



ACCELERATOR

Putting your ideas in motion

Recent Transportation Research Syntheses

- TRS1305 Asset Management for Retaining Walls
- TRS1306 Pedestrian Snow Removal Best Practices and Lessons Learned
- TRS1307 Cost Sharing Policies of State Transportation Agencies
- TRS1308 Bridge Safety Inspection and NBIS Bridge Inspection Program Administration
- TRS1309 Quantifying the Economic Impact of Bicycling: A Literature Review with Implications for Minnesota
- TRS1311 Applications of Computational Fluid Dynamics for River Simulation: State of the Practice
- TRS1313 STIP and TIP Amendment Procedures: A Review of State and MPO Practices

To Request a TRS

Contact Shirlee Sherkow
at 651-366-3783 or
Shirlee.Sherkow@state.mn.us.

Call today and get your report
in four to eight weeks!
[TRS Request Form](#)

Need Answers Now? Request a TRS

Before MnDOT's Metro District created an asset management plan for its retaining walls, staff wanted to know what other state departments of transportation had done. So the district contacted Research Services & Library to request a Transportation Research Synthesis.

A TRS is a type of literature review—either a report about the state of practice among other state DOTs, a summary of completed or in-progress research about a particular topic, or both. Unlike many other types of research, a TRS can be done relatively quickly—usually in a matter of weeks.

For Metro District staff, the requested TRS was a huge time-saver.

“Having the TRS has saved me days of research and writing,” said Trisha Nelson, a Metro District infrastructure asset management engineer. “The final product was great, with organized and thorough information. I’ve read all the referenced documents and contacted a couple of the experts referenced in the TRS.”

Likewise, Mark Gieseke, director of the Office of Transportation System Management, recently requested a TRS on cost-sharing policies. He said the results have helped shape ongoing discussions about the topic.

“People often ask, ‘How do other states do it?’” Gieseke said. “It’s nice to be able to have some answers to that question.”

A TRS can help you investigate a problem without starting from scratch. It can tell you what other states are doing



TRS1305, Asset Management for Retaining Walls, provided valuable information about how DOTs track and maintain the many barriers that keep soil from eroding onto roadways. Information gathered for this TRS included asset data collection techniques, inspection guidelines and schedules, life span estimates for several wall types in various conditions and risk management strategies.

with designs, specifications, manuals and procedures. It can also provide a review of the latest and greatest research on any issue that affects state DOTs. The end result is a clear, concise report with all the relevant findings in one place.

Implementation Projects



“There was a lot of confusion among local road authorities about the elements of Complete Streets programs and what issues agencies need to consider. This synthesis presents the latest and greatest in what practitioners are doing for Complete Streets.”

—Jeff Hulsether, City Engineer, City of Brainerd

Wind Turbines, Other Heavy Items Wear Down County Roads



Materials & Construction — When a wind farm is constructed, trucks carry heavy components over roads never intended to handle such loads. Traffic for a single construction project can easily consume half of a county road’s expected 20-year life span in a single season! To estimate the impact on roadways, researchers developed an Excel-based calculator that is now being used to help counties recoup costs for road damage. This tool also helps developers, as costs can be determined upfront. Researchers are adapting this tool for use in frac sand mining projects, and within the next year, an impact calculator will be created for generic heavy projects.

[Technical Summary 2012RIC11](#)

Helping Local Agencies with Complete Streets

Multimodal — Taking a “Complete Streets” approach to transportation infrastructure design and maintenance means making decisions based on the needs of all types of travelers. To help local agencies implement Complete Streets programs in their communities, the Local Road Research Board’s Research Implementation Committee funded a resource guide synthesizing national research and policies as well as recommendations from Minnesota agencies. An exceptionally active and involved Technical Advisory Panel ensured the guide would be useful to novices and experts at agencies both large and small. Many communities are now using this resource to develop their Complete Streets processes and providing valuable feedback to refine the guide. [Technical Summary 2013RIC02](#)

Controlling Dust on Unpaved Roads

Maintenance Operations & Security — When vehicles drive on Minnesota’s many gravel roads, they kick up dust, which affects air quality, crop yields, quality of life and even driver safety. MnDOT developed a new, easy-to-use guide that helps local agencies understand the options for controlling road dust and choose which is most cost-effective. While calcium chloride and magnesium chloride are the most commonly used dust suppressants, the guide highlights the benefits and drawbacks of several alternatives and includes a host of published resources. [Technical Summary 2013RIC6.7](#)

National News

TRB Representative to Visit MnDOT

TRB Senior Program Officer Stephen Maher will visit Minnesota Nov. 21-22, meeting with MnDOT executives and touring MnROAD and the St. Croix Bridge site. MnDOT staff is invited to a brown bag luncheon Nov. 22 to meet Maher and hear from MnDOT leaders about the benefits of TRB and AASHTO involvement. Lunch will be provided, but space is limited. Contact Nick Busse at Nick.Busse@state.mn.us or 651-366-3738 to sign up.

