

Guiding Research on Rail Network Performance

ELAINE KING

Rail Transport Specialist, TRB

In the past 2–3 years, the freight railroad industry has been transformed. The tremendous increase in international trade—primarily in intermodal containers arriving by sea from China and continuing by rail domestically—has driven much of the industry change. In addition, three of the Class 1 freight railroads have new leadership.

The increased freight traffic is straining the capacity of freight railroads. Congestion in other modes of transportation has led to increased demand for commuter and intercity passenger rail services. Many of these services, however, must share tracks and other facilities owned by freight railroads, adding to the pressure on rail system capacity.

The TRB Workshop on Research to Enhance Rail Network Performance, April 5–6, 2006, at the



Robert E. Gallamore, workshop chair, gives opening remarks at the plenary session of the Rail Workshop.

National Academies' Keck Center, Washington, D.C., examined the dramatic changes in the railroad business under three major themes: capacity, safety, and efficiency. The workshop, sponsored by the Federal Railroad Administration (FRA), asked the TRB Committee for Review of FRA's Research, Development, and Demonstration Programs to provide assistance in developing input for a new *Five-Year Strategic Plan for Railroad Research and Development* by engaging the stakeholders and customers of the programs in a discussion about needed research. Railroad industry and government leaders shared their perspectives from the freight and passenger sectors on issues related to the core themes.

Charles "Wick" Moorman, President and CEO of Norfolk Southern, stated that research could assist in improving all the components of system capacity, including workforce, locomotives, rolling stock, and infrastructure. He emphasized development of positive train control (PTC) technology, noting its potential for increasing capacity, safety, and efficiency. Moorman also urged the application of more resources for research on rail networks and systems.

Representing commuter rail, Philip Pagano, Executive Director of Chicago's Metra, echoed many of Moorman's concerns about capacity on shared rail lines and seconded the need for research and development on PTC.

Jo Strang, FRA Associate Administrator for Safety, provided an overview of safety issues, calling for a more proactive approach supported by research. This will require more attention to risk assessment and

Tracking the Trends in Light Rail Transit

TRB, the American Public Transportation Association, and the International Association of Public Transport (UITP) sponsored the 10th National Light Rail Transit (LRT) Conference: Light Rail—A World of Applications and Opportunities, April 9–11, 2006, in St. Louis, Missouri. More than 400 participants from North America and Europe attended, and the program presented the latest research and experience in key LRT areas such as

- ◆ Planning and urban integration;
- ◆ Use of infrastructure and design of new infrastructure;
- ◆ The case for contracting;
- ◆ Financing and controlling capital costs;
- ◆ Streetcar applications worldwide;
- ◆ Regulations and standards;
- ◆ Security issues;
- ◆ Light rail vehicle design;
- ◆ LRT or bus rapid transit—letting the market decide;
- ◆ Accessibility; and
- ◆ Remote monitoring for control and information.

The conference papers and presentations will be published as a TRB e-circular on the TRB website later this year.

For more information contact Pete Shaw, TRB (telephone 202-334-2966, e-mail pshaw@nas.edu).



A work crew welds plates before driving them into the ground during LRT construction in Phoenix, December 2005.

management, development of close-call data to increase understanding of incident causes, and behavior-based safety perception studies. The U.S. Department of Transportation and FRA strategic goals will shape research and development for the next 5 years—including a department goal of reducing congestion while improving safety.

Addressing efficiency, Matt Rose, President and CEO, BNSF, provided details of the dramatic growth in rail industry traffic since deregulation in 1980 while the industry was cutting costs and streamlining operations through reductions in infrastructure, equipment, and workforce. Rose identified critical elements for efficient growth, including improvement in the velocity of traffic on the network, in the physical infrastructure reliability, in intermodal hub technology, in mechanical and equipment reliability, and in performance-based safety.

According to Conrad Ruppert, Jr., Division Engineer (Northeast), National Railroad Passenger Corporation (Amtrak), the efficiency of passenger rail depends on the productivity of the workforce combined with improvements in technology and equipment.

Amtrak's Northeast Corridor experiences unique capacity, operational, and safety issues because of



Participating in breakout discussion are workshop group attendees (*left to right*) Reilly McCarren, Arkansas and Missouri Railroad; Brendan Hickman, Teradata; and Bruce Horowitz, ESH Consult.

the heavy volume of intercity passenger and commuter rail in major urban areas, as well as freight movements.

