Research for Public Transit: New Directions*, identified the need for the Transit Cooperative Research Program.

survey, to determine the level of awareness, satisfaction, and use of TCRP products. TRB makes all TCRP-published reports available online through TRB's website (www.TRB.org/trb/tcrp/). In addition, APTA maintains a TCRP dissemination website (www.tcrponline.org/) for ordering or accessing documents electronically.

The following TCRP activities of particular interest to the transit community were either in progress or completed in 2002:

Bus and Rail Safety

TCRP Report 81, *Toolbox for Transit Operator Fatigue*, documents principles, techniques, and strategies for fatigue-mitigation plans. The *Toolbox* includes a how-to component on the design, implementation, and evaluation of fatigue-mitigation plans, as well as descriptions of fatigue-management programs from organizations representing all modes, and suggests a five-step approach for implementing a program. An accompanying CD-ROM provides tools to assist in the development of a fatigue-mitigation plan.

TCRP Legal Research Digest 18, *Federal and State Licensing and Other Safety Requirements for Commercial Motor Vehicle Operators and Equipment*, presents an overview of federal, state, and local laws and regulations on commercial motor vehicle safety and commercial driver licensing requirements. The Digest also provides an index of state and local safety regulations, in addition to the federal regulations for the operation of commercial motor vehicles, including school bus and transit vehicles.

TCRP Research Results Digest 51, *Second Train Coming Warning Sign Demonstration Projects*, provides the results of two demonstration projects that tested second train coming warning signs: one on the Maryland Mass Transit Administration's Central Light Rail System in Baltimore and the other on the Los Angeles County Metropolitan Transportation Authority's Blue Line.

Public Transportation Security

In late 2001, the TCRP Oversight and Project Selection (TOPS) Committee allocated \$2 million in funding for security-related research through TCRP Special Project J-10, Public Transportation Security Research. The TOPS Committee designated an oversight panel composed of the APTA Executive Committee Security Task Force and FTA representatives to

determine allocation of the project funds. TCRP formed two technical panels to oversee the research and deployed a fast-track procurement process to act as quickly as possible after the technical panels had identified research topics. Three research teams with security-related technical expertise were designated for contracts.

The technical panels met in January to select research topics and prepare scopes of work. The APTA Executive Committee Security Task Force then endorsed the projects. The final research topics and scopes were assigned to the research teams based on the proposals submitted.

TCRP Report 86 comprises the series of security-related research. In 2002, *Communication of Threats: A Guide* and *K9 Units in Public Transportation: A Guide for Decision Makers* were published as TCRP Report 86, Volumes 1 and 2, respectively. The results of subsequent research will be published as additional volumes of TCRP Report 86. In addition, a report, *Transit System Security and Emergency Preparedness Planning Guide*, was prepared and transmitted to FTA for publication.

Four regional, invitation-only workshops on security for transit systems were conducted with TCRP Project J-10 funding during the first half of 2002, with general managers and chief security officers from selected transit systems invited. The first three—in New York, San Francisco, and Atlanta—focused on rail and bus operators in the regions, and the fourth session, in Chicago, addressed the largest bus-only operations. A consolidated summary report was prepared for dissemination to other transit systems through APTA.

Transit Vehicles and Maintenance

Using an industry consensus process administered by APTA, TCRP Project C-13, 30-Foot Transit Bus Technical Specifications, provided assistance in developing standard technical specifications for a 30-foot, low-floor, diesel transit bus. TCRP Project C-12 previously developed specifications for 35- to 40-foot, low-floor, diesel transit buses; and 35- to 40-foot, low-floor, compressed natural gas transit buses. These specifications are available through APTA and are posted on APTA's website.

TCRP Project C-14, Technical Support for Development of Transit Bus Standards, has established a transit industry-driven process for developing bus standards in several techni-



The role that operator fatigue plays in mass transit safety has become a primary consideration for U.S. bus and rail transit agencies. TCRP Report 81, *Toolbox for Operator Fatigue*, documents principles, techniques, and strategies used in the development of fatigue-mitigation plans.

cal areas. The APTA Bus and Paratransit CEO Committee's Bus Standards Policy and Planning Subcommittee guides the process, administered by APTA. The subcommittee has identified the design, safety inspection, and maintenance of bus vehicles as the three highest priorities for standards and recommended practices. A fast-track effort is developing standards for bus cooling and brake systems through the Society of Automotive Engineers (SAE). The SAE consensus process will guide the development of technical standards in these and other areas to improve transit bus quality.

Since 1996, TCRP Project G-4, Developing Standards for System and Subsystem Interfaces in Electric Rail Passenger Vehicles, has been assisting the Institute for Electrical and Electronics Engineers (IEEE) and the American Society of Mechanical Engineers (ASME) in the development of standards for railcar specifications. Standards have been initiated in 18 technical areas, with 10 formally published by IEEE. Several transit systems have issued technical specifications incorporating standards developed through TCRP Project G-4. TCRP Research Results Digest 44, *Consensus Standards for the Rail Transit Industry*, documents the results of the standards-development efforts. Support for continuing standards development by IEEE and ASME was transitioned from TCRP to APTA's Rail Transit Standards Policy Committee during 2002.

TCRP Synthesis 41, *The Use of Small Buses in Transit Service*, explores the replacement of large buses with small buses in fixed-route service and the use of small buses in innovative, flexible operations, such as route deviation or demand-response services.

TCRP Synthesis 44, *Training for On-Board Bus Electronics*, documents transit agency procedures and resources for training employees on advanced on-board electrical and electronic equipment and systems. Intended for senior managers charged with procuring, implementing, operating, and maintaining on-board electrical and electronic equipment, the Synthesis focuses on maintenance training.

Rural Transit

TCRP Report 76, *Guidebook for Selecting Appropriate Technology Systems for Small Urban and Rural Public Transportation Operators*, provides guidance for public transportation managers and other professionals in selecting the technol-

ogy appropriate for an operation's needs, size, and type. Although the focus is on rural and small urban operations, findings also apply to larger urban transit operations.

The guidebook covers the procurement of technologies, such as off-the-shelf computer software, as well as systems, such as automatic vehicle location systems. A companion document, TCRP Web Document 20, *Advanced Public Transportation Systems for Rural Areas: Where Do We Start? How Far Should We Go?*, focuses on advanced public transportation systems applications implemented at small urban and rural transit operations and includes advanced and basic technologies.

TCRP Report 79, *Effective Approaches to Meeting Rural Intercity Bus Transportation Needs*, addresses funding for intercity bus projects, barriers to implementation, and strategies for initiating, preserving, and enhancing intercity bus transportation.

Workforce Development

TCRP Research Results Digest 45, *Identification of the Critical Workforce Development Issues in the Transit Industry*, provides a resource for APTA's Workforce Development Initiative. The digest identifies the most important workforce development challenges facing the transit industry; innovative approaches by transit agencies, including external benchmarks; useful products for transit industry initiatives; and the next steps in addressing the issue on an effective, ongoing basis.

TCRP Report 77, *Managing Transit's Workforce in the New Millennium*, assesses the industry's workforce needs and prospects. The report provides guidelines for employers to assess workforce needs, presents best practices for recruiting and retaining employees, and identifies ways to enhance or establish management-labor partnerships to attract, train, and maintain a qualified workforce.

TCRP Synthesis 40, *A Challenged Employment System: Hiring, Training, Performance Evaluation, and Retention of Bus Operators*, offers a snapshot of public agency practices in hiring, training, evaluating, and keeping bus operators.

