



ACCELERATOR

Putting your ideas in motion

Using Roadsides for Butterflies & Bees

MnDOT is taking steps to provide more roadside habitat for pollinators like bees, birds and butterflies.

In addition to recently signing an agreement with five other states to improve pollinator habitat along a key migratory corridor for monarch butterflies, MnDOT just completed a review of other state and local government practices to identify more opportunities to use existing right of way (ROW) for pollinator habitat.

MnDOT set out to learn about the experiences of other states and local agencies in maintaining pollinator landscapes on highway ROWs through partnerships with individuals, groups and local agencies.

“State roadways have acres and acres of habitat ideal for pollinators,” said MnDOT Commissioner Charlie Zelle during the announcement about the I-35 initiative. “With some careful planning, we can ensure that monarch butterflies and other creatures that pollinate are able to thrive, which ultimately benefits our food sources and us.”

Results of the literature review are supplemented with findings from a survey of selected state DOTs and Minnesota counties. Nine state DOTs describe current practices or plans to develop



A Transportation Research Synthesis may lead to enhancements to MnDOT’s existing practices or the development of a new pollinator-specific partnership program.

new pollinator-specific partnerships; existing partnerships that have been expanded to address pollinators; and Adopt-a-Highway programs that support maintenance of vegetation in the ROW.

While MnDOT does not have a community partnership that focuses solely on promoting pollinator habitat, its Community Roadside Landscape Partnership Program allows Minnesota communities to partner with MnDOT to establish and maintain landscaping in the ROW along highways that traverse

their communities, and these landscaping treatments may benefit pollinators.

MnDOT has also partnered with the other state agencies to establish more than 20 native seed mixes for use on roadsides.

MnDOT’s online PlantSelector tool includes a seed mix tab to help designers and novices select the right seed for the right place.

Find a link to the PlantSelector tool with an online story on the Crossroads blog at mntransportationresearch.org.

Field Manual Supplements Specify Work Zone Layouts for Low-Volume Roads

Traffic & Safety — MnDOT's Temporary Traffic Control Zone Layouts Field Manual is an important tool for keeping work zones safe by describing traffic control layouts for a variety of conditions. However, many of these layouts are targeted toward high-volume, high-speed roads, which can make it difficult for local engineers to identify the appropriate layouts for low-volume roads.

The Local Road Research Board identified work zone layouts appropriate for low-volume roads from the manual and created two easy-to-use supplemental guidebooks for urban and rural areas.

"These guides should help with the efficiency of identifying appropriate work zone layouts, which will also enhance the safety of multiple units of government," said Jim Grothaus, program director for the Minnesota Local Technical Assistance Program.

The project's Technical Advisory Committee also developed ideas for additional work zone layouts that would be useful for low-volume roads and requested their inclusion in the next edition of the field manual.

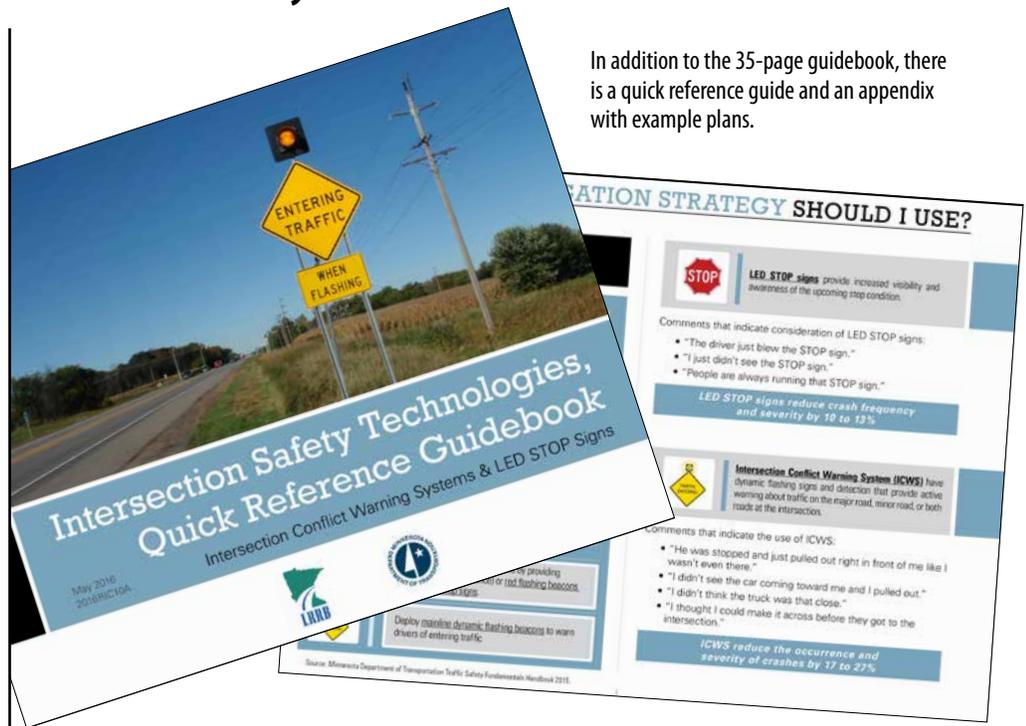
Technical Summary 2016RIC09

Could In-Vehicle Sign Systems Replace Road Signs? New Study Says No

Traffic & Safety — The [Minnesota Road Fee Test](#), completed in 2012, produced several ideas for services that could be provided to drivers through smartphone apps. A question was raised as to whether signs could be eliminated from roadsides and displayed on mobile devices in the vehicle instead, which would reduce costs related to sign installation and maintenance and improve landscapes.

