

TERRA 2011 Highlights

The Transportation Engineering and Road Research Alliance (TERRA) facilitates collaborative pavement and road-related research. The success of TERRA research, engagement, and communications efforts continues primarily because of the committed service of its members, the TERRA Board, and three active committees structured around the organization's strategic directions. This brief report highlights TERRA activities during the past year—a quick look inside this flourishing, vibrant, and vital road research alliance.



Professor Jerzy Ejsmont from Gdansk, Poland, prepares equipment to measure pavement rolling resistance at MnROAD.

Research and Implementation

The TERRA Research and Implementation Committee guides research projects and initiatives that involve collaborations among agency, industry, and academic partners, including a series of pooled-fund projects initiated through the Federal Highway Administration (FHWA) Transportation Pooled-Fund Program. Highlights from 2011:

- University researchers from Gdansk, Poland, used a specially designed trailer shipped from Poland to measure pavement rolling resistance at MnROAD. The technology previously had never been used within the United States. Reducing rolling resistance by improving pavement design, especially surface texture, could reduce fuel consumption in many vehicles up to 14 percent.
- Researchers are evaluating the effectiveness of a new guide-sign font developed by SignCAD Systems, Inc. Retroreflective materials used for guide signs have changed dramatically in the last 50 years, but fonts used on these signs have not. The SignCAD font, which is designed especially for older drivers, is available for free.
- A unique partnership of several state DOTs and four universities is developing asphalt mixture specifications for low-temperature cracking based on laboratory fracture testing and modeling. Field performance tests using nine new asphalt mixtures have been conducted at MnROAD. As a result of this research, upgrades to the AASHTO 2002 Design Guide are under consideration and could be implemented within three years.



A MnROAD tour participant examines a composite pavement test slab cross-section.

Engagement

The Member and Partner Engagement Committee encourages new ways of thinking about research problems by emphasizing partnership and cooperation to address the large-scale challenges before transportation professionals and policymakers. Highlights from 2011:

- During the past year, TERRA considered eight new projects and initiated seven considered in previous years. New collaborative research and implementation projects include evaluating temporary erosion and sediment control measures, determining the economic benefit of recycled aggregates in concrete pavement, measuring the rolling resistance of innovative diamond grinding, examining agency and industry-initiated warranties, and exploring the nanoscience of hot-mix asphalt pavement.
- The Michigan Department of Transportation (MDOT) hosted a three-day peer exchange to review plans for systematically implementing high-value research results. Team members included six transportation research managers from around the country who brought a rich variety of perspectives to the discussion.
- Several TERRA members were exhibitors at the 2011 National Association of County Engineers (NACE) Conference in Minneapolis.

Communications and Outreach

The TERRA Marketing and Communications Committee is focused on providing up-to-date information about ongoing research, communicating research results to a variety of audiences worldwide, and engaging stakeholders in a dialogue on road research and implementation activities. Highlights from 2011:

- As part of the TERRA Innovations Series, TERRA hosted the MnROAD Research Conference in October to share findings from several TERRA-initiated pooled-fund and other research studies ready for implementation around the country. More than 160 attendees participated from at least 13 states and Norway. Related events included a quarterly TERRA board meeting and technical advisory panel (TAP) meetings for seven MnROAD pooled-fund projects.
- Regional and national speakers at the 2011 TERRA Pavement Conference highlighted sustainability, innovative construction practices for better pavement performance, alternatives to paving, best practices for in-place recycling, and PCC pavement rehabilitation. The conference was the second under the TERRA label and the 15th overall.
- TERRA produced a promotional article for members to share summarizing the many benefits of collaborating through TERRA on pavement and road engineering research innovations. TERRA also offers members display materials for use at conferences and other events to promote interest in road research and facilitate new partnership opportunities.

TERRA Members

The TERRA Board includes representatives of industry associations, transportation agencies, and university research organizations who collaborate to set directions for TERRA research and outreach activities. The year's key highlights include welcoming Braun Intertec and the Iowa Department of Transportation as members.

Organizations currently represented on the TERRA board:

Industry

- Aggregate & Ready Mix Association of Minnesota
- American Concrete Pavement Association
- American Traffic Safety Services Association–Northland Chapter
- Associated General Contractors of Minnesota
- Braun Intertec*
- Caterpillar
- Concrete Paving Association of Minnesota
- Mathy Technology and Engineering Services
- Minnesota Asphalt Pavement Association
- RMC Research and Education Foundation
- Road Science, A Division of ArrMaz Custom Chemicals

National Transportation Agencies

- Norwegian Public Roads Administration
- United States Federal Highway Administration



TERRA Innovation Series event participants tour MnROAD.

Fact sheets

TERRA added to an ongoing series of fact sheets that highlight timely research topics. Each fact sheet shares examples of how research has been implemented and provides several resources for further information about the topic.

Fact sheet topics:

- Low-Cost Safety Improvements
- Concrete Overlays
- Greenroads
- Impacts of Farm Equipment
- Rumble Strips
- Warm-Mix Asphalt
- Pervious Concrete
- Full-Depth Reclamation (FDR)
- Implementation of New Technologies
- Low-Volume Roads

State and Local Transportation Agencies

- Iowa Department of Transportation*
- Michigan Department of Transportation
- Minnesota Department of Transportation
- Minnesota Local Road Research Board
- New York State Department of Transportation
- North Dakota Department of Transportation
- Wisconsin Department of Transportation

University Research Organizations

- Iowa State University
- Michigan Technological University
- University of Minnesota

* new member in 2011