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LRRB
LOCAL ROAD RESEARCH BOARD

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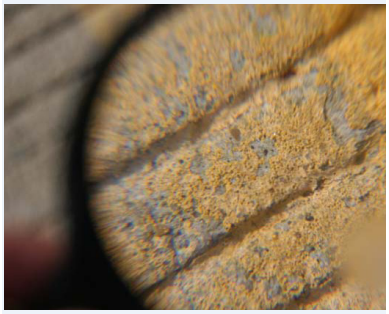

Surveying pavement markings can help local agencies identify and prioritize the need for restriping, saving money and resources.

MINNESOTA DEPARTMENT OF TRANSPORTATION

RESEARCH SERVICES
OFFICE OF POLICY ANALYSIS, RESEARCH & INNOVATION

State of Practice for Minnesota Local Agency Pavement Marking Management

Investigators surveyed Minnesota local transportation agencies regarding their practices for managing pavement markings and produced recommendations for best practices in this area.

What Was the Need?

In 2007 the FHWA held two workshops to get input from city, county and state transportation agencies about future changes to the Manual on Uniform Traffic Control Devices standards related to pavement marking retroreflectivity. In April 2010, the FHWA published text for the proposed pavement marking retroreflectivity standard. The new rule will apply to all local agencies with jurisdiction over public roads and sets minimum standards for the design and maintenance of pavement markings.

Currently, each local agency in Minnesota has its own policy and procedures for measuring the quality of markings (for example, how much of the marking remains on the road and how well the marking reflects light at night); determining when to replace them; selecting the appropriate material; and deciding how to perform the replacement. Once the rule-making process is complete, agencies across the state will be responsible for assuring that pavement markings meet or exceed the new minimum criteria. By identifying and sharing best practices for pavement markings, each agency will be able to improve roadway safety, reduce costs, and identify and implement standards to comply with new MUTCD rules.

What Was Our Goal?

This project's objective was to review and document existing pavement marking practices by local agencies in Minnesota, including material selection, installation, specifications and contracting procedures. This inventory and analysis would then be used to develop recommendations for pavement marking management best practices, and all findings would be shared with Minnesota's cities and counties.

What Did We Do?

Researchers first sent a short survey electronically to all of Minnesota's local transportation agencies to determine how each agency places pavement markings, what marking materials are used on new pavement and seal coat surfaces, and what marking materials are used for striping maintenance. From the 48 agency responses, nine counties and six cities representing a mix of different practices were selected for follow-up phone surveys. Agencies were interviewed to provide more detailed information about marking material selection, application processes, contracting procedures, specifications and quality control procedures.

Researchers then compiled and analyzed the results of the phone survey, working with experts on the project Technical Advisory Panel and Local Road Research Board members to identify best practices and develop recommendations for cost-effectively improving the quality and life expectancy of pavement markings.

What Did We Learn?

The initial survey of all local agencies in Minnesota found that:

- A majority of cities and counties use private contractors to install pavement markings.
- A majority of respondents use either latex or epoxy to stripe new or overlaid pavement segments.

continued

"This report serves as a method of sharing valuable information between local agencies throughout the state. It is part of a learning process where cities and counties can look to the report and gain ideas that will enhance safety."

–Lee Amundson,
Lincoln County Engineer

"Pavement markings are a low-cost safety solution. Preliminary results from a nationwide study have shown that 6-inch pavement markings reduce all crashes by 3 percent."

–Mark Vizecky,
Mn/DOT State Aid Program Support Engineer

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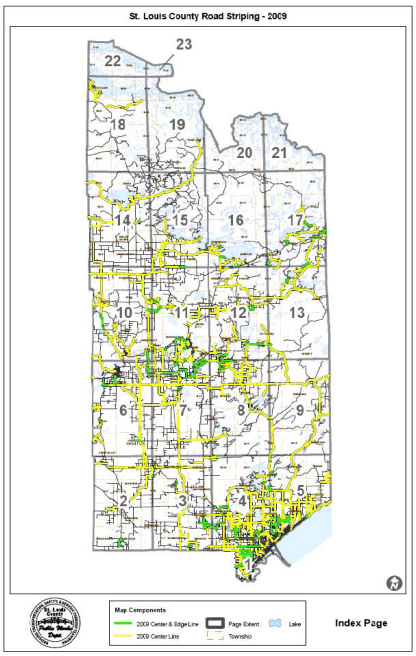

Using GIS technology to create pavement marking plans (shown here for St. Louis County) was among the best practices identified in this project.

- Nearly all respondents use latex for new seal coat surfaces.

The phone surveys provided more detailed information, finding that:

- Only approximately half of the agencies surveyed perform assessments to determine their annual paint program.
- The vast majority of counties employ private contractors to apply pavement markings; for cities, this was still the most common response, but less dramatically so.
- Most agencies use Mn/DOT standard specifications for materials and application.

Researchers found that the best method of assessing pavement markings is to conduct an annual nighttime and daytime survey to evaluate the quality of markings; this can save money on actual replacement cost. For example, in 2009 Washington County began using a nighttime survey method and as a result, it striped 23 percent less than in 2008.

Researchers recommend storing information from pavement surveys in a geographic information systems database to allow for easier review and decision making and to serve as a tool to communicate future striping needs. Researchers also noted that the use of in-house crews instead of contract crews has the benefit of flexible scheduling and minimized concerns over quality control.

The report emphasized that local agencies face a variety of challenges when it comes to managing pavement markings. Smaller localities often do not have the resources or the need to stripe as much as larger cities and counties. Each agency has developed different solutions for its needs within the limits of the agency's resources. The information obtained from this research and shared with local agencies can serve as a tool for each agency to make the most effective decisions with regard to cost and quality.

What's Next?

This project highlighted the need for continued information sharing between Minnesota's cities and counties and Mn/DOT regarding best pavement marking practices. Researchers recommend development of a training course to communicate pavement marking options readily available in the state. Future projects could document the best practices for each material type, exploring costs and identifying an approach for choosing one over another.

This Technical Summary pertains to the LRRB-produced Report 2010-05, "Minnesota Local Agency Pavement Marking Practices—Phase 1," published February 2010. The full report can be accessed at http://www.lrrb.org/PDF/201005.pdf.