In 2016, the A Line began service on Snelling Avenue, introducing Minneapolis-St. Paul to arterial bus rapid transit (ABRT). The A Line gained popularity almost immediately, offering transit customers a quicker, more reliable bus service that complements light rail and commuter rail service.

Unlike bus rapid transit (BRT), which requires a dedicated lane in a roadway corridor, ABRT operates within existing traffic lanes. Both forms of rapid transit use off-board payment at kiosks or online.

Recent MnDOT-sponsored research evaluated the A Line’s impact on traffic and riders’ perceptions of the service. The study also provided recommendations for future ABRT line design considerations.

“Researchers confirmed the findings of our original study conducted before we introduced the service,” explained Carl Jensen, MnDOT Traffic Advantages Engineer. “The arterial BRT stopping in a lane of traffic does not adversely affect traffic flows or signal operations.”

In addition to video analysis of traffic at key intersections, researchers surveyed riders, residents and business owners along the A Line service area and others. “The arterial BRT has a more favorable perception than local bus service,” Jensen said. “Stations are cleaner, more attractive, riding is easy, and payment options are convenient.”

More information about this study is available at bit.ly/Alinestudy.

7 research implementation projects funded

The state transportation research program’s governing board has funded seven research implementation projects that will advance new technologies or knowledge at MnDOT in the coming year. Included is seed money for a mobile work zone barrier, user testing of an all-in-one slurry system for snow and ice removal, and an e-ticketing pilot for asphalt truck material weight.

A complete list of funded projects is available at mndot.gov/research/implementation.html.
BRIDGE DECK PERFORMANCE

Performance Data Shows Less Damage With Epoxy-Coated Rebar Bridge Decks

Damage on the underside of bridge decks is less likely with epoxy-coated rebar.

BRIDGES & STRUCTURES — From 1973 to 1990, MnDOT built more than 600 bridges using epoxy-coated rebar in at least the upper layer of reinforcing matting in bridge decks. The bottom layer contained standard black rebar, although in recent decades MnDOT has been using epoxy-coated matting in both layers. The coated rebar was expected to reduce steel corrosion and concrete damage.

To learn how epoxy-coated rebar has performed in bridge decks, researchers studied bridge inspection data from 528 bridges, 57 of which used epoxy-coated bars in both layers. Next, they conducted site evaluations at 111 of these bridges to confirm inspection reports.

Results were clear: Concrete decks with all epoxy-coated rebar matting showed less damage above deck and below.

“These findings may help us shift some priorities for repairing or replacing mixed rebar bridges.”

—Nick Haltvick, North Region Bridge Construction Engineer, MnDOT Bridge Office

Chemical Adhesives Safely Anchor Epoxy-Coated Rebar in Hardened Concrete

BRIDGES & STRUCTURES — Bridge repairs often require replacing concrete slabs on deck barriers, crash barriers around piers and other non-hanging concrete applications. In these repairs, crews install new reinforcement bars in hardened concrete, using adhesives to hold the bars in place and allow load transfer between concrete slabs.

Adhesive manufacturers specify the expected strength of regular steel rebar in these installations, but not for corrosion-resistant epoxy-coated rebar. MnDOT suspended the use of epoxy-coated rebar in post-installed applications until adhesives could be evaluated.

In a recent study, researchers determined that epoxy-coated rebar is almost as secure as uncoated rebar and is safe for use. The findings from this research are helping the MnDOT Bridge Office determine what steps must be taken to resume using epoxy-coated rebar in these applications.

Laboratory pullout tests showed that epoxy-coated rebar sets nearly as well with adhesives as uncoated steel.

ENVIRONMENTAL — Vegetation alongside highways keeps sightlines clear for drivers, reduces erosion, and prevents road and vehicle contaminants from reaching waterways. But turfgrasses are subjected to environmental stressors, including heat, ice and deicing salt.

A study of Minnesota turfgrasses showed that tall fescue and perennial ryegrass tolerated salt, and certain bluegrasses and fescues performed adequately under heat stress. But researchers could not identify an ice-resistant cultivar. Investigators established a mixture of six species that could potentially manage these stresses. As part of a second phase of this research, which began last year, mixtures have been planted in different combinations alongside highways for further study.

Research Ideas Due May 3

MnDOT is soliciting new research ideas for CY2020 funding, with co-funding consideration by the Minnesota Local Road Research Board. Submit your idea by May 3 at mndot-lrrb.ideascale.com to be considered.

Research Points to Turfgrass Blends Suitable for Minnesota

Researchers measured green cover with digital imagery to evaluate the response of grass species to deicing salt, heat and ice stress. Results are shown over a 12-week period.

Research Ideas Due May 3

MnDOT is soliciting new research ideas for CY2020 funding, with co-funding consideration by the Minnesota Local Road Research Board. Submit your idea by May 3 at mndot-lrrb.ideascale.com to be considered.
Drivers Respond When Rest Areas Advertise Amenities

In the summer of 2015, MnDOT tried a new strategy for reducing roadway accidents: encouraging more drivers to take a break by posting signs that advertised rest area amenities, such as play areas, security cameras and shelters, in advance of highway rest areas.

To gauge the effectiveness of the rest area amenity signs, surveys were posted at 21 rest areas that were included in the pilot study along Interstate 35 (I-35), I-94 and State Highway 371. More than 900 visitors accessed the survey using a QR code. Of these respondents, 33 percent saw the signs, and 29 percent were not sure if they saw the signs. Of these two groups, 27 percent indicated the signs impacted their decision to stop.

Testing the Crack Resistance of Asphalt Mixes

MnDOT and the National Center for Asphalt Technology lead a five-state pooled fund study on performance testing asphalt for cracking potential. This group installed eight pavement sections at the MnROAD pavement test facility in 2016 to evaluate low-temperature, top-down and fatigue cracking in mixtures and pavements.

Researchers conducted additional tests on duplicates of the eight MnROAD mixtures. The three mix tests and one asphalt binder test proved viable for materials selection, quality control and forensic examinations of asphalt. Tests are at least as easy to run as existing alternatives, and the novel binder test is also simple to conduct. MnDOT is sharing results with its pooled fund partners as it works to improve asphalt testing procedures.
OFFICE OF RESEARCH & INNOVATION

ACCELERATOR
Putting your ideas in motion

Calendar

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Contact

**RESEARCH**
651-366-3780
research.dot@state.mn.us

**LIBRARY**
651-366-3791
library.dot@state.mn.us

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