TCRP Synthesis 46, *Diversity Training Initiatives*, summarizes the state-of-the-practice with results from a transit agency survey. Case studies provide a variety of approaches with different levels of effectiveness and identify unmet needs. In addition, innovative practices in other industries are

profiled for possible application in public transportation.

Two other related projects are under way: TCRP Project F-11, Positioning the Public Transportation Operating Agency as an Employer of Choice, and Project J-7/Topic SF-10, Corporate Culture as the Driver of Practices, Techniques, and Strategies for Hiring, Developing, Evaluating, and Retaining Transit Leadership. Both build on already-completed research on workforce development.

Transit for Older Persons

TCRP Report 82, *Improving Public Transit Options for Older Persons*, provides information for public transportation providers and planners addressing the future transportation challenges of an aging society. A handbook describes how to improve public transportation services to attract older persons. A complementary brochure with an executive summary of the report also was published for distribution to the transit industry and related organizations.

Transit at Large Airports

TCRP Report 83, *Strategies for Improving Public Transportation Access to Large Airports*, builds on the results of TCRP Report 62, *Improving Public Transportation Access to Large Airports*, which focused on rail transit. Report 83 focuses on rubber-tired vehicles for serving the various market segments at large airports.

Public Transportation Governing Boards

TCRP Report 85, *Public Transit Board Governance Guidebook*, is a reference on the governance practices of public transit boards for small, medium, and large transit agencies in diverse geographic locations. TCRP Web Document 21, *Public Transit System Policy Boards: Organization and Characteristics*, supplements the final report. A follow-up effort, TCRP Project H-24A, *Assessing the Effectiveness of Public Transportation Boards*, will develop a handbook that builds on Report 85, including an objective self-assessment and tools to measure the effectiveness of a public transportation board.

Planning

TCRP Report 74, *Costs of Sprawl—2000*, examines the controversial subject of urban sprawl in the United States. The report contains four parts: setting the scene, the impacts of sprawl

on resources, the personal costs of sprawl, and dealing with sprawl.

TCRP Report 78, *Estimating the Benefits and Costs of Public Transit Projects: Guidebook for Practitioners*, is a resource for analyzing the benefits and costs of public transportation services and for presenting the results to decision makers, the media, and the public. The guidebook and accompanying CD-ROM include guidance and practical tools and materials for estimating the benefits and costs of public transit projects, and for presenting the estimates to nontransportation audiences. Included are analytical tools, presentation templates, and a resource library.

TCRP Research Results Digest 52, *Transit-Oriented Development and Joint Development in the United States: A Literature Review*, surveys and summarizes the literature.

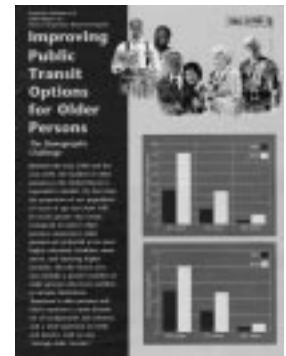
e-Transit: Electronic Business Strategies for Transit

TCRP Report 84 is a multipart series that covers “e-Transit”—electronic business strategies for public transit. The objective is to introduce electronic business strategies to public transportation and mobility management. Research has begun in seven topic areas, with two completed and published.

TCRP Report 84, Volume 1, *Supply Chain: Parts and Inventory Management*, examines the supply chain concept and identifies strategies used by nontransit fleets to reduce investment in parts and inventory yet increase fleet availability. Report 84, Volume 2, *Application Service Provider Implementation Guidelines*, provides a viable model for ASP delivery and offers guidelines for ASP selection and for managing the ongoing service relationship. The report also analyzes thin client computing—devices that rely on centralized or network-based resources to operate—and the potential benefit in targeted, vertical applications—that is, customized applications for a small market.

Transit Lessons from Abroad

Since 1994, TCRP has sponsored 17 leadership development missions under TCRP Project J-3, International Transit Studies Program. Through 2002, approximately 225 transit professionals have participated in missions to Europe, Asia, Canada, South America, New Zealand, and Australia. The program expands the horizons of U.S. transit managers and encourages a mobility manager approach to



With the number of older persons increasing as the population ages, more transportation alternatives need to be explored; TCRP Report 82, *Improving Public Transit Options for Older Persons*, provides information for public transportation planners.



Division D ushered in a new cooperative research program—the Commercial Truck and Bus Safety Synthesis Program—sponsored by the Federal Motor Carrier Safety Administration, to examine commercial truck and bus safety concerns.

transit services. *TCRP Research Results Digests* 20, 22, 27, 31, 33, 36, 42, 47, 49, and 54 describe the findings and observations.

Commercial Truck and Bus Safety Synthesis Program

The Commercial Truck and Bus Safety Synthesis Program (CTBSSP) is a new cooperative research program sponsored by the Federal Motor Carrier Safety Administration (FMCSA) and administered by TRB. Authorized in late 2001, CTBSSP supports FMCSA's safety research programs under an annual grant of approximately \$400,000.

The program initiates three to four synthesis studies each year to address commercial truck and bus safety concerns. A synthesis report is a relatively short document (40 to 60 pages) that summarizes practice in a specific technical area, typically relying on a literature search and a survey of organizations such as state DOTs, enforcement agencies,

commercial truck and bus carriers, or other appropriate organizations. The program is modeled after the successful NCHRP and TCRP synthesis programs. The primary users of syntheses are practitioners who work on issues or problems using diverse approaches in particular settings.

A program oversight panel provides general guidance for CTBSSP, selects synthesis topics after an industrywide solicitation, refines synthesis scopes, selects researchers to prepare each report, reviews products, and makes recommendations for publications.

The program oversight panel has authorized seven synthesis topics to date:

- CTBSSP 1, Security Measures in the Commercial Trucking and Bus Industries;
- CTBSSP 2, Effective Commercial Truck and Bus Safety Management Techniques;
- CTBSSP 3, Highway–Heavy Vehicle Safety Interaction;
- CTBSSP 4, Individual Differences and the “High Risk” Commercial Truck and Bus Driver: Implications for Carrier Human Resource Management;
- CTBSSP 5, Training of Commercial Motor Vehicle Drivers: Best Practices;
- CTBSSP 6, Technology Utilization in Commercial Truck and Bus Safety Strategies; and
- CTBSSP 7, Alternative Commercial Truck and Bus Inspection Strategies.

Initiated in mid-2002, the first three syntheses are scheduled for publication in mid-2003.

STAFF NEWS

- CRP staff received two National Academies Distinguished Service Awards this year:
 - B. Ray Derr was awarded an Individual Distinguished Service Award, and
 - The editorial team of the CRP Publications Office—Eileen Delaney, Hilary Freer, Andréa Briere, Ellen Chafee, and Beth Hatch—received a Group Distinguished Service Award.
- Javier Silva, a recent graduate of Wheaton College, joined the staff as an Office Assistant in June.



Victor M. Mendez
Chair

Long-Term Pavement
Performance
Committee

William J. Harris, Jr.
Chair

Committee for the
High-Speed Rail
IDEA Program

Joseph A. Mickes
Chair

TRB Superpave
Committee

Joseph T. Deneault
Chair

Committee for
Research on
Improved Concrete
Pavement for Federal-
Aid Highways

Ray Pethel
Chair

Transportation Safety
Technology IDEA
Committee

Neil F. Hawks
Director

Special Programs

Division E



SPECIAL PROGRAMS

The TRB Special Programs Division (Division E) administers short-term investigations of innovative concepts and advises the federal government on the conduct of long-term research studies. The Division's Innovations Deserving Exploratory Analysis (IDEA) programs foster new and unconventional approaches to advancing transportation practice in transit, highway, high-speed rail, intelligent transportation systems, and transportation safety.