The workshop concluded with remarks by Congressman Steve LaTourette (R-Ohio), who chairs the Railroad Subcommittee of the House Transportation and Infrastructure Committee. LaTourette stressed that railroads are important to the nation's economy and provide environmental benefits. He underscored the need for increased investment in rail capacity and described the types of public-private partnerships and funding sources that can meet the investment needs.

Breakout discussion groups offered opportunities for all workshop participants to express their views on research and development priorities. The breakout groups generated more than 150 research-needs statements, which will be sorted and prioritized by the sponsoring TRB committee for publication in workshop proceedings by year's end. Reports from the breakout discussion groups, along with background materials, are available on the workshop website at www.trb.org/Conferences/RailWorkshop/.



Charles "Wick" Moorman, president and CEO of Norfolk Southern, presents the freight-rail perspective on rail-system capacity issues.



EXPLORING THE OPTIONS—

Speaking at a meeting of the TRB Committee on the St. Lawrence Seaway, Anthony Earl, a partner with the Quarles and Brady Law Firm, Madison, Wisconsin, discusses the natural resources of the Great Lakes region. The Committee on the St. Lawrence Seaway is studying ways to enhance the potential for global trade in the Great Lakes region, and eliminate further introductions of non-indigenous aquatic species by vessels transiting the St. Lawrence Seaway.



SHARING GEOSPATIAL INFORMATION— Speaker Leni Oman, Director of Transportation Research, Washington State Department of Transportation, takes questions from attendees at the Environmental Geospatial Information for Transportation Workshop in Washington, D.C. The May 3–4 workshop focused on issues in Geographic Information System (GIS) applications and GIS use by transportation organizations to communicate planning and project information among diverse agencies. Attendees included representatives from state and federal transportation and natural resource agencies, local government, and nongovernmental organizations with expertise in natural resource planning, transportation planning and project development, and geographic information specialists from the Mid-Atlantic Region.

COOPERATIVE RESEARCH PROGRAMS NEWS

Transit Passenger Safety Inspections: Guidebook in Development

In response to worldwide terrorist activities and growing concerns about transit security, many transit agencies are assessing their security measures and acting to reduce the risk of attacks. One of the more notable measures under consideration is the introduction of passenger safety inspections. In addition to navigating the policy and logistical issues inherent in implementing inspections, many public transportation agencies need guidance on how to determine whether inspections should be implemented.

The Transit Cooperative Research Program has awarded a \$100,000, 9-month contract to Countermeasures Assessment & Security Experts, LLC, to develop a guidebook, *Public Transportation Passenger Safety Inspections: A Guide for Decision Makers*, to assist public transportation agencies in evaluating the feasibility of passenger security inspection programs and in introducing the programs.

Questions asked by transportation agencies about the introduction of passenger security inspections include the following:

- ◆ When are passenger security inspections warranted?
- ◆ What are the legal bases for conducting passenger security inspections?
- ◆ What are the liability issues associated with implementing or not implementing passenger security inspections?
- ◆ How can measures be implemented with minimal impact on operations?
- ◆ What are the precedents in the public transportation environment? What are the lessons learned?
- ◆ How will the public respond to implementing such measures?
- ◆ What public outreach or stakeholder input should be considered?
- ◆ What types of passenger security inspections are possible, and what technologies are available to support the inspections?
- ◆ What human resources are required?

- ◆ What financial implications and cost considerations are involved?
- ◆ How effective are passenger security inspections expected to be?

What are the metrics?

- ◆ What other challenges must be addressed in implementing passenger security inspections?

Research for the guidebook will be completed in November 2006. A draft report documenting the research is planned for October 2006.

For further information, contact S. A. Parker, TRB, 202-334-2554, saparker@nas.edu.

Increasing Concrete Girder Shear Strength

Fiber-reinforced polymer (FRP)—usually externally bonded laminates or near-surface mounted bars—are gaining wide acceptance for strengthening concrete structures. Research has shown that using FRP systems to strengthen concrete girders improves both long- and short-term flexural behavior.

Lesser known are the effects of FRP systems on girder shear strength. Although experimental data have shown that FRP systems can be effective for increasing concrete girder shear strength, the design of the FRP strengthening systems has been based largely on system- or project-specific research.

