



Collapse of the I-35W Bridge in Minneapolis
and how government documents facilitated recovery

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Introduction

During evening rush-hour on August 1, 2007, U.S. Highway Bridge 9340 in Minneapolis collapsed, killing 13 people and injuring 145. No reason for the collapse was immediately apparent. The weather that day was calm and traffic was moving more slowly than usual because there was a routine paving project underway on the bridge deck at the time.

The next morning, a story in the *Star Tribune* newspaper recounted how remote sensors at the Minnesota Department of Transportation (MnDOT) had picked up unusual movements on the central span and then how cameras captured the image of the bridge collapsing into the Mississippi River and embankment below. A call was generated to 9-1-1 and the Minnesota State Highway Patrol, Minneapolis Police Department, Hennepin County Sheriff, and Minneapolis Fire Department converged on the scene. The Hennepin County Medical Center initiated its disaster plan to call in additional personnel and notified other area hospitals to be ready. As part of a pre-established protocol for large-scale incidents within city limits, the Minneapolis Fire Department took the lead as Incident Commander. The Hennepin County Sheriff's Department oversaw the water rescue efforts and the Minneapolis Police Department took lead of the landside rescue efforts. Those efforts came to a close on August 21 when the last victim was recovered from the water.

Declaring an emergency

On August 2, Governor Tim Pawlenty issued Executive Order 07-09 declaring an emergency (<http://www.leg.state.mn.us/webcontent/lrl/issues/bridge/ExecOrder.pdf>). By declaring the peacetime emergency, the State of Minnesota officially proclaimed that the bridge collapse was affecting the security, well-being, health and commerce of the state. The executive order directed

all state agencies to provide support to the National Transportation Safety Board in investigating the event.

On August 3, the Minneapolis City Council followed suit, declaring a State of Emergency in the City of Minneapolis by approving Resolution 2007R-418. This municipal declaration made it possible for the city to receive special disaster related funding from state and federal sources, and allowed the city to operate within its emergency plan for as long as needed.

(<http://www.ci.minneapolis.mn.us/council/archives/proceedings/2007/20070803-proceedings.pdf>)

On August 21, at the request of Governor Tim Pawlenty, then President George W. Bush issued emergency declaration FEMA-3278-EM to facilitate recovery from the bridge collapse. By opting to declare an emergency rather than a disaster, the President committed federal resources for up to 75% of the eligible costs of recovery, requiring state and local governments to make up the difference. Had the president instead declared the situation a Major Disaster, the funding would have come from the President's Disaster Relief Fund and been less restricted.

(<http://www.fema.gov/hazard/dproc.shtm>)

The longer term recovery from the collapse of the I-35W Bridge took three paths: 1) replacing the physical infrastructure; 2) restoring the public's trust; and 3) learning from the experience. This paper uses a sampling of the many government documents that were created along the way in order to convey the story of that longer term recovery.

Stakeholders

Countless individuals, elected bodies, and government agencies all had vested interest in the bridge collapse and the subsequent efforts toward recovery. Major stakeholders included:

- The National Transportation Safety Board (NTSB) is an independent federal agency charged with investigating transportation related accidents in the United States and issuing recommendations aimed at preventing future accidents. (<http://www.nts.gov/>)

- The mission of the Federal Emergency Management Agency (FEMA) is to reduce the loss of life and property and protect the nation from hazards, including both natural and man-made disasters, through an emergency management system of preparedness, response, recovery, and mitigation. (<http://www.fema.gov/about/index.shtm#1>)
- Mayor R.T. Rybak and the Minneapolis City Council
- Governor Tim Pawlenty and the Minnesota Legislature
- The Minnesota Department of Transportation was created in 1976 to take on highway- and the transportation-related activities for the state. Today, MnDOT develops and implements policies, plans and programs for aeronautics, highways, motor carriers, ports, public transit and railroads. (<http://www.dot.state.mn.us/information/history.html>)
- The Federal Highways Administration is charged with ensuring that America's roads and highways are the safest and most technologically up-to-date. Although state, local, and tribal governments own most of the nation's highways, FHWA provides financial and technical support to them for constructing, improving, and preserving the nation's highway system. (<http://www.fhwa.dot.gov/whoweare/whoweare.htm>)
- The Joint Committee to Investigate the Bridge Collapse was appointed by the legislature on August 14, 2007 and charged with reviewing all decisions made by MnDOT related to the collapse of the I-35W Bridge. The Joint Committee was made up of 16 legislators of both parties and from both Senate and House Transportation Committees.
- The law firm of Gray Plant Mooty was retained by the Minnesota Legislature to conduct an independent investigation of MnDOT. Founded in 1866, Gray Plant Mooty is the longest-standing law firm in Minneapolis.
- Progressive Contractors Inc. (PCI), a private construction company from St. Michael, Minnesota, was performing overlay pavement work on the I-35W Bridge during the summer of 2007. An investigation did find that the added weight due to construction work may have contributed to the bridge collapse. Some in the community hypothesized that construction on the bridge had effectively limited the number of cars that could be on the bridge at the time and may have reduced the number of injuries/deaths as a result of the collapse.

Background

The bridge that collapsed on August 1, 2007, was originally constructed in 1967. It was composed of 14 spans with a total length of 1,907 feet. The central three spans, #6, 7 and 8 were “Fracture Critical” steel deck trusses which means that they were arranged in such a manner that if one of them were to fail, the bridge could collapse. A classification of “Fracture Critical” does not mean the bridge is inherently unsafe. However, the I-35W Bridge had Fracture Critical members and it also lacked redundancy, meaning that its design lacked alternate load paths in the event that a bridge member failed for whatever reason.