Supported by the Division, committees of experts in various aspects of highway technology monitor and advise the Federal Highway Administration (FHWA) of the U.S. Department of Transportation on the continuing operation of the Long-Term Pavement Performance (LTPP) studies, the continued development and deployment of the Superpave® system of hot-mix asphalt materials mixture design, and a long-term research program to improve the use of portland cement concrete in highway pavements.

The Division also supports a committee of analysts from the United States and abroad that convenes twice each year for informal, critical discussion of ongoing analytical

research involving LTPP and other pavement performance data.

IDEA Programs

IDEA programs fund initial investigations of concepts with potential for breakthroughs in transportation practice. Small, researcher-initiated projects pursue investigations to demonstrate the feasibility of innovative concepts in general areas of interest to the transportation community. 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 Special Programs Division published its first issue of *Ignition*, a quarterly report on promising projects.

A new IDEA program was established in 2001 under the sponsorship of the Federal Motor Carrier Safety Administration (FMCSA), broadening the range of programs that foster innovation in highway systems, high-speed rail, transit, and intelligent transportation systems. With the support of FMCSA and the Federal Railroad Administration (FRA), a Transportation Safety IDEA program is reviewing proposals to improve the safety of motor carrier and rail operations. The Safety IDEA program selected its first five research projects in 2002. FRA also became a program sponsor this year, making Safety IDEA the only multimodal IDEA program.

The National Cooperative Highway Research Program (NCHRP) funds 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 the Federal Transit Administration through the Transit Cooperative Research Program (TCRP). FRA sponsors the High-Speed Rail IDEA program.

Administration of each program is similar, with necessary adaptations for sponsorship arrangements and target audiences. A committee or panel of volunteer transportation experts administers each program, soliciting proposals, providing technical review of the proposals received, and selecting proposals that merit research contracts.

Because IDEA projects are high-risk investigations of unproved concepts, funds awarded for any one project are usually less than \$100,000. Frequently, however, IDEA funds are augmented through cost-share arrangements, nearly doubling the amount of research that can be supported through the programs. Projects active in 2002 received \$3.3 million in cost-share funds to supplement the \$4.4 million awarded by the program committees.

A 2001 survey of investigators revealed that after the completion of the IDEA contracts, nearly two-thirds of the projects gained an additional \$14 million in follow-on funding to continue research and development. Fourteen products are currently available and 33 others are in various stages of development.

An annual summary of completed and current projects is published for each of the IDEA programs and is distributed through mailings and at the TRB Annual Meeting. These summaries also are posted on the TRB website. A new quarterly publication, *Ignition*, debuted in October 2002, featuring interviews

with IDEA investigators and transportation leaders, as well as highlights of promising projects.

Program announcements are released periodically to initiate new cycles of proposals and awards. The current program announcement and the proposal forms are available on the TRB website (www4.national-academies.org/trb/dive-idea.nsf/).

Research Program Committees

The Transportation Equity Act for the 21st Century led directly to the creation of two new continuing research program committees in Division E and an expanded role for the TRB LTPP Committee. All three committees monitor, review, and advise on the conduct of pavement research and technology programs.

Long-Term Pavement Performance

The goal of LTPP is to discover the physical relationships governing the long-term performance of highway pavements, through a series of rigorous, long-term field experiments on in-service highways. Assisted by specialized expert task groups, the TRB LTPP Committee provides general guidance and technical oversight during the projected 20-year span of the studies.

The committee counsels FHWA and the American Association of State Highway and Transportation Officials (AASHTO) on the continuing operation of the LTPP studies, and on a program of data analysis and product development to convert LTPP findings into engineering products valuable to state departments of transportation and other sectors of the highway community. In 2002, five of the nine active projects recommended by the committee and funded by NCHRP were completed. The Expert Task Group on LTPP Data Analysis provides peer review of analytical research initiatives, and the TRB LTPP Committee offers recommendations on directing the analytical research toward needed practical products and has developed a long-term plan that prioritizes projects.

Other TRB expert task groups monitor LTPP operations, including Traffic Data Collection and Analysis, Automated Distress Identification, and Materials. Expert task groups are created whenever technical issues arise in LTPP studies; a new expert task group on the Management of the LTPP Database was created in 2002.

Another Division E group takes a less formal approach to encourage and facilitate use of LTPP and related data. The Data Analysis Working Group provides an international forum for researchers to discuss current pavement performance data analysis projects and to exchange new techniques for analyzing the data. At the informal forums, researchers relate experiences on active analytical projects. At the conclusion of each presentation, the speaker, in addition to answering questions from the audience, asks for suggestions on overcoming barriers or for alternative approaches to the analysis.

This year, the international group met in January during the TRB Annual Meeting, and in Copenhagen, Denmark, in association with the Ninth International Conference on Asphalt Pavements.

Superpave

As a result of the reduction in research funding under TEA-21, the Superpave program is now jointly funded and managed by FHWA and AASHTO (through NCHRP). The TRB Superpave Committee, organized at the request of AASHTO and FHWA, monitors



DriveCam—a palm-sized video data recorder that mounts behind a vehicle's rearview mirror and continuously monitors driving activity—is an example of the innovative research projects supported by Division E.

IDEA

Seeding a Crop of Innovations

10 Years of IDEA Programs

This year marks the 10th anniversary of the IDEA programs at TRB. The vision for the programs is to explore innovative concepts that may improve transportation services for the American public. In 10 years, IDEA projects have made it easier for seniors to travel independently and for bridges to be built faster. Pavement and traffic data can be collected more efficiently and used more reliably. Railroad grade-crossings can be monitored in real time and traffic incident data can be recorded. IDEA projects have developed safety measures for highway work zones, pedestrian crossings, and station platforms. All have proved to be good ideas.

The IDEA program concept was not new 10 years ago. A program for sponsors to invest small amounts in long-shot research was one of the successes of the 5-year Strategic Highway Research Program that then had just ended. TRB continued the concept, and by the end of 1992, the NCHRP IDEA program had received six proposals. The Transit and the Intelligent Vehicle Highway System (later the Intelligent Transportation Systems) IDEA Programs were assembling advisory committees, and the IDEA program manager—and lone staffer—K. T. Thirumalai, was spreading the word.

By the end of 2002, IDEA committees had evaluated more than 2,000 research proposals and had awarded 260 research contracts—that is, the committees have discerned breakthrough potential in about one of every nine concepts proposed for exploration. Of the first 130 research projects completed, 66—or about 50 percent—demonstrated enough merit to warrant follow-on research investment from public agencies and private firms, and

research and development is continuing on about 40 of those concepts. Approximately 20 have yielded commercially viable products, and about half of these in turn have been advertised for sale. Another dozen or so noncommercial products are available for use by transportation professionals.

State DOTs and the U.S. DOT modal administrations have viewed investments in the IDEA programs as “seed corn.” These agencies have fostered innovation through initial support of promising, but high-risk, untested concepts. The record shows that the IDEA programs are bearing fruit—but the seed corn also is yielding another crop. During the last 10 years, transportation agencies’ investment in IDEA research has been matched by other public and private investments in the form of cost sharing for IDEA research and has provided yet another \$16 million of investments in post-IDEA research and development. In short, the sponsoring agencies and the American public have enjoyed the benefits of \$3.00 worth of research for every agency dollar invested.

For more information about the IDEA programs, visit the IDEA website at www.TRB.org/trb/idea/.