The University of Missouri-Rolla has been awarded a \$400,000, 30-month contract [National Cooperative Highway Research Program (NCHRP) 12-75, FY 2006] to develop design methods, specifications, and examples for the design of FRP systems for strengthening concrete girders in shear. The proposed specifications will be prepared in a format compatible with the American Association of State Highway and Transportation Official's (AASHTO's) Load and Resistance Factor Design Bridge Design Specifications and will be recommended for adoption by the AASHTO Highway Subcommittee on Bridges and Structures.

For further information, contact Amir N. Hanna, TRB, 202-334-1892, ahanna@nas.edu.



FOCUS ON POLICY AND PRIORITIES—Tyler Duvall, Assistant Secretary for Transportation Policy, United States Department of Transportation, accompanied by Christina Casgar, Office of Freight and Logistics, Office of the Under Secretary for Transportation Policy, describes departmental policy and research priorities at the spring 2006 meeting of the TRB Executive Committee's Subcommittee on Planning and Policy Review, Washington, D.C.

IN MEMORIAM

Carl J. Seiberlich 1922–2006



SOURCE: USS HORNET MUSEUM

Carl J. Seiberlich, retired Navy rear admiral, World War II veteran, U.S. representative to the International Standards Organization, and long-time affiliate of TRB, died in Haymarket, Virginia, on March 24.

Born in Jenkinstown, Pennsylvania, Seiberlich graduated with a bachelor of science degree in marine transportation from the Merchant Marine Academy in 1943. He served in the Merchant Marine and the U.S. Navy for more than 40 years; saw action during World War II in the Atlantic and Pacific Theaters as a navigator aboard the USS *Mayo*; and witnessed the September 2, 1945, surrender of the Japanese high command at Tokyo Bay.

In 1952, Seiberlich earned his pilot's wings flying lighter-than-air craft or blimps, and made the first successful blimp night landing on an aircraft carrier. That same year, he received the Harmon International Trophy for achievement in aeronautics from President Harry S Truman for his work in the development and the fleet introduction of the world's first operational, variable depth-tone, towed sonar.

During the mid-1960s Seiberlich qualified to land multiengine airplanes on aircraft carrier flight decks. He was the only aviator in U.S. Navy history qualified to land blimps, helicopters, and airplanes on an

aircraft carrier. In 1967 Seiberlich became commanding officer of the fleet oiler USS *Salmonie*. In command of the USS *Hornet* in 1969, he participated in the recovery of NASA's first lunar landing craft, *Apollo 11*, seen by more than 500 million television viewers live on July 24, 1969. Seiberlich repeated his performance four months later by recovering the *Apollo 12* crew.

After retiring from the U.S. Navy in 1980, Seiberlich worked for several defense contractors in the transportation industry, including American President Lines, a global container shipping company, and TranSystems, a maritime consulting corporation. In his transportation career, Seiberlich worked tirelessly to bring an intermodal perspective to transportation decision making, and he was a leader in the field of supply chain management long before it became popular.

Active in TRB for 14 years, Seiberlich cochaired the Task Force on Intermodal Transportation from August 1993 to January 1998. He was a member of the Ports and Channels Committee, the steering committees for the Conference on Setting an Intermodal Transportation Research Framework and the Conference on Education and Intermodal Transportation, the Intermodal Freight Transport Committee, and the Military Transportation Committee.

The Rear Admiral Carl J. Seiberlich Fund for Youth Education has been established in his honor. For more information, go to www.uss-hornet.org/seiberlich/index.html.



Red-light camera at Northwest Highway and I-65, Garland, Texas.

Red-Light Cameras Reduce Crash Costs

Red-light running in the United States is estimated to cause more than 95,000 crashes and about 1,000 deaths per year. According to a new study by FHWA, red-light cameras at intersections can reduce the costs to society from crashes that result from red-light running.

The study examined crash-related results at 132 sites in multiple U.S. jurisdictions to determine the safety and effectiveness of red-light camera systems. The frequency of different crash types, including right-angle (side impact), left-turn, and rear-end crashes at signalized sites with and without cameras, was examined.

Data taken from camera-monitored sites indicated that right-angle or side-impact collisions typically decreased under camera enforcement, but rear-end collisions increased. The study also found that red-light camera systems would be most beneficial at intersections with relatively few rear-end crashes but many right-angle crashes.