A test of an in-vehicle sign system in the HumanFIRST driving simulator showed that replacing roadside signs with an in-vehicle sign system increased driver speed variability and decreased safety. However, a risk analysis found that supplementing roadside signs with an in-vehicle sign system may reduce the number of fatalities from front-impact crashes.

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In addition to the 35-page guidebook, there is a quick reference guide and an appendix with example plans.

New Handbook Helps Engineers Choose Right Rural Intersection Safety Technology

Traffic & Safety — Rural intersections without traffic signals are hot spots for serious crashes. Two notable technologies to address safety at these sites have developed over the past decade: the Advanced LED Warning System for Rural Intersections (ALERT), a stop sign with flashing LED lights to improve visibility, and Intersection Conflict Warning Systems (pictured above), which warn drivers when other traffic is approaching the intersection.

Because these systems evolved so quickly, it can be difficult for local engineers to access up-to-date information about them. This project created a guide to give local engineers a solid base of information about the technologies.

Technical Summary 2016RIC10

"This guide won't make the decision of whether or where to install ICWS or LED stop signs, but it will show local engineers the costs and factors to consider when making that decision."

— Ted Schoenecker
MnDOT Deputy State Aid Engineer

In the News: District 6 Pilots Traffic Signal System That Detects Bicyclists

Traffic & Safety — In hopes of helping bicyclists cross intersections more safely, MnDOT is piloting a traffic signal sensor in Northfield that senses bikes.

The system detects moving objects within 30 feet and can distinguish a bicyclist from pedestrians and cars. When a bike approaches, the traffic light turns green and gives the cyclist 9.5 seconds to cross.

The sensor was installed in late spring at Hwy 3 and Second Street, and has worked well so far, Jerry Kotzenmacher, MnDOT traffic system specialist, told the Star Tribune in a June 18 article.

Kotzenmacher plans to study the system over a longer period of time, however, and assess its performance in different types of weather.

Maintaining Pavement Markings



Retroreflectivity is a key measure of the effectiveness of reflective striping at night.

Keeping Rumble 'Stripes' Bright With Glass Bead Application

Maintenance & Operations — Bright edgelines and centerlines on roads are a cost-effective safety measure. This retroreflectivity (where the paint shines headlights back at drivers) is accomplished by spraying tiny glass beads on fresh paint. But tires and snowplows can scrape off these beads, and effectively placing them over the uneven surface of rumble strips is especially challenging.

Investigators evaluated the effectiveness of current application practices and confirmed the utility of recent steps taken by MnDOT pavement marking engineers that require contractors to measure retroreflectivity after painting over rumble strips. This step should ensure careful application of the glass beads, leading to higher reflectivity values initially and over time.

[Technical Summary 2016-13](#)

Drone Project Picked as 'High Value' Research

Maintenance & Operations — The Bridge Office's highly regarded drone demonstration project for bridge inspections was recently selected by the American Association of State Highway and Transportation Officials - Region 3 as its High Value Research project for 2016.

"This is a huge honor and will include recognition from several national events and publications. Only 16 projects are selected across the country, and this is the first time MnDOT has been recognized," said Linda Taylor, MnDOT Research Services director.

The research – led by Jennifer Zink, a MnDOT bridge inspector – demonstrated how innovative drone technology can reduce costs, improve safety, and enhance MnDOT's bridge inspection capabilities. In addition to improving the quality of inspections, her team found that drones cut the inspection time from eight to five days for the structures studied.

MnDOT representatives have been asked to speak around the country about its groundbreaking drone research, which is ongoing through two additional research studies.

Additional bridges are slated this summer for inspection with a specialized drone meant for infrastructure, as MnDOT continues to its effort to build a best practices guide for drone inspection.

MnDOT also recently awarded funding for an implementation project to develop guidance for a statewide drone bridge inspection contract.



Thicker Paint Layers Last Longer on Coarse Pavement Surfaces

Maintenance & Operations — Road striping loses its retroreflectivity as traffic wears off the paint, sometimes within a year of application. Specialized pavement treatments like chip seals, designed for improved wet roadway traction, can be particularly challenging. Paint seeps in between the aggregate particles, and as paint wears off the high aggregate surfaces, a faded line remains that is difficult to see at night or in wet weather.

Researchers found that thicker paint layers, particularly when latex is used the first year and repainted with epoxy the following year, can last for two or three years. Adding drying compounds can shorten curing times and painting costs.

[Technical Summary 2016-08](#)

New Universities, Consultants Available to Do Research

Administration — In a few weeks, MnDOT and local governments could have up to nine universities and as many as 20 consultants to choose from for conducting research, project implementation and knowledge transfer. Nine universities qualified for MnDOT's five-year University Master Contract program, which currently has five institutions:

- Iowa State University
- Michigan Technological University*
- Montana State University
- North Dakota State University*
- Texas A&M*
- University of Minnesota*
- University of New Hampshire*
- University of Pittsburgh*
- University of Wisconsin – Madison*

* final terms still being negotiated

Research can also be conducted through interagency agreements with Minnesota State Colleges and Universities.

Twenty consultants qualified for the five-year Transportation Research Assistance Program, which pre-certifies firms for research program support. Half the vendors have completed pre-award audits and can now be hired. See the list at mndot.gov/consult/certified.html.



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Calendar

- 8/8-11 MAASTO Conference, Minneapolis
- 8/28-31 APWA National Conference, Minneapolis
- 9/12 LRRB RIC Meeting, St. Cloud
- 10/5-6 Minnesota Fall Maintenance Expo, St. Cloud
- 10/15 NCHRP Domestic Scan Program topic proposals due
- 10/19 LRRB Meeting, St. Cloud

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