K. T. Thirumalai, the IDEA program's first manager, is now Chief Engineer, Research and Special Programs Administration, U.S. DOT.



All Strategic Highway Research Program reports are online.

implementation, recommends annual work programs, and provides a forum for industry and academia.

The TRB Superpave Committee, with expert task groups on mix, binder, and communications, advises the AASHTO Standing Committee on Research about potential Superpave-related research and development projects for funding through NCHRP and monitors the progress of the Superpave research and development conducted by FHWA. Since its first meeting in March 1999, the committee has issued eight advisory letter reports and has developed a long-range plan to bring Superpave development and deployment to a logical conclusion.

Improved Concrete Pavements

TEA-21 provided for a new research program to improve the use of portland cement con-

crete pavements in federal-aid highways. FHWA, which manages the research, requested that TRB organize a committee to coordinate and review the program and to provide a forum for balanced input from the states, academia, and industry.

The Committee for Research on Improved Concrete Pavement for Federal-Aid Highways met in March and September of 2002 and has developed a long-range plan to guide recommendations for future concrete pavement research. The committee has issued seven letter reports with recommendations. These letter reports, along with those of the TRB Superpave and LTPP committees, are available on the TRB website.

Other Initiatives

Division E has converted all 237 reports issued by the Strategic Highway Research Program into text-searchable electronic format. These reports are available on the Internet at <http://www4.nas.edu/trb/onlinepubs.nsf/>.

STAFF NEWS

- Connie Woldu, formerly a Program Assistant with TCRP, is the new assistant to the Special Programs Division Director.



Michael P. LaPlante
Director
Administration and
Finance

Division C



ADMINISTRATION AND FINANCE

The TRB Administration and Finance Division (Division C) provides financial, technology, and other administrative support for TRB staff; financial oversight of the contracts and grants that support the work of TRB; expenditure controls; administration of publications sales and distribution; maintenance of benefits and services for sponsors and affiliates; and liaison to the administrative and financial offices of the National Academies.

Financial Management

Responsible for the preparation of budgets for TRB operations and for individual projects, the Administration and Finance Division also controls expenditures and administers contracts and grants. A statement of income and expenditures is provided on pages 44–45.

Affiliate and Sponsor Services

There are five main levels of support for TRB's core technical activities: student affiliate, individual affiliate, organizational affiliate, sustaining affiliate, and sponsor. All affiliates and

sponsors contribute to the support of TRB activities through annual fees based on the level of services elected.

Individual and student affiliate benefits include reduced registration fees for the TRB Annual Meeting, complimentary subscription to *TR News*, discounts on most TRB books and reports, use of the TRB library, and assistance with the use of TRB computer-based information services. Individual and student affiliates also may subscribe to publications at a substantially reduced cost through a selective distribution program.

Organizational affiliates include government agencies, academic organizations, private organizations, and consultants committed to the advancement of knowledge about the nature and performance of transportation systems and their components. In addition to the benefits for individuals, organizational affiliates receive most publications at no cost and complimentary registrations to the TRB Annual Meeting. Contributions for organizational affiliates range from \$2,000 to \$6,000, depending on the level of benefits elected.

Sustaining affiliates are agencies and organizations—including individual corporations and businesses—that support TRB at a level considerably higher than the direct cost of services and publications listed above. The minimum annual contribution is \$15,000.

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 various industry groups are eligible to be TRB sponsors. Fees and services are negotiated to serve the particular needs of each sponsor and to provide fundamental support for the Board's programs and activities of interest to the entire transportation community. The minimum annual fee is \$60,000. Sponsors are also represented on the TRB Executive Committee.

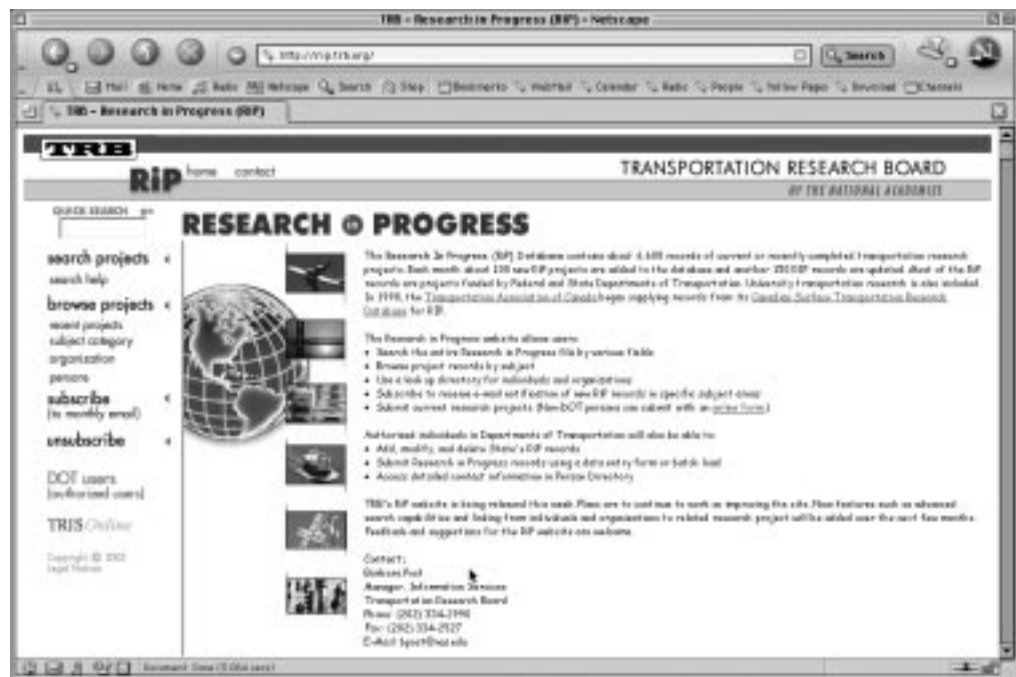
A complete list of TRB sponsors, sustaining affiliates, and organizational affiliates begins on page 50.

Web and Strategic Applications

TRB's technology and strategic applications staff have worked to improve the Transportation Research Information Systems (TRIS) online database, to enhance TRB web applications, and to modernize the TRB electronic bookstore. In addition, staff completed two sizable projects in 2002, bringing practical research tools closer to users of the TRB website—a revised and expanded Research in Progress (RiP) database and the TRB Directory are now available online.

The TRB Directory made the transition from print to Internet-only this year and is accessible to the general public (<http://gulliver.trb.org/directory/>). The directory includes listings of all TRB committee members and staff and is searchable by committee name, keyword, or code and by committee member name.

A valuable transportation research tool for decades, TRIS contains almost half a million records of references to books, technical reports, conference proceedings, journal articles, and ongoing research in transportation. TRB technical staff have worked with the Bureau of Transportation Statistics (BTS) in the past year to improve the user interfaces of



Division C staff responsible for web and strategic applications developed a new Research in Progress website, put the TRB Directory online, and launched a searchable online program for TRB's 2002 Annual Meeting.



TRB publications are displayed in the National Academies Press bookstore, located in the lobby of the new National Academies building.

TRIS Online, which is available free on the Internet through the BTS National Transportation Library website (www.bts.gov.ntl/).

Another web success was the launch of a searchable online program for TRB's 2002 Annual Meeting. Visitors to the TRB Annual Meeting website (<http://gulliver.trb.org/am/>) can search the complete Annual Meeting program schedule—sessions, workshops, committee meetings, and other events—by subject area, key words, or presenter's name. For the upcoming Annual Meeting, attendees can use the website's interactive planner to create a personalized hour-by-hour datebook of sessions and events to attend.