AASHTO Task Force Recognizes MnDOT’s SAFL Baffle

The Value of Research Task Force of AASHTO’s Research Advisory Committee features MnDOT-funded research on the St. Anthony Falls Laboratory stormwater baffle in its annual [Research Makes the Difference](#) brochure. The new device removes pollution-carrying sediments from stormwater at a fraction of the cost of previous technologies. Read more in [Technical Summary 2012-13](#).

Research Projects

Getting a Distracted Driver's Attention in a Work Zone

Traffic & Safety — If a trucker doesn't notice a work zone up ahead, he may not be able to stop safely by the time he sees a flagger.



The Intelligent Drum Line system could improve work zone safety by providing visual and audible warnings. The system uses two modified traffic drums placed 300 to 400 feet apart that communicate wirelessly. The first uses sensors to detect a fast oncoming vehicle and immediately sets off both drums with lights and timed air horns. A prototype proved effective on the MnROAD testing site. Modifications are underway to help the new system pass Federal Highway Administration crashworthiness tests and to make it cost-effective and portable for widespread implementation. [Technical Summary 2012-26](#)

Pavement Curing: Can We Allow Traffic on the New Concrete Road?

Materials & Construction — During concrete pavement construction, engineers need to determine how long to let concrete cure before allowing traffic on the road. Opening the road too early can damage it, but waiting too long unnecessarily inconveniences the public. Researchers developed "maturity curves" for various MnDOT concrete mixes. These mathematical models will allow field personnel and materials engineers to choose the best mix for a given environment and estimate the in-place strength of the pavement with less sampling and testing than was previously needed. MnDOT is now evaluating a draft construction specification and laboratory manual for implementation. [Technical Summary 2013-10](#)

Read two-page Technical Summaries of these projects at mndot.gov/research.

GPS Data Now Used to Measure Mobility

Traffic & Safety — MnDOT already uses data from vehicle detectors and cameras to evaluate state freeways, but the effectiveness of the arterial street network has been harder to monitor. Now, however, smartphones and GPS devices collect data that can help this effort. MnDOT acquired more than 3 gigabytes of travel-speed data for the Twin Cities Metropolitan Area from a commercial data provider and used it to construct new performance measures that will help address traffic issues and guide transportation planning. These measures have already been used to identify the most congested streets in the metro area. [Technical Summary 2013-14](#)

Preventing Asphalt under Chip Seals from Stripping

Maintenance Operations & Security — To help preserve hot-mix asphalt pavements, MnDOT uses preventive maintenance strategies like chip sealing, which covers a pavement surface with an asphalt emulsion and thin layer of aggregate. However, the layer just underneath a chip seal can strip: A small blister enlarges to the size of a pothole, requiring costly maintenance. After determining that inadequate compaction was causing the stripping, researchers recommended prevention measures such as using a nuclear density gauge to qualify candidates for chip seals and taking random core samples from pavements during rolling. To inform local agencies of their findings and ensure better construction methods, researchers developed a handout that will be incorporated into MnDOT's bituminous training classes. [Technical Summary 2013-08](#)



MnDOT Library Hosts the Annual Meeting of the Transportation Library Pooled Fund Study

On Sept. 19, the MnDOT Library hosted the annual meeting of Transportation Library Connectivity & Development Pooled Fund Study TPF-5(237), bringing together representatives from 13 state department of transportation libraries plus several universities and national associations. Participants discussed new and ongoing projects and addressed the challenges of sharing transportation information resources.



This study's collaborative efforts have significantly changed the transportation library landscape, helping MnDOT's library evolve with changing technologies and research priorities to promote the value of transportation libraries and facilitate their interconnectivity. Pooled fund participation gives MnDOT access to more research resources and experts, group discounts on some materials and information about current best practices for transportation libraries.

"Each individual library cannot collect everything. Filling these gaps from our partner libraries is one of the benefits of transportation libraries networking. Our customers and ultimately our agencies benefit from this relationship-building."

—Sheila Hatchell, MnDOT Library Director



RESEARCH SERVICES & LIBRARY

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Calendar

- 11/14–15 Minnesota Toward Zero Deaths Conference
- 11/21–22 American Public Works Association Minnesota Chapter Fall Conference
- 12/3 LRRB Research Implementation Committee Meeting
- 12/4–5 LRRB Meeting
- 12/10–11 TRIG Meeting
- 12/11 Minnesota Asphalt Pavement Association 60th Annual Conference
- 12/17 American Public Works Association Underground Utilities Construction Inspector School
- 1/12–16 TRB Annual Meeting
- 1/21–24 Minnesota County Engineers Association Annual Meeting
- 1/29–31 City Engineers Association of Minnesota Annual Conference

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