

Anti-icing system planned for bridges

KNIK RIVER: Sensors could be embedded in road next winter.

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WASILLA -- Commuters crossing the Knik River bridges on the Glenn Highway have good reason to fear the ice- and fog-prone spans.

Every winter, enough accidents occur on the two bridges to qualify as demolition derbies.

But by next winter, state transportation officials hope to install an automated anti-icing system that promises drivers a firmer grip on the bridges without the aid of a single sanding truck.

The system uses sensors embedded in the road to detect when ice is about to form and sprays a deicing fluid to keep it from happening. It is untested in Alaska. But similar setups in several Lower 48 states as well as in Ontario, Canada, have gotten good reviews.

"Part of idea is to put it in here and see how it works," said Jack Fullerton, the central region safety and operations manager for the state Department of Transportation.

The department is currently taking comment on the environmental impact of the system and hopes to go out to bid this spring, he said.

The anti-icing setup won't be cheap.

Installing the system on each of the 1,500-foot-long Knik River spans will cost an estimated \$1.2 million, a pricey proposition compared with sending out sanding trucks, Fullerton said.

But he said the setup may pay for itself in saved lives and reduced accident expenses like medical bills and automobile repairs.

"We think that it will improve safety," he said. "It's hard to put a dollar amount on that."

It may also lower maintenance costs by reducing the amount of time crews need to spend on the bridge and possibly extend the life of the road by reducing the need for more corrosive salt, he said.

Officials have been looking at trying out an anti-icing system in Alaska for the past few years, Fullerton said. Deciding to put it on the Knik River bridges, which average more than 20,000 vehicles a day, was an easy pick, he said.

The spans have been the site of numerous bad accidents over the years, including a November 1990 pileup in which a motorist leapt from the bridge into the Knik River to avoid being hit by an oncoming car. The man miraculously suffered only minor injuries.



Ice and fog contributed to a Knik River Bridge pileup in the north- and southbound lanes one morning in October 2004. The northbound lane, above, was jammed from rail to rail when 19 vehicles piled up midway across the bridge. *(JIM LAVRAKAS / Daily News archive 2004)*

In October 2004, ice and fog contributed to a 23-car pileup that left both spans littered with vehicles and sent four people to the hospital.

Mark Sundquist, whose 1996 Chevrolet Tahoe was totaled in the pileup, said the bridges were in a different world that day. Off the spans, the highway was clear and dry, while on the bridge, the road was shrouded in thick fog and its surface so icy that people could barely stand, he said.

Like all bridges, the Knik River spans are more prone to freezing because cold air can circulate underneath as well as above the road, said Ron Martindale. He helps oversee a highway safety improvement program for the state Transportation Department.

What makes the bridge particularly troublesome is the open water below, which provides moisture that can turn to fog and black ice, he said. Even when the rest of the highway is clear, the spans can be covered in fog and ice, surprising motorists who have been cruising along on an otherwise clear, dry road, he said.

While the basic idea behind the anti-icing systems is simple -- to keep ice from forming on the roads -- the technology is not.

According to state officials and a local vendor, the systems rely on electronic sensors embedded in the roadway to record conditions like temperature, humidity and whether the pavement is wet or dry in order to predict when ice will form. One sensor does its own quality-control check, constantly heating up and cooling down to track the temperature at which ice begins to form.

If the system senses the road is close to icing, it activates nozzles, also embedded in the road, that spray a deicing fluid such as potassium acetate onto the pavement. The fluid has a lower freezing temperature than water, which keeps the road from icing over.

"Basically the ice never forms if you have it properly designed," said Jerry Des Jarlais, a regional sales manager for Boschung America LLC, which has installed systems in several Lower 48 states.

The systems have gotten good reviews. In Minnesota, an anti-icing system installed in 1999 on the troublesome I-35W bridge leading into downtown Minneapolis reduced accidents by nearly two-thirds in the first couple of years, said Calvin Lucas, a program specialist in the Minnesota transportation engineering department.

"We took the worst spot we could find to see if this was a system that could perform," he said.

Officials in Pennsylvania, which has installed anti-icing setups on about 12 bridges, also praised the system, saying it freed up crews to tend to other trouble spots.

"One of biggest things is we don't have to be concerned about those bridges anymore," said Steve Chizmar, a spokesman for the Pennsylvania Department of Transportation.

That doesn't mean the systems are without glitches. The anti-icing programs don't clear snow, at least anything over a half inch, and don't work well in freezing rain, Lucas said. In the latter case, the system on I-35 spewed so much deicing fluid that engineers shut it down, he said. But he said that wasn't a huge problem since the rest of the highway was also coated in freezing rain. Overall the system has proven worthwhile, he said.

"This is the wave of the future," he said.

Fullerton said he would consider such a system on the Knik River bridges a test case. If it does well, state officials may consider installing it on other ice-prone roads.

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