Publication Sales and Distribution

TRB's timely distribution of publications disseminates transportation research and technology results worldwide. TRB also continues to expand publishing efforts by releasing selected titles in electronic format, some exclusively. In addition, TRB distributes and maintains an inventory of publications and videotapes that report on the results of research supported by the Strategic Highway Research Program (SHRP). The full collection of SHRP reports is available in electronic format on the TRB website (www.TRB.org/). A complete listing of TRB publications issued from January 1, 2002, through December 31, 2002, appears on pages 47–49.

Activity in the TRB online Bookstore has grown steadily with each improvement in user

features. Online sales now account for nearly half of all publication orders, which have averaged more than 400 per month—or 5,000 per year—for the past three years. The *Highway Capacity Manual 2000* tops all titles in sales.

In addition to distributing publications online and through the Business Office, TRB has gained another venue with the move to the new National Academies building—the National Academies Press (NAP) bookstore, located prominently in the building lobby, displays and sells TRB and SHRP publications. The NAP bookstore provides an opportunity for TRB to showcase publications and make sales to a wider audience, particularly members of the scientific and engineering communities who come to the building to attend meetings or events held by other divisions of the National Academies.

STAFF NEWS

- Michael LaPlante, formerly Assistant Director, was appointed Director, Administration and Finance, succeeding Marcia Appel, who retired in January.
- Longtime TRB employee James Henson was promoted to Financial and Administrative Manager.
- Alexandra Stupple has joined the Business Office as Publications Sales Assistant.

Statement of Income and Expenditures

Calendar Years 2001 and 2002

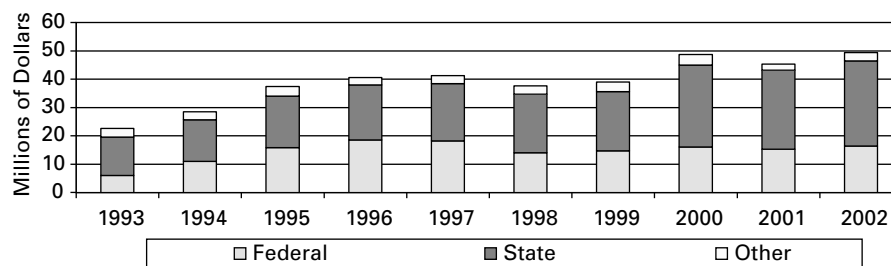
STATEMENT OF INCOME AND EXPENDITURES Calendar Years 2001 and 2002

	CY 2001 (actuals)	CY 2002 (projected) ^a
Sources of Income		
Core Technical Activities, Special Continuing Programs, and Studies/Conferences/Workshops		
Federal Highway Administration	\$5,845,831	\$6,085,000
State Transportation Departments	5,784,600	5,784,600
National Highway Traffic Safety Administration	644,739	620,000
Bureau of Transportation Statistics	402,700	450,000
U.S. Coast Guard	309,378	290,000
Federal Transit Administration	294,351	280,000
National Aeronautics and Space Administration	291,933	250,000
Federal Aviation Administration	222,981	240,000
Research and Special Programs Administration	176,669	200,000
Federal Motor Carrier Safety Administration	153,484	300,000
U.S. Army Corps of Engineers	140,615	150,000
Department of Navy	92,528	100,000
Federal Railroad Administration	81,358	100,000
American Public Transportation Association	60,000	60,000
Environmental Protection Agency	60,000	60,000
Association of American Railroads	60,000	60,000
National Asphalt Pavement Association	60,000	60,000
American Transportation Research Institute	60,000	60,000
American Concrete Pavement Association	30,000	0
Department of Energy	25,000	85,000
National Science Foundation	20,000	0
Maritime Administration	15,000	15,000
National Oceanic and Atmospheric Administration	10,000	10,000
The National Academies	6,592	70,000
Miscellaneous	232,327	235,000
Affiliate, registration, TRIS search fees, and publication sales	2,865,217	2,618,000
Subtotal	\$17,945,303	\$18,182,600
Cooperative Research Programs		
State Transportation Departments	\$22,103,302	\$24,800,000
Federal Highway Administration	174,828	400,000
Federal Transit Administration	6,445,525	6,450,000
Publication Sales	38,446	42,000
Subtotal	\$28,762,101	\$31,692,000
Total TRB Income		
State	\$27,887,902	\$30,584,600
Federal	15,281,305	15,920,000
Other	3,538,197	3,370,000
Total	\$46,707,404	\$49,874,600
Expenditures by Major Cost Category		
Salaries (including fringe benefits)	\$8,290,082	\$8,857,340
Travel	2,218,349	2,767,450
Consultants and Contracts	21,110,035	22,206,770
Reproduction and Duplication	1,914,314	2,021,290
Other Direct Costs	2,460,943	3,130,190
Indirect Costs	9,334,098	10,416,960
	\$45,327,821	\$49,400,000
Total TRB Expenditures		
State	\$27,887,902	\$30,584,600
Federal	15,281,305	15,920,000
Other	\$2,158,614	\$2,895,400
Total	\$45,327,821	\$49,400,000
SPECIAL FUND		
Fund balance, end of previous fiscal year	\$3,885,967	\$5,265,550
Plus (minus) current fiscal year income over (under) expenditures	1,379,583	474,600
Balance, current fiscal year	\$5,265,550	\$5,740,150

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 2001 (actuals)	CY 2002 (projected) ^a
Expenditures by Major Activity		
Core Technical Activities		
Field Visits and Committee Activities	\$4,897,924	\$5,413,680
Annual Meeting	1,166,916	\$1,289,790
Transportation Research Information Services	1,190,002	\$1,315,310
Publications	2,715,446	\$3,001,380
Subtotal	\$9,970,288	\$11,020,160
State	\$5,784,600	\$5,784,600
Federal	\$2,864,967	\$3,015,000
Other	\$1,320,721	\$2,220,560
Special Continuing Programs		
Pavement Program Review Committees and Activities	\$1,023,890	\$1,100,000
Innovations Deserving Exploratory Analysis (IDEA)	2,634,734	2,800,000
Research and Technology Coordinating Committee	268,049	250,000
Marine Board	229,610	180,000
Subtotal	\$4,156,283	\$4,330,000
State	\$1,049,496	\$1,050,000
Federal	\$2,992,387	\$3,250,000
Other	\$114,400	\$30,000
Studies/Conferences/Workshops		
State	\$59,948	\$60,000
Federal	\$3,186,537	\$3,200,000
Other	\$656,802	\$665,240
	\$3,903,286	\$3,925,240
Cooperative Research Programs		
National Cooperative Research Program		
Technical Direction, Reports and Panels	\$5,842,482	\$6,076,000
Research	15,354,022	18,398,600
Subtotal	\$21,196,504	\$24,474,600
Transit Cooperative Research Program		
Technical Direction, Reports and Panels	\$2,239,525	2,329,110
Research	3,861,935	3,320,890
Subtotal	\$6,101,460	\$5,650,000
Total, Cooperative Research Programs^b	\$27,297,964	\$30,124,600
State	\$20,993,858	\$23,200,000
Federal	\$6,263,372	\$6,882,600
Other	\$40,735	\$42,000
Total Expenditures by Major Activity		
State	\$27,887,902	\$30,094,600
Federal	\$15,307,263	\$16,347,600
Other	\$2,132,657	\$2,957,800
	\$45,327,822	\$49,400,000

TRB Expenditures per Year



^a Actual income and expenditures through August 2002; estimates for September 1–December 31, 2002.

