

TR NEWS



**Asset
Management
for a Durable
Infrastructure**
Practical Perspectives

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

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

The **Transportation Research Board** is one of six major divisions of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance, and which is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities.

www.TRB.org

TRANSPORTATION RESEARCH BOARD 2010 EXECUTIVE COMMITTEE*

Chair: Michael R. Morris, Director of Transportation, North Central Texas Council of Governments, Arlington
Vice Chair: Neil J. Pedersen, Administrator, Maryland State Highway Administration, Baltimore
Executive Director: Robert E. Skinner, Jr., Transportation Research Board

J. Barry Barker, Executive Director, Transit Authority of River City, Louisville, Kentucky
Allen D. Biehler, Secretary, Pennsylvania Department of Transportation, Harrisburg
Larry L. Brown, Sr., Executive Director, Mississippi Department of Transportation, Jackson
Deborah H. Butler, Executive Vice President, Planning, and CIO, Norfolk Southern Corporation, Norfolk, Virginia
William A. V. Clark, Professor, Department of Geography, University of California, Los Angeles
Eugene A. Conti, Jr., Secretary of Transportation, North Carolina Department of Transportation, Raleigh
Nicholas J. Garber, Henry L. Kinnier Professor, Department of Civil Engineering, and Director, Center for Transportation Studies, University of Virginia, Charlottesville
Jeffrey W. Hamiel, Executive Director, Metropolitan Airports Commission, Minneapolis, Minnesota
Paula J. Hammond, Secretary, Washington State Department of Transportation, Olympia
Edward A. (Ned) Helme, President, Center for Clean Air Policy, Washington, D.C.
Adib K. Kanafani, Cahill Professor of Civil Engineering, University of California, Berkeley (Past Chair, 2009)
Susan Martinovich, Director, Nevada Department of Transportation, Carson City
Debra L. Miller, Secretary, Kansas Department of Transportation, Topeka (Past Chair, 2008)
Sandra Rosenbloom, Professor of Planning, University of Arizona, Tucson
Tracy L. Rosser, Vice President, Corporate Traffic, Wal-Mart Stores, Inc., Mandeville, Louisiana
Steven T. Scalgo, Chief Operating Officer, Marine Resources Group, Seattle, Washington
Henry G. (Gerry) Schwartz, Jr., Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, Missouri
Beverly A. Scott, General Manager and Chief Executive Officer, Metropolitan Atlanta Rapid Transit Authority, Atlanta, Georgia
David Seltzer, Principal, Mercator Advisors LLC, Philadelphia, Pennsylvania
Daniel Sperling, Professor of Civil Engineering and Environmental Science and Policy; Director, Institute of Transportation Studies; and Interim Director, Energy Efficiency Center, University of California, Davis
Kirk T. Steudle, Director, Michigan Department of Transportation, Lansing
Douglas W. Stotlar, President and Chief Executive Officer, Con-Way, Inc., Ann Arbor, Michigan
C. Michael Walton, Ernest H. Cockrell Centennial Chair in Engineering, University of Texas, Austin (Past Chair, 1991)

Peter H. Appel, Administrator, Research and Innovative Technology Administration, U.S. Department of Transportation (ex officio)
J. Randolph Babbitt, Administrator, Federal Aviation Administration, U.S. Department of Transportation (ex officio)
Rebecca M. Brewster, President and COO, American Transportation Research Institute, Smyrna, Georgia (ex officio)
George Bugliarello, President Emeritus and University Professor, Polytechnic Institute of New York University, Brooklyn; Foreign Secretary, National Academy of Engineering, Washington, D.C. (ex officio)
Anne S. Ferro, Administrator, Federal Motor Carrier Safety Administration, U.S. Department of Transportation (ex officio)
LeRoy Gishi, Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior, Washington, D.C. (ex officio)
Edward R. Hamberger, President and CEO, Association of American Railroads, Washington, D.C. (ex officio)
John C. Horsley, Executive Director, American Association of State Highway and Transportation Officials, Washington, D.C. (ex officio)
David T. Matsuda, Deputy Administrator, Maritime Administration, U.S. Department of Transportation (ex officio)
Victor M. Mendez, Administrator, Federal Highway Administration, U.S. Department of Transportation (ex officio)
William W. Millar, President, American Public Transportation Association, Washington, D.C. (ex officio) (Past Chair, 1992)
Tara O'Toole, Secretary for Science and Technology, U.S. Department of Homeland Security (ex officio)
Robert J. Papp (Adm., U.S. Coast Guard), Commandant, U.S. Coast Guard, U.S. Department of Homeland Security (ex officio)
Cynthia L. Quarterman, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (ex officio)
Peter M. Rogoff, Administrator, Federal Transit Administration, U.S. Department of Transportation (ex officio)
David L. Strickland, Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation (ex officio)
Joseph C. Szabo, Administrator, Federal Railroad Administration, U.S. Department of Transportation (ex officio)
Polly Trottenberg, Assistant Secretary for Transportation Policy, U.S. Department of Transportation (ex officio)
Robert L. Van Antwerp (Lt. General, U.S. Army), Chief of Engineers and Commanding General, U.S. Army Corps of Engineers, Washington, D.C. (ex officio)