Data were analyzed from intersections in El Cajon, San Diego, and San Francisco, California; Howard County, Montgomery County, and Baltimore, Maryland; and Charlotte, North Carolina. Because of the observational, retrospective nature of the study, the authors note that additional research is necessary.

For more information view the complete report at www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS_TE//14270.htm.

Bay Area Study Endorses Pedestrian-Friendly Zones

A new study by the Metropolitan Transportation Commission showcases the most promising techniques for making the Bay Area cities pedestrian friendly. *The Bay Area Pedestrian Districts Study* provides city, county, and regional agency planners with 10 case studies of Bay Area pedestrian-friendly zone models that examine pedestrian master plans from cities such as San Francisco, Oakland, and Berkeley.

The driving study identifies 10 models or typologies of pedestrian districts: urban residential, pedestrian-oriented suburban residential, major mixed-use district, transit village, large neighborhood corridor, major city downtown, medium-sized city downtown, small downtown, urban institutional, and suburban employment center.

The study provides practical information for traffic engineers and public works staff, with guidance on how to identify appropriate streetscape and district improvement projects. The study's cost estimates can assist in determining funding needs for similar projects by local and regional planning agencies.

For more information, view the complete report at www.mtc.ca.gov/planning/bicyclepedestrians/index.htm.

Crash Study Targets Driver Behavior

A report released in April by the U.S. Department of Transportation estimated that 43,200 people died in car crashes last year, an increase from 42,636 in 2004. Released at the same time, the 100-Car Naturalistic Driving Study, conducted by the National Highway Traffic Safety Administration (NHTSA) and Virginia Tech's Transportation Institute, cites inattentiveness and risky behavior as key factors in crashes and near-crashes.

The study was conducted by equipping 100 vehicles with sensor devices and video cameras, and tracking vehicle drivers for more than 1 year as they drove nearly 2 million miles on U.S. public roads. Drivers were involved in 82 crashes and 761 near-crashes, with 15 incidents serious enough to be reported to police.

Findings showed that drowsiness, cell phone use, and reaching for a moving object were forms of risky behavior that increased the likelihood of a crash. Risky driver behavior was noted in 80 percent of crashes and near-crashes.

Highway crashes are estimated to cost society \$230.6 billion, or about \$820 per American. Additional statistics released by FHWA include an increase in pedestrian deaths from 4,641 to 4,674, and an increase in alcohol-related fatalities, from 16,694 to 16,792. A follow-up analysis of the 100-car study results also has been released.

For more information, view the study results and analysis at www-nrd.nhtsa.dot.gov/departments/nrd-13/driver-distraction/PDF/100CarMain.pdf.

Safety Campaign Aims at Seatbelt Nonusers

Although seat belt use has reached record levels nationwide, approximately 48 million Americans do not use seat belts when driving, according to a report from the National Highway Traffic Safety Administration (NHTSA). Young males living in rural areas comprise the largest demographic among those who drive unbelted.

The report also notes that men account for 65 percent of the more than 31,000 people killed each year in passenger vehicle accidents. Other statistics indicate that of those killed while unbelted, 58 percent were killed along rural roads; in crashes involving pickup trucks, approximately 7 out of 10 killed were unbelted; and approximately 6 in 10 of those aged 8–44 years killed in passenger vehicles were not wearing safety belts.

As a countermeasure, NHTSA is spending \$31 million this year in state and federal grants for advertising aimed at drivers in the target demographic. The ad campaign, "Click It or Ticket," ran from May 22–June 4, and was backed with increased enforcement of seatbelt laws nationwide.

For more information, visit www.nhtsa.gov.