^b The total expenditure shown for the Cooperative Research Programs does not match the total revenue shown for the Cooperative Research Programs because \$1,464,136 is represented as expenditures in TRB's Special Continuing Activities and Studies/Conferences/Workshops.

TRB Conferences and Workshops

January 1, 2002–December 31, 2002

January

13–17 TRB 81st Annual Meeting

February

14–16 International Deep Foundations Congress*
20–21 Getting Active at Passive Rail–Highway Crossings*

March

11–13 Incident Management Conference*
12–13 Third Annual Forum on Public Health and Transportation Safety*
14 National Freight Forum: Private-Sector Freight Roundtable
21–23 Environmental Research Needs in Transportation

April

3–4 Highway Safety Workforce Planning Workshop*
3–5 3rd International Large Truck and Bus Safety Symposium*
13–17 Fifth International Conference on Case Histories in Geotechnical Engineering*
14–18 ASCE Second International Conference on Urban Public Transportation Systems*
15–19 Geophysics 2002*
22–25 3D Visualization in Transportation
28–5/1 3rd National Seismic Conference and Workshop on Bridges and Highways*

May

2–3 Using Spatial Information Technologies to Improve Project Delivery
3 Summit on High Occupancy Vehicle Lanes
5–7 Conference on Transportation and Economic Development
12–16 North American Travel Monitoring Exposition and Conference*

June

Economic Stake in Transportation Congressional Breakfast Series*
2–4 Visibility and Simulation Symposium
13–14 Using Spatial Information Technologies to Improve Security, Safety, and Mobility
23–26 5th National Conference on Access Management
23–26 27th Annual Summer Ports, Waterways, Freight, and International Trade Conference
26–29 Highway Capacity and Quality of Service Committee 2002 Midyear Meeting and Conference
30–7/3 41st Annual Workshop on Transportation Law

July

7–9 Joint Summer Meeting Planning and Conference of the Committees on Energy, Air Quality, and Alternative Fuels
11–13 Joint Summer Meeting of the Planning, Economics, Finance, Management, Freight, and Transit Committees
14–16 1st International Conference on Bridge Maintenance, Safety and Management*
30–31 Safety-Conscious Planning Leadership Conference

August

4–9 T2002: 16th International Conference on Alcohol, Drugs and Traffic Safety*
5–7 7th International Conference on Application of Advanced Technology in Transportation*
13 Design and Construction of Transportation Facilities in Melange—Block in Matrix
14–16 Midwest Conference on Library and Information Services for Transportation
17–22 9th International Conference on Asphalt Pavements*
18 DAWG Forum on Pavement Performance Data Analysis
19–21 Community Impact Assessment in the 21st Century: Making Connections and Building Relationships
21–23 National Transportation Information Infrastructure (INFOstructure)*

September

3–6 Pro Bike, Pro Walk Conference*
8–11 Providing a Transportation System to Support Smart Growth: Issues, Practice and Implementation
10–12 Human Factors in Railroad Operation Safety
18–20 12th International Workshop on Future Aviation Activities
18–20 8th National Conference on Transportation Planning for Small and Medium-Sized Communities “Tools of the Trade”*
22 Workshop on Railway Maintenance Planning
30–10/2 Joint Subcommittee for the Highway Safety Manual Midyear Meeting

October

17–18 Joint Meeting on Vehicle-Highway Automation*
21–23 Safety on Roads: International Conference (SORIC '02)*
22–24 Strategies for Improving Multimodal Transportation Planning and Operations with Spatial Information Technologies
27–30 3rd National Transportation Finance Conference
27–30 11th International High-Occupancy Vehicle Conference
27–30 15th National Conference on Rural Public and Intercity Bus Transportation

November

7–10 5th Rail Passenger Caucus
11–15 Remote Sensing and Spatial Information Technologies for Transportation, during Conference on Pecora/Land Satellite Information in the Next Decade*
17–20 First International Conference on Scour of Foundations*
18–19 Global Forum on the Marine Transportation of Energy*
20–21 Drowsy Driving Summit*

December

3–7 ARTBA 2nd International Conference on Work Zone Safety*

* TRB participates in meeting as a cosponsor.

TRB Publications

Transportation Research Record: Journal of the Transportation Research Board

- 1781 High-Occupancy Vehicle Systems and Demand Management 2002
- 1782 Marine Transportation and Port Operations
- 1783 Transportation Network Modeling 2002
- 1784 Statistical Methodology, Design Data Analysis, and Evaluation
- 1785 Railroads: Intercity Rail Passenger Transport; Track Design and Maintenance
- 1786 Geology and Properties of Earth Materials 2002
- 1787 Geomaterials 2002
- 1788 Aviation: Airport and Air Traffic Economic and Operational Issues; 2002 TRB Distinguished Lecture
- 1789 Bituminous Paving Mixtures 2002
- 1790 Freight Transportation 2002
- 1791 Transit: Buses, Paratransit, Rural Public Buses, and Intercity Transit; New Transportation Systems and Technology; Capacity and Quality of Service
- 1792 Sustainability and Environmental Concerns in Transportation 2002
- 1793 Transit: Intermodal Facilities, Rail Transit, Commuter Rail, Light Rail Transit and Maintenance, and Ferry Transportation
- 1794 Safety and Maintenance Services
- 1795 Maintenance of Pavements and Structures
- 1796 Geometric Designs and the Effect on Traffic Operations 2002
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- 1798 Concrete 2002
- 1799 Transit: Planning and Development, Management and Performance, Marketing and Fare Policy
- 1800 Intelligent Transportation Systems and Vehicle-Highway Automation 2002
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- 1802 Traffic Flow Theory and Highway Capacity 2002
- 1803 Human Performance: Models, Intelligent Vehicle Initiative, Traveler Advisory and Information Systems
- 1804 Transportation Data and Information Technology Research
- 1805 Travel Demand and Land Use 2002
- 1806 Assessing and Evaluating Pavements 2002
- 1807 Traveler Behavior and Values 2002
- 1808 Soil Mechanics 2002

- 1809 Design and Rehabilitation of Pavements 2002
- 1810 Bituminous Binders 2002
- 1811 Advanced Traffic Management Systems for Freeways and Traffic Signal Systems 2002
- 1812 Transportation and Public Policy 2002
- 1813 Construction 2002
- 1814 Design of Structures 2002
- 1815 Energy, Air Quality, and Fuels 2002
- 1816 Pavement Management, Monitoring, and Accelerated Testing 2002
- 1817 Transportation Planning and Analysis 2002
- 1818 Highway Safety: Work Zones, Law Enforcement, Motorcycles, Trucks, Older Drivers, and Pedestrians

Special Reports¹

- 263 Future Flight: A Review of the Small Aircraft Transportation System Concept
- 264 The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience
- 265 The National Highway Traffic Safety Administration's Rating System for Rollover Resistance: An Assessment
- 266 Naval Engineering: Alternative Approaches for Organizing Cooperative Research
- 267 Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles
- 268 Surface Transportation Environmental Research: A Long-Term Strategy
- 269 The Relative Risks of School Travel: A National Perspective and Guidance for Local Community Risk Assessment
- 270 Deterrence, Protection, and Preparation: The New Transportation Security Imperative
- 271 Freight Capacity for the 21st Century

Miscellaneous Publication

Research Pays Off: 100 Articles 1983-2001 CD-ROM²

Conference Proceedings

- 28 Conference on Environmental Research Needs in Transportation

Transportation Research Circulars (Online)

