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MINNEAPOLIS BRIDGE COLLAPSE

Lessons learned from the 35W bridge collapse

by *Sea Stachura*, Minnesota Public Radio

July 31, 2009

Minneapolis — It's been two years since the collapse of the I- 35W bridge in downtown Minneapolis. In that time, Minnesota and other states have become more rigorous about inspecting and maintaining their bridges.

Shortly after the bridge collapsed on Aug. 1, 2007, transportation officials around the country ran to inspect their deck truss bridges -- the ones with the same design as the fallen bridge. Minnesota had 25 bridges with that design.

Dan Dorgan, Minnesota Department of Transportation's state bridge engineer, says those inspections were the start of important changes at MnDOT.

"We knew early on that this was a design error," said Dorgan. "One of our people put it best -- in the days after I-35 with the terrible event that happened, that something good has to come out of this. And I think people proceeded on that basis with, let's take a look at everything we do and see where we can improve."

The National Transportation Safety Board ruled that the 35W bridge collapsed because of under-designed gusset plates. But it also pointed to contributing factors, like too much weight from construction materials on the bridge.

The board also found that MnDOT didn't have enough redundancy in its bridge inspections and internal communications.



Gusset plate

Dorgan says those issues have been addressed. He says the inspections and maintenance departments now formally communicate about the condition of each bridge.

"Findings from an inspection report, after the inspection is completed, determine what work needs to be completed this year, what work needs to be completed next year, what work can wait until next year," said Dorgan. "And at times an inspector will cite something that, in the end, didn't turn out to be an issue."


MnDOT has added seven bridge inspectors -- nearly double the number the department had two years ago. It also hired an additional 30 maintenance workers, for a total of 140 workers around the state. Finally, MnDOT uses a second engineering firm to review new bridge designs.

Nationally, updates have been made on bridge management as well. The American Association of State Highway Transportation Officials manages that. Mal Kerley is the chair of the association's subcommittee on bridges and structures. A few weeks ago, that committee met to update bridge guidelines.

"My goal coming out of our meeting was to address many things from what I'll call an official viewpoint," he said.

Kerley says these guidelines formalize what many states have already started doing. For example, Kerley says state DOTs now dictate how and where contractors can place construction materials on bridges.

AUDIO

 [Lessons learned from the 35W bridge collapse](#)
(feature audio)

MINNEAPOLIS BRIDGE COLLAPSE

The I-35W bridge over the Mississippi in Minneapolis collapsed during rush hour on August 1, 2007, plunging dozens of cars and their occupants into the river.

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Inspection

"To make sure that if a contractor proposes something where he would be loading or using a bridge structure as his work platform, so to speak, that there would be guidance of various things he'd have to check, to make sure what he was doing was safe to do," said Kerley.

Specific instructions are offered on how to inspect gusset plates. And the Federal Highway Administration, along with the association, is conducting research on how multiple types of gusset plates respond to stresses.

"Whatever comes out of that, we'll be looking at that to update our manual accordingly," said Andre Filiatrault, a structural engineer at the University at Buffalo.



Piles of sand

Filiatrault is conducting more research on bridge safety. His research lab is looking at how extreme weather and earthquakes impact bridges, and one step in that research is to build a full-scale bridge in upstate New York.

"What we'll be able to do in this particular case is replicate the shaking that this bridge will undergo during a real earthquake," said Filiatrault. "And we'll be able to do that every week for a period of five years, to see the changes of properties over time and correlate that with the change in temperatures."

Filiatrault says right now, bridge engineers know how those materials function when they are new, but not after years of snow, ice and tremors. He hopes the findings will help guide engineers in bridge maintenance.

For now, state bridge engineers say they are taking a more cautious approach to the cracks and corrosion they do see. Two years after one of the nation's biggest bridge disasters, transportation officials say the nation's bridges are safe.

Broadcast Dates

All Things Considered, 07/31/2009, 4:45 p.m.

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