



Protecting people, bridges and roads™

# The Wellsboro GAZETTE

---

## Wellsboro, Pennsylvania

Reprinted with permission,  
The Wellsboro Gazette, 2007

## Tioga County bridges are test site for new Cargill safety technology

Diane Eaton

Bob Persichetti, general manager for SafeLane™ Surface Overlay, watches as crews work to squeegee the black, oil-like epoxy onto the concrete surface of the twin Route 15 bridges that span Johnson Creek, south of Blossburg. The overlay is being applied to 65,000 square feet of surface on the 765-foot-long concrete bridge decks.

"SafeLane can extend the life of roads and bridges by acting as a sealant to reduce the effects of chloride and water intrusion. More importantly; it can reduce vehicular crashes and save lives," says Persichetti.

The work being done on Route 15 may reduce the number of vehicular crashes on the Johnson Creek twin bridges and, if it does, then the decision may be made to use this technology on other bridges throughout the state of Pennsylvania.

The Johnson Creek Bridges' project is the second Tioga County site used to test the SafeLane™ Surface Overlay technology. The first test site is the small, sharply curved Route 660 bridge, located about two miles from the intersection of Route 660 with old Route 15, south of Mansfield. The SafeLane™ Surface Overlay was installed there in the fall of 2006. PennDOT managers were pleased with its winter performance.

PennDOT is overseeing both of the Tioga County test sites to evaluate this new technology, designed to help increase traffic safety and mobility on roads and bridges in bad weather conditions. Noted Rick Mason, PennDOT communications officer, "The decision about whether this product will be used on a statewide basis will be made jointly by our central office

and district engineers. It will take a couple of winter seasons to see how these bridge deck treatments perform. Then, we would be better able to make a judgment on how successful they are."

Persichetti said, "PennDOT has folks from the Harrisburg central office looking at our technology for statewide application. Normally, how the process works in Pennsylvania and a lot of other states, is they will look at this site and evaluate it so they can write a specification for a product like this. That would allow PennDOT or any state agency or municipality to use our technology because it would be on the state's qualified product list after going through their testing process. They look at the installation process to see if it is something that their state employees can do and under what conditions the work would be contracted out.

"Our company, Cargill, is based in Minneapolis. Cargill's SafeLane™ headquarters are located in York, PA, Persichetti explained. Cargill introduced SafeLane™ to the marketplace in 2003. This technology is still considered new. Because of the good results PennDOT has seen from the installation of SafeLane™ on the Route 660 bridge, the decision was made to test the technology a second time on larger bridges. The Johnson Creek Bridges' project is scheduled for completion by mid-June. This \$694,000 project is being funded, in part, through a \$150,000 grant from the Federal Highway Administration's Innovative Bridge Research and Construction program, which helps governments incorporate innovative materials and technologies into their bridge projects.

The technology, called SafeLane™ Surface Overlay, is a patented combination of epoxy and stone that acts like a rigid

*(continued)*

## new Cargill safety technology (continued)

sponge, storing deicing chemicals inside and automatically releasing them as snow and ice conditions develop.

"PennDOT uses standard rock salt as their deicing chemical," Persichetti said. "By putting the chemical down on the road or bridge surface treated with SafeLane before a snow, ice or freezing rain event occurs, the aggregate acts like a hard sponge. It holds that chemical which reduces the freezing point of the surface making travel safer. It actually helps prevent ice and snow from forming and snow from accumulating on the bridge or road where it is used. The result is safer roads with better mobility. Instead of snow or ice, the surface is going to be wet. Traditional rock salt is most effective when temperatures are above 15 degrees but some highway departments are using chemicals that work below 15 degrees so it depends on what the agency wants to use. Some states are using magnesium chloride, others calcium chloride. It really doesn't matter what chemical you use – SafeLane performs the same."

The aggregate will work with any common deicing chemical. A report by Dr. Wilfrid Nixon, president of Asset Insight Technologies and professor of engineering at the University of Iowa, evaluating SafeLane™ Overlay's performance at all nine test sites installed during the winter of 2005-2006 concluded SafeLane™ Overlay provided safety and mobility benefits, while requiring significantly less chemical treatment during winter storms.

In fact, the report notes there were no weather-related accidents at the nine installations sites over the winter season (a very small number of slide-off incidents in Ohio were attributed to excessive speed). In many cases this contrasted with accidents on nearby untreated stretches of road or bridge deck, and in nearly all cases the treated sites themselves had a history of winter weather accidents. Copies of the report are posted at [www.cargillsafelane.com](http://www.cargillsafelane.com).

SafeLane Surface Overlay was developed by Michigan Tech University. The university actually holds the patent on the product and licensed its use to Cargill. "The first test site was installed in Crandon, Wisconsin in 2003," Persichetti noted. "By 2005, we'd grown to nine sites. At the end of the 2006 construction season, there were 30 SafeLane Overlay installations in 17 states and by the end of the year, we expect to be up to 50 test sites.