- 36 Airport Modeling and Simulation for Environmental Analyses
- 37 Glossary of Highway Quality Assurance Terms
- 38 Standards for Testing, Evaluating, and Locating Roadside Safety Features

- 39 Conference on Transportation Improvements: Experiences Among Tribal, Local, State, and Federal Governments
- 40 Aviation Demand Forecasting: A Survey of Methodologies
- 41 Supporting the Establishment of Safe Transportation Networks
- 42 Airport-Airspace Simulations: A New Outlook
- 43 Significance of Restricted Zone in Superpave Aggregate Gradation Specification
- 44 Bailey Method for Gradation Selection in HMA Mixture Design
- 45 2002 California HOV Summit
- 46 Using Spatial Data, Tools and Techniques To Improve Program Delivery
- 47 Financial Aspects of Equipment Acquisition

TR News

Nos. 218-223

Online Newsletters

Intercity Rail Passenger Systems Update, No. 9
LRT News, Vol. 17, No. 1
TRB Transportation Research Electronic Newsletter

National Cooperative Highway Research Program (NCHRP) Reports³

- 455 Recommended Performance-Related Specifications for Hot-Mix Asphalt Construction: Results of the WesTrack Project
- 464 The Restricted Zone in the Superpave Aggregate Gradation Specification
- 465 Simple Performance Test for Superpave Mix Design
- 466 Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects
- 467 Performance Testing for Modular Bridge Joint Systems
- 468 Contributions of Pavement Structural Layers to Rutting of Hot-Mix Asphalt Pavements
- 469 Fatigue-Resistant Design of Cantilevered Signal, Sign, and Light Supports
- 470 Traffic-Control Devices for Passive Railroad-Highway Grade Crossings

¹Publications released since 1998 are available online.

²Specific publication is available in print and online.

³Publications released since 2001 are available online.

- 471 Evaluation of Roadside Features to Accommodate Vans, Minivans, Pickup Trucks, and 4-Wheel Drive Vehicles
- 472 Comprehensive Specification for the Seismic Design of Bridges
- 473 Recommended Specifications for Large-Span Culverts
- 474 Assessing the Impacts of Bridge Deck Runoff Contaminants in Receiving Waters Volume 1: Final Report, Volume 2: Practitioner's Handbook
- 475 A Procedure for Assessing and Planning Nighttime Highway Construction and Maintenance
- 476 Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance and Construction
- 477 Recommended Practice for Evaluation of Metal-Tensioned Systems in Geotechnical Applications
- 478 Relationship of Superpave Gyrotory Compaction Properties to HMA Rutting Behavior
- 479 Short-Term Monitoring for Compliance with Air Quality Standards
- 480 A Guide to Best Practices for Context Sensitive Solutions (with CD-ROM)
- 482 Guidance for Selecting Compensatory Wetlands Mitigation Options
- 484 Feasibility Study for an All-White Pavement Marking System

NCHRP Syntheses of Highway Practice³

- 297 Building Effective Relationships Between Central Cities and Regional, State, and Federal Agencies
- 298 Truck Trip Generation Data
- 299 Recent Geometric Design Research for Improved Safety and Operations
- 300 Performance Measures for Research, Development, and Technology Programs
- 301 Collecting, Processing, and Integrating GPS Data into GIS
- 302 Mitigation of Ecological Impacts
- 303 Assessment and Rehabilitation of Existing Culverts
- 304 Driveway Regulation Practices
- 305 Interactions Between Roadways and Wildlife Ecology
- 306 Long-Term Pavement Marking Practices
- 308 Owner-Controlled Insurance Programs

NCHRP Research Results Digests³

- 261 The Case for Standardizing Household Travel Surveys
- 262 Field Shear Test for Hot-Mix Asphalt
- 263 Continuing Project to Synthesize Information on Highway Problems

- 264 LTPP Data Analysis: Factors Affecting Pavement Smoothness
- 265 AASHTO Strategic Highway Safety Plan—Case Studies
- 266 Asset Management Guidance for Transportation Agencies
- 267 Utility of Machine Translation Software
- 268 Visibility Performance Requirements for Vehicular Traffic Signals
- 269 LTPP Data Analysis: Significance of “As-Constructed” AC Air Voids to Pavement Performance
- 270 Relationships of Portland Cement Characteristics to Concrete Durability

NCHRP Legal Research Digest³

- 47 Judicial Enforcement of Variable Speed Limits

NCHRP Web Documents (Online)

- 37 Management of Runoff from Surface Transportation Facilities—Synthesis and Research Plan
- 38 Quality-Based Performance Rating of Contractors for Prequalification and Bidding Purposes
- 39 Managing Change in State Departments of Transportation
- 40 LTPP Data Analysis: Factors Affecting Pavement Smoothness
- 41 Task 1 of 3: Synthesis of Asset Management Practice, Task 2 of 3: Asset Management Framework, Task 3 of 3: Recommended Research Program
- 42 Issues in Pavement Smoothness: A Summary Report
- 43 Guidance for Estimating the Indirect Effects of Proposed Transportation Projects
- 44 Design Examples for Large-Span Culverts: Supporting Material for NCHRP Report 473
- 45 A Process for Selecting Strategies for Rehabilitation of Rigid Pavements
- 46 Visibility Performance Requirements for Vehicular Traffic Signals
- 47 LTPP Data Analysis: Effectiveness of Maintenance and Rehabilitation Options
- 48 LTPP Data Analysis: Variations in Pavement Design Inputs
- 49 TRAC PAC 2—A Hands-On Educational Program
- 50 Repair and Rehabilitation of Bridge Components Containing Epoxy-Coated Reinforcement
- 51 Construction Engineering and Management Research Program
- 52 LTPP Data Analysis: Feasibility of Using FWD
- 53 Guidance Manual: Bridge Life-Cycle Cost Analysis

NCHRP CD-ROMs

- CRP-CD-9 Recommended Performance-Related Specifications for Hot-Mix Asphalt Construction: Results of the WesTrack Project
- CRP-CD-10 Bituminous Materials Research Series III, NCHRP Projects 9-10, 9-14, and 9-19
- CRP-CD-14 Technologies to Improve Consideration of Environmental Concerns in Transportation Decisions
- CRP-CD-15 Supporting Materials for NCHRP Report 462: Quantifying Air-Quality and Other Benefits and Costs of Transportation Control Measures
- CRP-CD-20 NCHRP and TCRP Selected Studies in Transportation Law: Volume 4 (also online)
- CRP-CD-22 Scientific Approaches for Transportation Research
- CRP-CD-23 A Guide to Best Practices for Achieving Context-Sensitive Solutions
- CRP-CD-24 Impact Calculator: Impacts of Access Management Techniques
- CRP-CD-26 Guidance Manual and Software for Bridge Life-Cycle Cost Analysis

Transit Cooperative Research Program (TCRP) Reports⁴

- 73 Characteristics of Urban Travel Demand
- 74 Costs of Sprawl 2000
- 75 The Role of the Private-for-Hire Vehicle Industry in Public Transit
- 76 Guidebook for Selecting Appropriate Technology Systems for Small Urban and Rural Public Transportation Operators
- 77 Managing Transit's Workforce in the New Millennium
- 78 Estimating the Benefits and Costs of Public Transit Projects: A Guidebook for Practitioners
- 79 Effective Approaches to Meeting Rural Intercity Bus Transportation Needs
- 80 A Toolkit for Self-Service, Barrier-Free Fare Collection
- 81 Toolbox for Transit Operator Fatigue
- 82 Improving Public Transit Options for Older Persons
- 83 Strategies for Improving Public Transportation Access to Large Airports
- 84 e-Transit Electronic Business Strategies for Public Transportation; Volume 1: Supply Chain: Parts and Inventory Management; Volume 2: Application Service Provider Implementation Guidelines

⁴Entire series is available in print and online.