CALENDAR

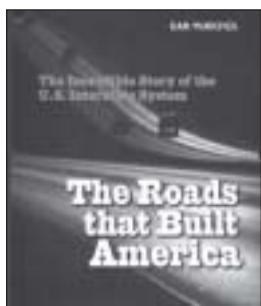
TRB Meetings

2006

July							September
8	Challenges of Data for Performance Measures <i>(by invitation)</i> La Jolla, California <i>Thomas Palmerlee</i>	30– Aug. 3	2nd International Symposium on Transportation Technology Transfer* St. Petersburg, Florida <i>Kimberly Fisher</i>	13–15	10th National Conference on Transportation Planning for Small and Medium-Sized Communities: Tools of the Trade Nashville, Tennessee	18–19	Aviation Forecast Assumption Workshops: Airports <i>(by invitation)</i> Washington, D.C. <i>Christine Gerencher</i>
9–11	TRB 2006 Summer Conference La Jolla, California	2–4	3rd Bus Rapid Transit Conference Toronto, Ontario, Canada <i>Peter Shaw</i>	18–20	5th National Seismic Conference on Bridges and Highways* San Mateo, California	25–26	National Security, Natural Disasters, Logistics, and Transportation: Assessing the Risks and Responses Kingston, Rhode Island
9–11	31st Annual Summer Ports, Waterways, Freight, and International Trade Conference La Jolla, California	6–9	1st International Conference on Fatigue and Fracture in the Infrastructure: Bridges and Structures of the 21st Century* Philadelphia, Pennsylvania	25–27	Freight Demand Modeling: A Conference on Improving Analysis and Forecasting Tools for Public-Sector Decision Making Washington, D.C. <i>Elaine King</i>	26	Symposium on Applications of Geophysics for Geotechnical Projects Breckenridge, Colorado
10–12	Traffic Signal Systems Committee Summer Meeting Woods Hole, Massachusetts	13–16	7th National Access Management Conference Park City, Utah	October	The Metropolitan Planning Organization: Present and Future—A Conference Washington, D.C. <i>Kimberly Fisher</i>	2–5	Plastic Pipes XIII Conference* Washington, D.C.
16–19	3rd International Conference on Bridge Maintenance, Safety, and Management* Porto, Portugal	13–16	9th International Conference on Applications of Advanced Technology in Transportation* Chicago, Illinois <i>Thomas Palmerlee</i>	5–6	Aviation Forecast Assumption Workshops: Business Aviation <i>(by invitation)</i> Washington, D.C. <i>Christine Gerencher</i>		
16–20	11th AASHTO–TRB Maintenance Management Conference* Charleston, South Carolina	23–26	7th International Conference on Short- and Medium-Span Bridges* Montreal, Quebec, Canada				
23–26	45th Annual Workshop on Transportation Law Chicago, Illinois <i>James McDaniel</i>	27–29					
23–26	Geospatial Data Acquisition Technologies in Design and Construction Committee Summer Meeting Port Angeles, Washington <i>Thomas Palmerlee</i>						
25–29	5th International Symposium on Highway Capacity* Yokohama, Japan						

Additional information on TRB meetings, including calls for abstracts, meeting registration, and hotel reservations, is available at www.TRB.org/calendar). To reach the TRB staff contacts, telephone 202-334-2934, fax 202-334-2003, or e-mail lkarson@nas.edu. Meetings listed without a TRB staff contact have direct links from the TRB calendar web page.

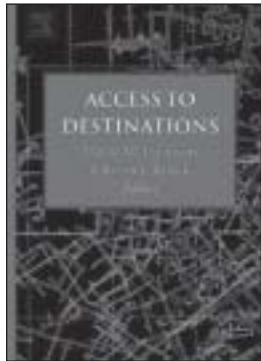
*TRB is cosponsor of the meeting.



The Roads That Built America

Dan McNichol. Sterling, 2006; 255 pp.; \$14.95; 1-4027-3468-9.

Author and former Department of Transportation appointee Dan McNichol chronicles the creation and development of the U.S. Interstate system and describes the visionaries who were responsible for bringing the "world's greatest engineering project" to fruition. The ideas and intents that shaped the system are examined in detail, including how the 67 highways, 54,663 bridges, and 104 tunnels of the system were created with the goals of improving commerce, reducing travel times, and protecting the nation from military aggression. The system's effects on the lifestyle, culture, and economy of the nation also are examined.



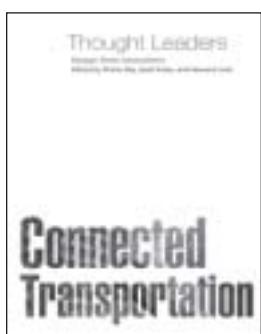
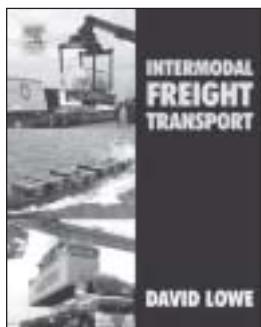
Mathematical and Economic Theory

of Road Pricing

Hai Yang and Hai-Jun Huang. Elsevier, 2005; 486 pp.; \$135; 0-08-044487-3.

