



Local Operational Research Assistance (OPERA) Program

Biobased Sealant for Bridge Decks

What was the need?

Most bridge sealants are quite toxic and contain many compounds that can be dangerous. The City of Hutchinson wanted a more environmentally friendly and operator-friendly option for sealing bridge decks.

What was tested?

City staff chose to use an Opti-SEAL™ product from BioSpan Technologies because it is 90% biobased.

How was it done?

The bridge deck, sidewalk, and sidewalls were cleaned prior to application. The sealant was placed in three applications.

Two areas of the bridge were left untreated to allow for comparison. One area was a sidewalk; the other, on the opposite side of the bridge, was the bridge deck from the fog line to the guardrail.

To test the material, staff sealed large rain-gauge tubes to treated and untreated areas at opposite ends of the bridge to measure water loss. After installing the tubes, crews measured results two days later and again six days later. This testing was done one month following application.

The product was applied with a utility-vehicle-type sprayer. It can also be applied with a handheld spraying tool for areas hard to reach with the spray bars.

Traffic remained open during the project. Traffic was restored after the material was no longer “running” on the concrete surface. After application, there was a wet look to the pavement for about eight hours.

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OPERA Funding

\$15,000



Treated bridge deck showing virtually no loss of water

What were the results?

The test helped corroborate the city's expectation that there would be a benefit to sealing the bridge deck (see table). Observations taken one year later also corroborated the expectation.

The city did not expect to see much difference between the treated and untreated sidewalk, since the sidewalk is pitched to shed water and the finish of the concrete is tight.

The product needs to be applied when dry conditions will persist for at least eight hours. It was easy to apply using a utility-type sprayer. Only a few small areas, near the ends of the bridge, were treated with handheld spraying tools.

What's next?

Hutchinson intends to implement a program to treat all of its bridge decks using Opti-SEAL™ or a comparable sealant as part of an ongoing maintenance strategy.

Other agencies may wish to assess the benefits of biobased sealants to reduce impacts on the environment.

Untreated deck water loss	
8/15/17 – 08/17/17	0.74"
8/15/17 – 08/21/17	0.84"
Treated deck water loss	
8/15/17 – 08/17/17	0.02"
8/15/17 – 08/21/17	0.08"
Untreated sidewalk water loss	
8/15/17 – 08/17/17	0.01"
8/15/17 – 08/21/17	0.09"
Treated sidewalk water loss	
8/15/17 – 08/17/17	0.20"
08/15/17 – 08/21/17	NA



Untreated bridge deck showing water

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The Local OPERA Program encourages maintenance employees from cities and counties to get involved in operational, “hands-on” research. OPERA helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide.

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Local OPERA Program partners: Minnesota Local Road Research Board (LRRB), Minnesota Department of Transportation (MnDOT), and Minnesota Local Technical Assistance Program (LTAP) at the Center for Transportation Studies, University of Minnesota.

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