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SafeLane® Surface Overlay

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The use of epoxy compounds to seal highway bridge decks and roadways is not necessarily a new or novel idea. However, when epoxy is blended in a patented combination with special aggregate, a new technology known as SafeLane® surface overlay is born. The combination of epoxy and aggregate acts like a rigid sponge. It absorbs and stores anti-icing pretreatments and then releases them, based on temperature and precipitation, as snow and ice conditions develop. In addition, it seals the bridge deck or road against physical degradation and provides improved traction in year-round weather conditions.

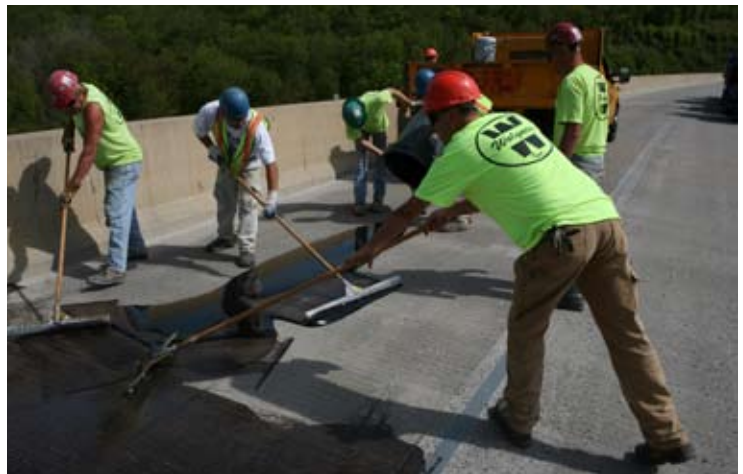
Installation of SafeLane® surface overlay follows AASHTO (American Association of State Highway and Transportation Officials) Task Force 34 protocols. Step one involves surface preparation to clean off oil and contaminants. This includes shotblasting, sandblasting and stripe removal. Meanwhile, a crew mixes and prepares the epoxy.

While SafeLane® overlay is a relatively new technology, it is applied in a surprisingly low-tech manner. Crew members manually spread the epoxy using squeegees and then hand shovel the aggregate across the surface. Hand installation is preferred because the limited work areas where the product has been installed make it impractical to use automated equipment. For application to larger areas, automated installation of both the epoxy and aggregate would not only be possible but certainly more practical.

The epoxy is applied and is followed immediately with spreading of the aggregate. The overlay is then allowed to cure for several hours depending on outdoor temperatures. After it cures, any loose aggregate is vacuumed up by a sweeper truck. A second layer is then applied using the same protocols resulting in a final overlay that is 3/8 inches thick. The surface is then reopened to traffic.

Researched and developed at Michigan Tech University, SafeLane® technology was licensed to Cargill in 2004 and is undergoing rigorous field testing. It has met with an enthusias-

tic response. SafeLane® overlay is now installed at 57 sites in the United States, Canada and the United Kingdom, including both road and bridge applications, as well as at commercial venues, sidewalks, parking lots and airport baggage handling areas.



The Ohio Turnpike Commission reports that SafeLane® overlay is making a difference on the Turnpike. It was installed in November of 2005 on an exit ramp with a tight curve, an incline and a significant "slide-off" accident history. The ramp is at Turnpike Exit 173 (I-80 eastbound) near Brecksville. At the same time, new signs warning motorists of possible hazards were added in what Turnpike Maintenance Engineer Tim Ujvari called a "multi-pronged approach" to improving safety on the ramp. Between November 2005 and January 2008, no winter weather-related slide-offs have occurred on the ramp. In the two years prior to the installation of SafeLane® and the new signage, 49 crashes had been reported. "I feel SafeLane® overlay has contributed significantly to improving traction on that ramp," Ujvari said.

Over the past two years, Cargill has commissioned leading snow and ice control expert Dr. Wilfrid Nixon to analyze SafeLane® overlay's winter performance across all installations. In his 2006-2007 report, Nixon, president of Asset Insight Tech-

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SafeLane® Surface Overlay (continued)

nologies and an engineering professor at the University of Iowa, concluded, "There are now two years of consistent evidence that improved performance by SafeLane® overlay under winter conditions...does indeed translate into safety improvements for the traveling public."

Another advantage of SafeLane® overlay involves improved year-round traction. At the Mitchell Bridge test site near Hibbing, Minnesota, the Minnesota Department of Transportation (MnDOT) installed SafeLane® overlay on 16, 600 square feet of the southbound lanes of the bridge. Since the installation, traction has been greatly improved during rain events and light frost according to Tim Sheehy, Operations Superintendent for MnDOT District 1.

Similarly, studies at other SafeLane® overlay test sites have found surface friction immediately following installation to measure 58 to 60 using the ASTM E524 bald tire skid test. In this test, the higher the number, the better the friction and generally, any number over 40 is considered acceptable.

Finally, SafeLane® overlay seals roadway surfaces and bridge decks to prevent their degradation. For more than three de-

acades, DOTs have been using standard epoxy overlays to minimize water seepage and intrusion of agents such as chlorides. The Virginia Transportation Research Council's Michael Sprinkel, a nationally recognized expert in the design, construction and evaluation of epoxy overlays, notes that SafeLane® overlay provides all the benefits of a standard epoxy overlay plus, "The specific aggregate-chemical combination in SafeLane® overlay has the additional benefit of minimizing snow and ice-related crashes."

The potential for improved year-round traction, accident reduction and infrastructure protection is leading a growing number of transportation agencies to consider SafeLane® overlay as a part of their road and bridge management strategy. For additional information on costs, specific project applications and how you can make SafeLane® overlay a party of your road and bridge management program, please contact Kevin Jost, Cargill Deicing Technology at 410-245-7552 or Kevin_Jost@cargill.com.