



Connecting Partners

Pooling Research Funds

Sharing Results

TERRA

Transportation Engineering and Road Research Alliance

Partnering for Roadway Innovation



www.TerraRoadAlliance.org



Our quality of life depends on transportation

A strong transportation network is essential for competing in the global marketplace. Yet our infrastructure is aging, construction costs are rising, and the public is demanding a higher level of service—all while revenues are in decline. These trends make it clear: We need innovative solutions to preserve what we have and to invest in tomorrow.

TERRA: A collaborative approach to transportation research

The Transportation Engineering and Road Research Alliance is a unique force for this much-needed innovation. TERRA was formed in 2004 after a task force of Minnesota government, industry, and academic representatives investigated road research governing structures and evaluated ways to broaden the use of the unique capabilities of the Minnesota Road Research Project (MnROAD) test facility. TERRA's dynamic partnering efforts now reach beyond Minnesota to include transportation organizations in other states and in Europe.

TERRA's mission is to develop, sustain, and communicate a comprehensive program of research on pavement, materials, and related transportation engineering challenges, including issues related to cold climates.

TERRA promotes innovative research that benefits:

- Policymakers, by providing data that help them make informed transportation decisions.
- Taxpayers, by leveraging public dollars, cutting construction and repair costs, and investing for the future.
- The traveling public, by improving roads and minimizing vehicle damage, increasing safety, and reducing construction-related congestion.
- Transportation practitioners, by arming them with information that helps them do their jobs more efficiently.

Solving common problems with research

TERRA members join together to establish priorities, attract funding, pool research dollars, and share results. The diverse membership gives TERRA a broad perspective, representing the needs of everyone from county agencies to private industry to national road administrations.

TERRA also works to put research results into practice. TERRA uses tools such as a Web site (TerraRoadAlliance.org) and an electronic newsletter to communicate research findings and help members learn from each other. It also holds events in Minnesota and other TERRA member states through the TERRA Innovation Series, which showcases TERRA activities, research, and products.

We must take significant, decisive action now to create and sustain the pre-eminent surface transportation system in the world.

— *Transportation for Tomorrow*: Report of the National Surface Transportation Policy and Revenue Study Commission, 2008

Innovation saves money

Pavement research has already brought significant savings to the people of Minnesota. Conservative estimates based on Minnesota and national data indicate that research conducted at MnROAD, a comprehensive outdoor pavement research facility north of Minneapolis, has saved Minnesota taxpayers \$33 million per year. Transferring these savings to the national level could mean nearly \$750 million in annual savings.

One example: improvements in the timing of spring road-weight restrictions have reduced pavement failures, saving an estimated \$14 million annually in road repairs in Minnesota.

Improvement/innovation	Minnesota savings \$million	National potential savings \$million
Spring load restriction policy	14	210
Winter load increase policy	7	105
Low-temperature cracking reduction	6	114
Asphalt and concrete pavement designs	5	10
Sealing pavement/shoulder joints	1	60



TERRA research helps:

- Develop better methods and materials to preserve the infrastructure.
- Save money through innovation.
- Keep people and products—and the economy—moving.
- Improve traffic safety.
- Reduce delays and congestion from reconstruction/repair.
- Protect the environment.

TERRA and the Environment

TERRA is about more than saving money—it's also about saving the environment. For example, MnROAD's controlled test site allowed researchers to study the effects of roadside plantings and check-dams on rainwater runoff. They found these methods reduced runoff pollutants (such as road salt) as much as 54 percent—pollutants that otherwise could find their way into our rivers, lakes, and watersheds.



Thoughts from our members:

“One of my primary goals as commissioner is to regenerate a spirit of innovation and creativity in Minnesota. TERRA is a fine example of how partnerships that reach across borders can lead to innovation that helps Minnesota.”

—Tom Sorel, Commissioner, Minnesota Department of Transportation

“TERRA’s collaborative approach to pavement and road engineering research already has begun to yield innovative solutions to our common transportation problems.”

— Fred Corrigan, Executive Director, Aggregate & Ready Mix Association of Minnesota

“Cold weather climates—whether in Minnesota or Norway—present unique challenges for pavements. We are pleased to be part of the international knowledge transfer provided through TERRA.”

— Leif Baklokk, Senior Principle Engineer, Norwegian Public Roads Administration

“The demonstrated research leadership at the University of Minnesota and Mn/DOT is a key factor in TERRA’s success.”

—Roberto Ballarini, Professor and Head, Department of Civil Engineering, University of Minnesota

“TERRA is a great opportunity to get exposure to the agencies and do it in a highly research-oriented framework with a lot of substance behind it.”

—Dan Wegman, Account Manager, Road Science

“There is an increasing need to find solutions that incorporate sustainability into the transportation industry. Our goal in joining TERRA is to foster new partnerships and collaborations to develop these solutions and offer our current strengths to others.”

— Lawrence Sutter, Professor and Director, Michigan Tech Transportation Institute (MTTI) and the University Transportation Center for Materials in Sustainable Transportation Infrastructure (MiSTI)

TERRA Members

The TERRA Board includes representatives of the pavement industry, transportation agencies, and university research organizations who collaborate to set directions for TERRA’s research and outreach activities. Organizations currently represented on the board include:

Aggregate and Ready Mix Association of Minnesota	Iowa Department of Transportation Iowa State University	North Dakota Department of Transportation Norwegian Public Roads Administration
American Concrete Pavement Association	Mathy Technology and Engineering Services	RMC Research and Education Foundation
American Traffic Safety Services Association - Northland Chapter	Michigan Department of Transportation Michigan Technological University	Road Science , A Division of ArrMaz Custom Chemicals
Associated General Contractors of Minnesota	Minnesota Asphalt Pavement Association	United States Federal Highway Administration
Braun Intertec	Minnesota Department of Transportation	University of Minnesota
Caterpillar	Minnesota Local Road Research Board	Wisconsin Department of Transportation
Concrete Paving Association of Minnesota	New York State Department of Transportation	

Contact TERRA

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