TERRA Transportation Engineering and Road Research Alliance

Partnering for Roadway Innovation

TERRA 2014 Highlights

The Transportation Engineering and Road Research Alliance brings together government, industry, and academia to develop and implement collaborative innovations through pavement and road engineering research. The continued success of TERRA stems primarily from the committed service of the TERRA General Assembly, coordinated research and implementation activities by members, and thriving ad hoc task forces. This brief report highlights TERRA research and implementation, engagement, and communications activities during the past year.

Intelligent compaction has attracted significant interest among TERRA members.

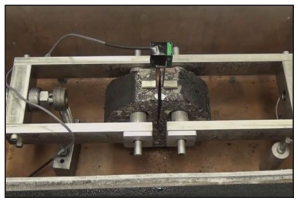
Research and Implementation

The TERRA General Assembly guides research projects and initiatives involving collaborations among the public sector, private and non-profit sector, and academic sector. In addition, research coordinators representing each state DOT member organization share research and its implementation among members. Highlights from 2014:

- TERRA was awarded $95,000 of Federal Highway Administration State Transportation Innovation Council (STIC) incentive program funding by the Minnesota Department of Transportation (MnDOT) for TERRA-related implementation activities. The STIC is the leadership platform in every state established to identify critical needs, find best solutions, and get them into practice quickly. STICs help facilitate the deployment of innovations and engage the various stakeholders within the state.

- MnROAD and its southern U.S. equivalent, the National Center for Asphalt Technology in Auburn, Alabama, are planning to partner in order to better leverage research performed at their cold- and hot-weather facilities. Each facility has a history of evaluating the performance of pavement preservation treatments, including chip sealing, microsurfacing, crack sealing, and thin overlays. To address needs in both northern and southern climates, similar test sections would be developed at each facility.

- Low-temperature cracking is the most prevalent form of distress found in asphalt pavements in cold climates. The disc-shaped compact tension (DCT) test, developed through a decade-long multi-state pooled-fund research project, evaluates the low-temperature performance of asphalt mixes by applying tension to an asphalt mixture sample to determine its thermal fracture resistance. MnDOT is conducting pilot tests to become more familiar with DCT testing and to educate road contractors, who may eventually be required to use the test in the state.



TERRA STIC-funded research projects

- *Asphalt Mixture Performance Testing for Fatigue and Thermal Cracking*. This study aims to develop asphalt mixture performance specifications for TERRA members based on broad specifications and the implementation of performance specifications by Iowa, Minnesota, and Wisconsin DOTs.
- *Implementation of Thin Bonded Concrete Overlays of Asphalt Pavements*. This project is designed to educate engineers, planners, and policy makers on the potential and proper applications of bonded concrete overlays of asphalt pavements in Minnesota and other TERRA member states.
- *Best Practices for Soil Stabilization Design and Construction*. This project will deliver a best-practices document for soil stabilization design and construction using fly ash, cement, lime, and other chemical stabilizers.

TERRA Member Organizations

The TERRA General Assembly includes representatives of 22 industry associations, transportation agencies, and university research organizations. This year, TERRA welcomed the National Ready Mixed Concrete Association as a new member organization.

MnROAD celebrates its 20th anniversary with an open house.

Communications

The TERRA 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 2014:

- MnROAD celebrated its 20th anniversary by welcoming research partners, supporters, and friends to an open house in August. MnROAD staff conducted tours of the mainline and low-volume road along with equipment demos in the parking lot. Staff also gathered suggestions for its 2016 research program in addition to discussing current and completed research. In April, MnDOT held a national peer exchange with public and private stakeholders to gain their input and funding options.

- Pavement engineers from around the nation met in September for the Midwestern Pavement Preservation Partnership Forum and the SHRP2 R26 Workshop for the Preservation of High-Traffic-Volume Roadways. During the event, conference participants toured MnROAD and also reviewed the latest preservation techniques being developed for high-volume roads. MnROAD's chip sealing study of higher-volume highways drew special interest from several agencies.

- A half-day TERRA Innovations Series event highlighted current pavement-related research topics in the Wisconsin transportation community and offered tours of two of the University's traffic engineering laboratories and the Wisconsin Energy Institute. The event was held in August at the University of Wisconsin-Madison, in conjunction with the Mid-Continent Transportation Research Symposium.

- The 18th Annual TERRA Pavement Conference in February, which attracted nearly 200 attendees, was held in conjunction with a meeting of the TERRA General Assembly as well as the Road Dust Institute's 3rd Road Dust Best Management Practices Conference. The conference featured a number of presentations highlighting traditional pavement surfaces of asphalt, concrete, and gravel, as well as topics such as Canadian ice highways and Wisconsin farm roads.

Engagement

The TERRA Membership 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 2014:

- Funding for new TERRA-initiated research projects through FY14 totaled $316,377. The seven projects are flexible micro-surfacing, DCT implementation in Minnesota, thin concrete repair, diamond grinding of pervious concrete, pervious paver blocks, high-volume chip seal, and concrete repairs. The funding reflects contributions, both monetary and in-kind, from industry, federal, and state organizations.

- A survey revealed that TERRA members highly value General Assembly presentations. This year, for example, intelligent compaction (IC) drew significant interest when featured at two of the quarterly meetings. Presenters from MnDOT, a recognized leader in the use of intelligent compaction, outlined plans to use IC in all asphalt paving projects by 2018. A speaker with the Federal Highway Administration shared preliminary results from hot-mix asphalt in-place density studies and discussed efforts to create a new pooled fund for VEDA software development and implementation. An Iowa State University researcher provided details about participation in an 11-state pooled-fund study examining IC projects and outcomes.

- Halil Ceylan from InTrans at Iowa State University became the new TERRA lead research coordinator. In that role, Ceylan works with coordinators from each state department of transportation member organization to ensure that research and its implementation are being shared among members. He is spearheading an effort to compile a master list of active and recently completed research projects from TERRA members. In addition, two new ad hoc task forces—on cold in-place recycling and fly ash—illustrate highly productive collaboration within the organization.

Fact sheet draws national interest

The Transportation Research Board (TRB) e-newsletter featured TERRA's latest fact sheet in November. The TERRA fact sheet, which highlights current practices for patching concrete and asphalt pavements, is based on a recent synthesis report from the National Cooperative Highway Research Program.

TERRA also published two additional fact sheets this year. One provides an overview of a multi-agency project in Wisconsin to develop new farm equipment weight standards. The other summarizes selected pavement preservation techniques from a variety of research projects at MnROAD.