This book presents the most recent advances in the application of advanced modeling techniques to road pricing. Moving beyond the empirical, the studies are carried out in the context of a general equilibrium model, with rigorous optimization and application of economic theories.

Topics of discussion include fundamentals of traffic equilibrium problems; the principle of marginal-cost road pricing; models and algorithms for the general second-best road pricing problems; discriminatory and anonymous road pricing; social and spatial equities; Pareto pricing and revenue refunding schemes; pricing, capacity choice, and financing; simultaneous determination of toll levels and locations; sequential pricing experiments with limited information; bounding the efficiency of road pricing; and dynamic road pricing.



Access to Destinations

Edited by David M. Levinson and Kevin J. Krizek. Elsevier, 2005; 422 pp.; \$94.95; 0-08-044678-7.

Efficient land use and planning is a key strategy for reducing traffic congestion. Currently measures of traffic congestion, however, rarely provide more than a snapshot of a city's transportation system and often fail to indicate how quickly a destination can be reached.

Editors Levinson and Krizek focus on the science and policy surrounding the multimodal concept of accessibility with a collection of 17 research papers from the Access to Destinations conference sponsored by the University of Minnesota Center for Transportation Studies in November 2004. Papers explore many aspects of accessibility, the loss of accessibility, and how mobility and accessibility relate to one another.

This book should be of interest to planners, engineers, and urbanists of all backgrounds. Krizek is chair

of the TRB Telecommunications and Travel Committee and secretary of the Transportation and Land Development Committee, and Levinson is a member of the TRB Transportation Demand Forecasting Committee.

Intermodal Freight Transport

David Lowe. Butterworth Heinemann, 2005; 304 pp.; \$79.95; 0-7506-5935-1.

Lowe examines the concept of intermodal freight transport, placing European experiences, developments in the United Kingdom, and political influences on intermodal freight in the context of developments in North America and Asia. Topics include rail freight operations, environmental and economic issues, grant aid and government support, intermodal road and rail vehicles, maritime vessels, customs procedures, and safety.

A comprehensive review of intermodal freight transportation, this book should be of interest to shippers, intermodal road haulers, terminal operators, equipment manufacturers, ancillary suppliers, students, and others who follow the industry's trends and developments.

Connected Transportation

Edited by Pravin Raj, Sved Hoda, and Howard Lock. Cisco Systems, 2006; 140 pp.; 0-9551959-0-X.

The editors from the Cisco International Business Solutions Group have assembled a collection of essays by business executives and leaders in government and transportation organizations highlighting issues in the U.S. transportation industry. The focus is on viable strategies to meet the demand for transportation services and to deal with the challenges that threaten to strain the transportation infrastructure. Topics include the role of government in transportation; the use of pricing as a means of controlling congestion; improving security; and the social, economic, and political factors involved in providing an efficient transportation system.

Adding FAST Lanes to Milwaukee's Freeways: Congestion Relief, Improved Transit, and Help with Funding Reconstruction

Robert W. Poole, Jr., and Kevin Soucie. Reason, 2006; 40 pp. Variable-price toll, or FAST, lanes should become the core of southeastern Wisconsin's \$6.2 billion freeway modernization plan, according to the proposals in this study. The FAST lanes would ease traffic congestion and fund road reconstruction in the Milwaukee region.

The authors examine traffic's impact on public transportation efficiency and motorist commute times; projected toll revenues; toll lane effects on emergency vehicle response times; FAST lane locations; and real-time variable pricing modeled after in-place systems in San Diego, California, and Minneapolis, Minnesota. Poole is a member of the TRB Congestion Pricing Committee.

The books in this section are not TRB publications. To order, contact the publisher listed.

TRB PUBLICATIONS

Guidance for Implementation of the AASHTO Strategic Highway Safety Plan: A Guide for Enhancing Rural Emergency Medical Services

NCHRP Report 500, Volume 14

This volume of NCHRP Report 500 provides strategies to reduce the number of crashes involving drowsy and distracted drivers by decreasing the occurrence of distracted or fatigued driving and by making the consequences of lapses of attention less severe.

2005; 96 pp.; TRB affiliates, \$16.50; TRB nonaffiliates, \$22.