* Membership as of October 2010.

TR NEWS

NUMBER 270

SEPTEMBER–OCTOBER 2010

ASSET MANAGEMENT FOR A DURABLE INFRASTRUCTURE

3 INTRODUCTION

Asset Management at Work: Practical Perspectives on an Evolving Strategy

David L. Blake, Sue McNeil, and Kathryn A. Zimmerman

Whatever the infrastructure asset to be maintained, the principles of asset management can apply. Articles in this issue showcase a range of asset management experiences and successes, illustrating the principles at work in particular environments and offering practical insights into an evolving, proven, and valuable strategy.

4 Transportation Asset Management Timeline

6 **Asset Management to Improve Highway Performance: Lessons from North Carolina and Tillamook County, Oregon**

Patricia M. Bugas-Schramm and Lacy D. Love

The North Carolina Department of Transportation and Tillamook County Public Works in rural Oregon have worked to convert data about their activities, projects, and programs into information that decision makers can use in managing performance across a range of assets while minimizing cost and risk. Here are the challenges faced and the solutions that worked—which also have gained community support.

7 Transportation Asset Management: Definitions and Principles

Philip Tiewater and Kathryn A. Zimmerman

14 Applying Asset Management to the Interstate Highway System

16 **Driving Asset Management Through Performance: Culture Change and Proven Results at the Missouri Department of Transportation**

Mara K. Campbell

Missouri DOT has achieved significant improvements in pavement and other assets by implementing throughout the organization a performance management approach—data-driven, results-focused, accountability-based, and incorporating asset management practices. The system offers flexibility to adapt to customer needs and to an uncertain funding environment.

21 Developing Asset Management Programs for Airports

Marci A. Greenberger

22 **Local Communities Adopting Asset Management: Initiatives, Models, and Results in Michigan and Wisconsin**

Steve Warren

In Michigan and Wisconsin, statewide initiatives have encouraged local agencies to adopt an asset management approach to paved road conditions. Many local agencies are using asset management to educate decision makers and stakeholders about the basics of pavement deterioration and to explain the logic and sense of a mix-of-fixes preservation strategy.

28 **Visualization of Transportation Assets with Geobrowsers: Cost-Effective Tools for Exploration, Interaction, and Decision Making**

M. T. Darter, T. A. Lasky, and B. Ravani

Geobrowsers that use free or low-cost software have opened new opportunities for asset visualization, improving ease of use by transportation staff from diverse professional backgrounds, as well as by the public. Geographic visualization can assist in asset management by emphasizing exploration, interaction, and decision making.

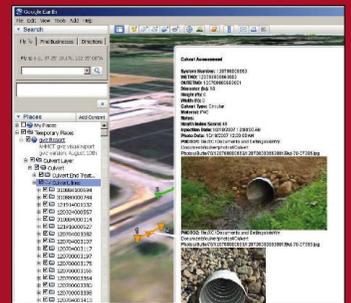
32 Asset Management Resources



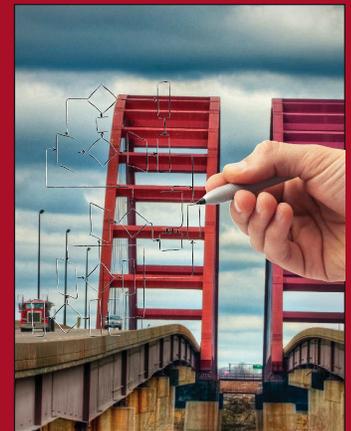
3



22



28



COVER: As the nation's infrastructure ages, states and localities are putting asset management principles to work to improve the management and extend the service life of infrastructure assets. (Background photo: Missouri Department of Transportation)

TR NEWS

features articles on innovative and timely research and development activities in all modes of transportation. Brief news items of interest to the transportation community are also included, along with profiles of transportation professionals, meeting announcements, summaries of new publications, and news of Transportation Research Board activities.