- 85 Public Transit Board Governance Guidebook
- 86 Public Transportation Security; Volume 1: Communication of Threats; Volume 2: K9 Units in Public Transportation: A Guide for Decision Makers

TCRP Syntheses of Transit Practice⁴

- 38 Electronic Surveillance Technology on Transit Vehicles
- 39 Transportation on College and University Campuses
- 40 A Challenged Employment System: Hiring, Training, Performance Evaluation, and Retention of Bus Operators
- 41 The Use of Small Buses in Transit Service
- 42 Use of Flexible Funds for Transit Under ISTEA and TEA-21
- 43 Effective Use of Transit Websites
- 44 Training for On-Board Bus Electronics
- 45 Customer-Focused Transit

TCRP Research Results Digests⁴

- 44 Consensus Standards for the Rail Transit Industry
- 45 Identification of the Critical Workforce Development Issues in the Transit Industry
- 46 Supplemental Analysis of National Survey on Contracting Transit Services
- 47 International Transit Studies Program—Report of the Spring 2000 Mission—Germany’s Track-Sharing

- 49 Experience: Mixed Use of Rail Corridors
- 50 Synthesis of Information Related to Transit Problems
- 50 International Transit Studies Program; Report on the Fall 2000 Mission—Excellence in Transit Operations in Small and Medium European Cities
- 51 Legal Aspects of Transit and Intermodal Transportation Programs
- 52 Second Train Coming Warning Sign: Demonstration Projects
- 53 Transit-Oriented Development and Joint Development in the United States: A Literature Review
- 54 Fall 2001 Mission: Emerging Trends in European Public Transport
- 55 Support for Fundamental Change in Public Transportation

TCRP Legal Research Digest⁴

- 18 Federal and State Licensing and Other Safety Requirements for Commercial Motor Vehicle Operators and Equipment

TCRP Web Documents (Online)

- 20 Advanced Public Transportation Systems for Rural Areas: Where Do We Start? How Far Should We Go?
- 21 Public Transit System Policy Boards: Organization and Characteristics

TCRP CD-ROMs

- CRP-CD-16 Multimedia Presentation: Role of Private-for-Hire Vehicle Industry in Public Transit²

- CRP-CD-17 Supporting Material for TCRP Report 73: Characteristics of Urban Travel Demand²
- CRP-CD-18 Estimating and Presenting the Benefits and Costs of Public Transit Projects: Guidebook for Practitioners
- CRP-CD-19 A Toolkit for Self-Service Barrier-Free Fare Collection
- CRP-CD-20 NCHRP and TCRP Selected Studies in Transportation Law: Volume 4 (also online)
- CRP-CD-21 Toolkit for Transit Operator Fatigue
- CRP-CD-25 Guidebook for Developing a Transit Performance-Measurement System

Commercial Trucks and Busses Safety Synthesis Program (CTBSSP) Research Results Digest

- 1 Commercial Truck and Bus Safety Synthesis Program

Cooperative Research Program Miscellaneous Publications

- Highway Research and Technology: The Need for Greater Investment
- NCHRP Project 1-37A, Milestones 2002 Newsletters
- Improving Public Transit Options for Older Persons

TRB PUBLICATIONS

January 1–December 31, 2002

- | | |
|---|---|
| <ul style="list-style-type: none"> 38 Transportation Research Records: Journal of the Transportation Research Board 9 Special Reports 1 Conference Proceedings 12 Transportation Research Circulars (Online) 6 issues of <i>TR News</i> 2 issues of Online Newsletters (<i>LRT News</i> and <i>Intercity Rail Passenger Systems</i>) 20 NCHRP Reports 11 NCHRP Syntheses 10 NCHRP Research Results Digests 1 NCHRP Legal Research Digest 17 NCHRP Web Documents (Online) 1 NCHRP and TCRP Selected Studies in Transportation Law CD-ROM | <ul style="list-style-type: none"> 8 NCHRP CD-ROMs 14 TCRP Reports 8 TCRP Syntheses 11 TCRP Research Results Digests 1 TCRP Legal Research Digest 2 TCRP Web Documents (Online) 6 TCRP CD-ROMs 1 CTBSSP Research Results Digest Weekly issues of TRB Transportation Research Electronic Newsletter <i>Highway Research and Technology: The Need for Greater Investment</i> NCHRP Project 1-37A, Milestones 2002 Newsletters <i>Improving Public Transit Options for Older Persons</i> Research Pays Off: 100 Articles 1983–2001 CD-ROM |
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National Transportation Safety Board, Washington, D.C.
North Central Texas Council of Governments, Arlington
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North Jersey Transportation Planning Authority, Newark
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Pima County Transportation, Tucson, Arizona
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Road Commission for Oakland County, Beverly Hills, Michigan
Sacramento Area Council of Governments, California

Seminole County Engineering, Sanford, Florida
Tennessee Valley Authority, Knoxville
Texas A&M University, College Station
University of Michigan, Ann Arbor
USDA Forest Service, Washington, D.C.
Washington Metropolitan Area Transit Authority, Washington, D.C.

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Queensland Transport, Brisbane
Roads and Traffic Authority, Haymarket, New South Wales
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Danish Road Institute, Elisagårdsvej

Egypt

Cairo University, Giza

Finland

Finnish Road Administration, Helsinki
VTT Building and Transport, Espoo

Greece

Athens Urban Transport Organization, Athens
Attiko Metro SA, Athens

Iceland

Public Roads Administration, Reykjavik

Italy

Associazione Italiana Società Concessionarie Autostrade e Trafori (AISCAT), Rome

Japan

Japan Road Association, Tokyo

Republic of Korea

Inchon Development Institute, Incheon
Seoul City University, Seoul

Mexico

Instituto Mexicano Del Transporte, Queretaro

Norway

Institute of Transport Economics, Oslo
Norwegian Public Roads Administration, Oslo

Saudi Arabia

Ministry of Communications, Riyadh

South Africa

National Institute for Transport and Road Research (CSIR), Pretoria
South African National Roads Agency, Pretoria

Spain

Consorcio de Transportes de Madrid, Madrid

Sweden

Swedish National Road Administration, Borlange
Swedish National Road and Traffic Research, Linköping

United Arab Emirates

Abu Dhabi Municipality, Abu Dhabi

Private Organizations

United States

American Public Works Association, Washington, D.C.
American Road and Transportation Builders Association, Washington, D.C.
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Battelle, Columbus, Ohio
Conference of Minority Transportation Officials, Washington, D.C.
Eno Transportation Foundation, Washington, D.C.
Inter-American Development Bank, Washington, D.C.
Institute of Transportation Engineers, Washington, D.C.
International Road Federation, Washington, D.C.
International Bridge, Tunnel, and Turnpike Association, Washington, D.C.
Intelligent Transportation Society of America, Washington, D.C.
National Stone Sand Gravel Association, Arlington, Virginia
Portland Cement Association, Skokie, Illinois
Salt Institute, Alexandria, Virginia
The Asphalt Institute, Lexington, Kentucky
The World Bank, Washington, D.C.
Transpo Industries, Inc., New Rochelle, New York

Belgium

Union International des Transports Publique (UITP), Brussels

France

Mutuelle Assurance des Instituteurs de France (MAIF Fondation), Paris

Greece

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