Environmentally Sensitive Channel and Bank Protection Measures

NCHRP Report 544 (with supporting material on CD-ROM)

Useful, environmentally sensitive channel- and bank-protection measures are described, along with design guidelines for their application and a system for selecting the most appropriate measure for channel and bank protection.

2005; 50 pp.; TRB affiliates, \$22.50; nonaffiliates, \$30. Subscriber categories: energy and environment (IB); bridges, other structures, hydraulics and hydrology (IIC); soils, geology, and foundations (IIIA).

Developing Transportation Agency Leaders

NCHRP Synthesis 349

Practices and innovative approaches for developing transportation leadership within state department of transportation (DOT) management and operations are presented. Four key subtopics are examined: demographics, recruitment and retention, leadership training, and succession management. This synthesis will be of interest to state DOT personnel, as well as to other professionals in the public and private sectors who are dealing with the issues of leadership training and succession management.

2005; 51 pp.; TRB affiliates, \$12; nonaffiliates, \$16. Subscriber category: planning and administration (IA).

Crash Records Systems

NCHRP Synthesis 350

This synthesis examines current practices in applying crash records systems to the improvement of highway and traffic safety. No single system offers the best approaches to data collection, data processing and management, and data linkages for reporting and analysis, but systems are identified with components that successfully address one or two of these areas. Improvements are suggested for expanding the use and capabilities of crash records systems.

2005; 35 pp.; TRB affiliates, \$12; nonaffiliates, \$16.

Subscriber categories: planning and administration (IA); highway operations, capacity, and traffic control (IVA); safety and human performance (IVB).

Public Transportation Security: Public Transportation Emergency Mobilization and Emergency Operations Guide

TCRP Report 86, Volume 7

Key considerations are highlighted for public transportation agencies in working with local communities to enhance mobilization. The recommendations and tools derive from extensive research conducted with public transportation systems; local, state, and federal emergency planning agencies; and first responders around the country.

2005; 124 pp.; TRB affiliates, \$18.75; nonaffiliates, \$25. Subscriber categories: planning and administration (IA); safety and human performance (IVB); public transit (VI); rail (VII).

Public Transportation Security: Hazard and Security Plan Workshop: Instructor Guide

TCRP Report 86, Volume 10 (with supporting material on CD-ROM)

This instructor guide is designed to assist rural, small urban, and community-based passenger transportation agencies in creating hazard and security plans or in evaluating and modifying plans, policies, and procedures consistent with the National Incident Management System. The guide includes a lesson plan, a PowerPoint presentation with notes, a guide for workshop participants, and a CD-ROM that contains a template adaptable for participants' organizations, along with sample policies and procedures.

2006; 195 pp.; TRB affiliates, \$41.25; nonaffiliates, \$55. Subscriber categories: planning and administration (IA); public transit (VI); security (X).

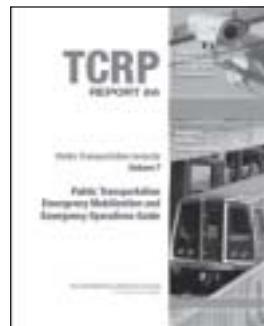
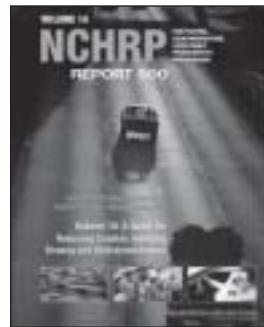
Traveler Response to Transportation System Changes: Vanpools and Buspools

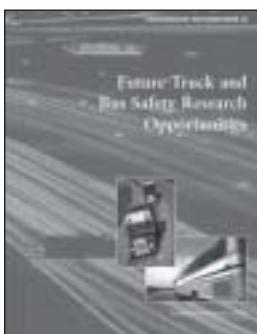
TCRP Report 95, Chapter 5

The TCRP Report 95 series comprehensively documents transportation system changes, policy actions, and alternative land use and site development design approaches. This third edition covers 18 topic areas, each to be published as a stand-alone chapter.

Chapter 5 examines the effects of travel times, pricing, and related tangibles and intangibles on the decision to vanpool; quantifies vanpooling and buspooling; examines vanpooling trends; presents information from rider surveys; identifies indicators of market potential; and explores the cost implications.