TR News is produced by the Transportation Research Board Publications Office

Javy Awan, Editor and Publications Director
Lea Mae Rice, Assistant Editor
Jennifer J. Weeks, Photo Researcher
Juanita Green, Production Manager
Michelle Wandres, Graphic Designer

TR News Editorial Board

Frederick D. Hejl, Chairman
Jerry A. DiMaggio
Charles Fay
Christine L. Gerencher
Edward T. Harrigan
Christopher J. Hedges
Russell W. Houston
Thomas R. Menzies, Jr.
G.P. Jayaprakash, Research Pays Off Liaison

Transportation Research Board

Robert E. Skinner, Jr., Executive Director
Suzanne B. Schneider, Associate Executive Director
Mark R. Norman, Director,
Technical Activities
Stephen R. Godwin, Director,
Studies and Special Programs
Michael P. LaPlante, Director,
Administration and Finance
Christopher W. Jenks, Director,
Cooperative Research Programs
Neil F. Hawks, Director, SHRP 2

TR News (ISSN 0738-6826) is issued bimonthly by the Transportation Research Board, National Research Council, 500 Fifth Street, NW, Washington, DC 20001. Internet address: www.TRB.org.

Editorial Correspondence: By mail to the Publications Office, Transportation Research Board, 500 Fifth Street, NW, Washington, DC 20001, by telephone 202-334-2972, by fax 202-334-3495, or by e-mail jawan@nas.edu.

Subscriptions: North America: 1 year \$55; single issue \$10. Overseas: 1 year \$80; single issue \$14. Inquiries or communications concerning new subscriptions, subscription problems, or single-copy sales should be addressed to the Business Office at the address below, or telephone 202-334-3216, fax 202-334-2519. Periodicals postage paid at Washington, D.C.

Postmaster: Send changes of address to *TR News*, Transportation Research Board, 500 Fifth Street, NW, Washington, DC 20001.

Notice: The opinions expressed in articles appearing in *TR News* are those of the authors and do not necessarily reflect the views of the Transportation Research Board. The Transportation Research Board and *TR News* do not endorse products or manufacturers. Trade and manufacturers' names appear in an article only because they are considered essential to its object.

Printed in the United States of America.

Copyright © 2010 National Academy of Sciences. All rights reserved. For permissions, contact TRB.

33 POINT OF VIEW **The Right Fix at the Right Time**

Kirk T. Steudle

For nearly two decades, Michigan DOT has applied an asset management approach to investing in its infrastructure, and local transportation partners have worked to do the same for almost 10 years. The state agency's director reviews the practical lessons and the benefits, as the legislature considers funding allocations in adverse economic times.

ALSO IN THIS ISSUE:

37 Calendar

38 Research Pays Off **Get on the Bus: Connecting Small Communities on Montana's Hi-Line**

David Kack

40 Profiles

Bridge design engineer Barney T. Martin, Jr., and civil engineering professor and consultant Reginald R. Souleyrette

42 News Briefs

War of 1812 ship, green initiatives, online shopping's effects, and European traffic

44 TRB Highlights

Cooperative Research Programs News, 44

46 Bookshelf

COMING NEXT ISSUE



The Transportation Research Board celebrates its 90th Anniversary in 2011, and the November–December 2010 *TR News* will inaugurate the occasion with a feature article by past Executive Director Thomas B. Deen, reviewing the organization's history and characteristics but focusing on developments and trends in the past 15 years.

Supplementary features and sidebars include selected major milestones in TRB's evolution, a look forward to the next 10 years and TRB's centennial, summary comments from some of TRB's significant players, and a review of the first 5 years of the Airport Cooperative Research Program. Other features present state department of transportation experiences with public communication through social networking media, policy lessons for today from medieval bridge builders, and more.