"PennDOT installed SafeLane Overlay' on the small bridge on Route 660 just south of Mansfield so they could see how it is applied and gain experience with the technology before the

much larger installation near Blossburg. They were pleased enough with what they saw to make the decision to do the Johnson Creek Bridges project on Route 15 this year.

"Applying an epoxy overlay is not like applying asphalt: It is physically demanding. It is a manual system. We use squeegees to get the right amount of epoxy on the concrete bridge surface and then put the aggregate in. It is a methodical process that has to be done step by step. What PennDOT wants to know is how the bridge surface is going to wear under heavy traffic conditions and how the surface will hold up to snow plows. Does the product help to reduce crash rates and does it have a maintenance benefit by extending the life of the surface? Bridge decks freeze first, meaning you are going to have a higher number of crashes in the winter and during wet weather events. So, if we can help reduce crashes and save lives - that is a success!"

"First, we clean the bridge or road surface. Then, we use a shot blast machine to mill the surface to get it to the texture needed to ensure that the epoxy will adhere to it. Then, we vacuum the surface so it is dust free. The next step is to apply the epoxy. Made of two different materials, about 20 gallons of the epoxy product are mixed in a bucket and then poured onto the bridge surface. Workers with squeegees immediately begin to smooth the product out over the surface. They continue that process until the SafeLane is uniformly spread over the bridge surface. Then, the aggregate is dropped onto the surface.

Persichetti explained, "On the first pass, we use about one-third of the epoxy and then put the aggregate down. We wait for that to dry and then we then do a second pass, using the remaining two-thirds of the epoxy and then put aggregate on top of that. The final profile is about 3/8 of an inch thick. When it dries, we vacuum the rest of the aggregate off and then open up the bridge to traffic. We will repeat this process until both the northbound and southbound lanes on the bridge are finished. The new surface does not have any impact on drivers. They don't notice any difference because the surface is nice and smooth when the work is completed.

Work started on the Johnson Creek Bridge project on Monday, May 7. "We are working on the northbound side this week. We were expecting to have the passing lane done today (Thursday, May 10) but unfortunately, the rain stopped us. We will have it done tomorrow (Friday, May 11). Then, next week (May 14-18), we will move over to the driving lane and finish that. Then, We will turn around and do the same thing the following

*(continued)*

## new Cargill safety technology (continued)

two weeks. This will be a three to four-week project, depending on the weather. We don't work in the rain.

Bridge surfaces are made of concrete and are therefore porous.

PennDOT and other state transportation departments have started to use epoxy technologies because they effectively seal concrete surfaces and keep the chlorides and moisture from penetrating the concrete. For years, the state has been using epoxy as a water proofing system. Keeping chlorides and moisture out of a concrete bridge deck will extend the life of the bridge deck.

Persichetti said, "While you can use an epoxy product on road surfaces, most roadways in Pennsylvania are asphalt. That does not have the same life that concrete has. Statistics show that most asphalt roads have to be replaced every five to 10 years whereas if epoxy is applied to a concrete bridge deck, that deck will last 20+ years.

"The SafeLane™ Surface Overlay is used to provide better surface friction for vehicles. People using SafeLane™ are able to get outstanding surface friction year round. It is particularly helpful in rain events or any type of moisture on the roads/bridges. Persichetti continued, "As an example, we did a site on the Ohio Turnpike on an asphalt entrance ramp. Vehicles coming off the highway there would do a sharp radius turn. What happened is, because they were going too fast, they would end up sliding off the road. They had a lot of crashes on that ramp. During the two-year period before SafeLane™ Overlay was installed, there were 49 weather-related crashes

on that ramp. In the two years since SafeLane™ Overlay was installed, there have only been three all of which have been attributed to excessive speed. Ohio officials feel " they can keep vehicles on the road because of the superior surface friction and they are pleased with the results."

He said, "In Vermont, we are also putting SafeLane™ on roads where there is a steep grade, where trucks would lose traction. The goal of Vermont officials is to keep trucks from sliding when there is an accumulation of snow or ice. In addition to anti-icing, SafeLane™ Overlay provides super surface friction.

"During the winter of 2005-2006, the nine SafeLane™ test sites had a combined average of 30 crashes. After the installation of SafeLane™, it went to zero.

"We knew we had a good product and thought we could make a difference." Cargill commissioned University of Iowa professor Dr. Wilfred Nixon, a leading ice and snow control expert, to evaluate SafeLane's™ performance during the winter of 2005-2006. "Dr. Nixon has a great deal of credibility within the transportation industry. So we have asked him to also analyze SafeLane™ Overlay's performance during the winter of 2006-2007. That report, due out May 31, will include information on the Pennsylvania site that we did last year on the Route 660 bridge. The results of his second study will be presented during an international Webinar. Anyone interested in joining the discussion can register at [www.cargillsafelane.com](http://www.cargillsafelane.com).