2005; 55 pp.; TRB affiliates, \$15; nonaffiliates, \$20.



TRB PUBLICATIONS (continued)

Subscriber categories: planning and administration (IA); highway operations, capacity, and traffic control (IV); public transit (VI).

Future Truck and Bus Safety**Research Opportunities****Conference Proceedings 38**

The conference on Future Truck and Bus Safety Research Opportunities, held in March 2005 in Arlington, Virginia, considered the directions of the commercial vehicle industry and explored the types of research needed to meet the upcoming challenges. The proceedings include research papers along with summaries of the issues, comments, future scenarios, and other information addressed at the conference. Also presented are the results of a follow-up meeting of the conference committee, which synthesized the information and deliberated on findings and recommendations for future research.

2006; 107 pp.; TRB affiliates, \$30; nonaffiliates, \$40.
Subscriber category: safety and human performance (IVB).

**Pavement Rehabilitation, Strength and Deformation Characteristics, and Surface Properties 2005****Transportation Research Record 1905**

This multifaceted selection of papers presents information on asphalt pavement rehabilitation treatments, Wisconsin's experiences with reflective crack relief projects, the interpretation of transverse profiles to determine the source of rutting within an asphalt pavement system, assessments of pavement layer condition with use of multiload-level falling weight deflectometer deflections, a methodology for the detection of defect locations in pavement profiles, and modeling hydroplaning and the effects of pavement microtexture.

2005; 176 pp.; TRB affiliates, \$41.25; nonaffiliates, \$55. *Subscriber category:* pavement design, management and performance (IIB).

Freight Analysis, Evaluation, and Modeling 2005**Transportation Research Record 1906**

The first section of this two-part volume contains the 2005 Thomas B. Deen Distinguished Lecture by Lillian C. Borrone, "Sparking the Globalized Trade and Transportation Connection: Supplying Freight System Responses to Global Trade Demands." The second part includes information on the technical efficiency of road haulage firms; urban freight in Dublin City Center, Ireland; the impact of pickup- and delivery-related illegal parking activities on traffic; multiobjective optimization for hazardous materials transportation; and measurement tools for assessing a motor vehicle divi-

sion's port-of-entry performance.

2005; 128 pp.; TRB affiliates, \$37.50; nonaffiliates, \$50. *Subscriber category:* freight transportation (multimodal) (VIII).

Construction 2005**Transportation Research Record 1907**

Authors assess topics in construction management, quality assurance, bridges and structures, portland cement concrete pavement, and hot-mix asphalt pavement. Specific subjects include improving construction communication; the computerized system for efficient scheduling of highway construction; development of the Florida Department of Transportation's percent-within-limits hot-mix asphalt specification; design and construction of a full-width, full-depth, precast concrete deck slab on a steel girder bridge; changing the shape and location of pavement load transfer devices; and the initial ride quality of hot-mix asphalt pavements.

2005; 144 pp.; TRB affiliates, \$37.50; nonaffiliates, \$50. *Subscriber category:* materials and construction (IIIB).

Statistical Methods; Highway Safety Data, Analysis, and Evaluation; Occupant Protection; Systematic Reviews and Meta-Analysis**Transportation Research Record 1908**

Safety studies presented in this volume cover use of a linear optimization model to maximize the safety benefits from highway improvements under specific budget constraints and the analysis of types of crashes at signalized intersections with complete crash data. Other investigations examine the events leading to a sport utility vehicle rollover, as well as countermeasures for deer-vehicle crashes.

2005; 235 pp.; TRB affiliates, \$44.25; nonaffiliates, \$59. *Subscriber category:* safety and human performance (IVB).

Inland Waterways; Ports and Channels; and the Marine Environment**Transportation Research Record 1909**

The research topics examined in this volume include the study of short-run grain movements of the inland waterway system, long-term forecasting of world grain trade by gulf exports, measuring the nontraditional benefits and costs of inland navigation, European transport policy and the Danube River, rural water transport and development, geographical characterization of ship traffic and emissions, and oil spills in maritime transit.

2005; 107 pp.; TRB affiliates, \$34.50; nonaffiliates, \$46. *Subscriber category:* marine transportation (IX).

To order the TRB titles described in Bookshelf, visit the TRB online Bookstore, www.TRB.org/bookstore/, or contact the Business Office at 202-334-3213.