



Making Safe Lanes

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Cargill Safelane

New technology to make roads, bridges, sidewalks and airport runways safer in cold weather is being put to the test at 30 sites in 17 states this winter.

If that technology, SafeLane Surface Overlay, works as well this season as last, it will mean fewer crashes and better mobility for drivers; fewer slips, falls and injuries for pedestrians on walkways, and a better night's rest for some of the highway maintenance workers upon whom the traveling public depends.

"We had no calls, no complaints and, most importantly, no accidents," says Ron Cole, Forest County highway department, regarding the Wolf River Bridge near Crandon, Wisconsin. This winter will mark the fourth year in which SafeLane is helping to keep the bridge ice- and frost-free. "The bridge had always been a headache, but with SafeLane everything is working out great," Cole adds. "One of the added benefits ended up being that no one would call me in the middle of the night and make me get out of bed to take care of the bridge."

"This is potentially the biggest technological breakthrough for improving highway safety in snow-belt regions since the invention of the snowplow," adds John Bray, a District 1 transportation official in Minnesota, one of the states that expanded its highway safety arsenal this summer by adding a SafeLane test site.

A New Technology SafeLane is made up of a patented combination of epoxy and aggregate rock. Transportation depart-

ments "charge" the surface with their standard liquid anti-icing chemicals before frost or ice storms are expected. The SafeLane material acts like a rigid sponge, storing the chemicals inside, and then automatically releasing them as conditions develop for the formation of ice or snow. The result is safer roads with better mobility, because the overlay helps prevent frost or ice from ever forming on road or bridge surfaces, plus provides superior friction for year-round traction in all weather conditions. Equally attractive is the fact that SafeLane keeps releasing the anti-icing chemicals over multiple events.

Expanding Markets In 2003, the technology was licensed to Cargill by Michigan Tech University, where it was invented, and has been met with an enthusiastic response. The technology was first made available to state department of transportation (DOTs) with target applications including bridges and overpasses, dangerous intersections or stretches of roads, entrance and exit ramps, and approaches to toll barriers. By the winter of 2005-2006, SafeLane had been installed on seven bridges and two ramps (on grade), both concrete and asphalt surfaces, for a total of nine test sites in six states.

Those nine sites had a combined average of 35 winter weather-related accidents per year before SafeLane and zero after its installation, according to an analysis by a leading ice and snow control expert. The results impressed DOTs and led to requests for commercial and airport applications of the technology as well.

As a result, this year SafeLane introduced a second product, called SafeLane CA-48, designed for parking decks, airport ramps, public transportation platforms, pedestrian walkways, sidewalks, bike paths and store fronts. SafeLane CA-48 has

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all the same benefits of traditional SafeLane, but a smaller aggregate that meets the U.S. Federal Aviation Administration's Foreign Object Debris prevention (FOD) requirements. Businesses that have installed SafeLane CA-48 say they hope to reduce pedestrian injuries from slips and falls on sidewalks, walkways and outdoor work platforms.

Noticeable Safety Improvements The analysis of SafeLane Surface Overlay's performance during the 2005-06 winter season, commissioned by Cargill and conducted by Asset Insight Technologies, a consulting service for the winter highway maintenance industry, concludes it is providing safety and mobility benefits while requiring significantly less chemical treatment during winter storms.

Among the conclusions:

In nearly all cases, test sections remained clear of snow or ice at times when it was accumulating on untreated (control) sections of roads and bridges.

When accumulation did occur in heavy snowstorms, the snow and ice did not bond to the surface, resulting in easier plowing.

Bare pavement could be maintained on test sections with about half the chemical applied to the untreated (control) sections.

There were no concerns with chemical slickness or slipperiness even when chemical was applied in conditions where such slickness could be expected.

Copies of the Asset Insight Technologies report are posted at www.cargillsafelane.com. Asset Insight Technologies will provide an updated analysis of SafeLane's performance in April 2007.

Rapid installation The installation method for SafeLane follows the recommendations outlined in AASHTO Task force 34. Although SafeLane represents new technology, it is applied in a decidedly low-tech manner. Crews spread the sticky, black epoxy across the road surface via hand squeegees, after which the aggregate is immediately shoveled across the surface. Once the epoxy has been given proper time to harden, a

sweeper truck passes by to remove any loose aggregate, followed by two leaf blowers to remove residual dust left behind to ensure a good clean surface for the second course. The final profile is about 3/8-inch thick.

The installations of SafeLane CA-48 follows the same protocols except a smaller aggregate is used and only one application of epoxy and aggregate is required. The result is a lower cost installation that still provides all the same anti-icing and mobility benefits.

Better Mobility, Plus Asset Protection Greater safety and better mobility are why SafeLane's use is growing. The technology improves safety year round by increasing surface friction. "We have no indication that we should expect any difference in skid performance between SafeLane and standard epoxy overlays. So, if Cargill's SafeLane performs as well as the standard epoxy overlay, you can expect to have good skid numbers 15-25 years or more," says the Virginia Transportation Research Council's Michael Sprinkel, a national expert in the design, construction and evaluation of epoxy overlays.

In addition, for decades transportation departments have been using standard epoxy overlays to minimize water seepage and intrusion of corrosive agents like chlorides. Sprinkel notes that SafeLane provides all the benefits of standard epoxy overlays but has the added unique benefit of minimizing snow and ice-related crashes.

"This could be the most significant highway advancement in 40 years," says Congressman Jim Oberstar, incoming chairman of the U.S. House of Representative's Transportation and Infrastructure Committee. "One, it will save lives. And two, it will extend the useable life of a bridge or roadway."

For more information about SafeLane, or to contact a SafeLane representative, log on to www.cargillsafelane.com.