Expedited early actions

The National Transportation Safety Board (NTSB) began investigating immediately following the collapse, gathering all refuse from the site and taking it away for testing and evaluation. The state of Minnesota also acted immediately, passing HR3311 (MN) authorizing additional funds for emergency repair and reconstruction of the bridge. The speed of this action allowed the work to begin immediately on plans for a replacement bridge. Normally, such large-scale building projects entail years of planning and budgeting but because it was a vital link in an interstate highway system, the I-35W bridge needed to be replaced as soon as possible. On August 4, the Minnesota Department of Transportation issued a Request for Qualifications of design-build teams for a “major river crossing with 5 lanes in each direction with shoulders over the Mississippi River with minor grading, hydraulics, utilities, ITS, lighting, paving and other miscellaneous work.” (<http://www.dot.state.mn.us/designbuild/35wrfq1.pdf>) The deadline for submittal was just three days later on August 7.

Rebuilding the bridge

Under Minnesota Statue 161.162-161.167, municipal approval is required for highway projects within municipalities when the projects alter access, increase or reduce traffic capacity,

and/or require acquisition of permanent right-of-way. The replacement of the I-35W bridge triggered this statute so the state sought approval of its plans from the City of Minneapolis. The City of Minneapolis responded by passing Resolution 2007R-505 Approving the August 21, 2007 Highway Project Review Package submitted by the Minnesota Department of Transportation pertaining to the reconstruction of the Interstate 35W Bridge over the Mississippi River from Washington Av S to University Av SE, referred to as State Project 2783-120.

(<http://www.ci.minneapolis.mn.us/council/archives/proceedings/2007/20071005-proceedings.pdf>)

Construction of the new bridge began November 1, 2007, and the new bridge opened to traffic on September 18, 2008. The new bridge cost approximately \$234 million and was completed more than 3 months ahead of schedule.

Finding answers and restoring public trust

Of course the greatest cost of the collapse of the I-35W Bridge was the human cost – 13 people lost their lives and 145 were injured. Another cost was lost commerce due to traffic on land being detoured away from the bridge for more than a year and water access being limited while diving was taking place to recover evidence.

Another less tangible outcome of the bridge collapse was that the public was suddenly uncertain about the safety of the other bridges they were crossing. Initial testing had established that a particular design flaw might have caused the collapse of the I-35W Bridge and engineers wondered if other bridges similar in design might share its potential vulnerability. In December of 2007, the Federal Highway Administration issued Technological Advisory 5140.27 ordering immediate inspection of Deck Truss Bridges containing fracture critical members. This action resulted in the full or partial closure of three bridges in Minnesota: DeSoto Bridge in St. Cloud, a

high-truss bridge in Winona and closed lanes and weight restrictions on the Blatnik Bridge in Duluth. (http://www.commissions.leg.state.mn.us/jbc/GPM_Report/InvestigativeReport.pdf)

The Joint Committee to Investigate the Bridge Collapse was appointed August 14, 2007, by the Subcommittee on Committees of the Committee on Rules and Administration of the Senate and the Speaker of the House of Representatives. The Joint Committee was charged with reviewing all of MnDOT's decisions relating to bridge inspection and repair, that might be relevant to the collapse of the I-35W Bridge. The Joint Committee was instructed to compare the agency's practices on other bridges in order to determine the potential vulnerability of other bridges, and to recommend changes to the bridge maintenance and replacement program to ensure that no more bridges collapse. (<http://www.commissions.leg.state.mn.us/jbc/index.htm>)

The law firm of Gray Plant Mooty was retained to conduct an independent investigation into MnDOT practices. The investigation entailed review of documents and interviews of current and former elected officials and MnDOT staff. The report concluded that MnDOT policies were not followed in critical respects; responsibility for decision-making was unclear; expert advice was not effectively utilized; financial consideration may have adversely influenced decision-making; and organizational structure did not adequately address bridge conditions and safety. (<http://www.commissions.leg.state.mn.us/jbc/gpm.htm>)

Learning from the experience and moving forward

While FEMA studied how jurisdictions and agencies physically responded to an emergency, another governmental organization set out to evaluate the State of Minnesota's financial preparation for such catastrophes. The collapse of the I-35W Bridge on August 1, 2007, pushed the Minnesota Office of Legislative Auditor to update their *1997 Highway Spending Report*. What the updated report revealed was probably no big surprise; infrastructure across the

state was nearing the end of its life and much regular maintenance had been deferred for lack of sufficient funding. (<http://www.auditor.leg.state.mn.us/ped/pedrep/trunkhwy.pdf>)

One week after the release of the Legislative Auditor's report, the Minnesota Legislature passed an increase in the state's gasoline excise tax to provide additional funds for maintenance. H.R. 2800 (2008) passed in the House but Gov Tim Pawlenty vetoed the bill when it got to his desk. The House voted 91-41 and the Senate voted 47-20 to over-ride the Governor's veto and the bill became law on February 25, 2008. Enacting this law increased the state's gasoline excise tax by 5.5% on April 1, 2009 and would gradually increase it by another 3 cents by 2012.

The National Transportation Safety Board. 2008. *Collapse of I-35W Highway Bridge, Minneapolis, Minnesota, August 1, 2007* was released on November 14, 2008. The report discussed insufficient quality control and review procedures and identified a particular set of gusset plates as the place where the bridge failure initiated. Perhaps no less valuable, the report also discussed and ruled out a number of other possible contributing factors. (<http://www.nts.gov/dockets/Highway/HWY07MH024/default.htm>)

Public Information

From the day of the collapse, public interest in the facts of the case was strong. MnDOT set up a web page (<http://www.dot.state.mn.us/I-35Wbridgedata/>) where interested people could find and request documents (proactively complying with the "Minnesota Government Data Practices Act." Minnesota Statute 13.01)

Recognizing the public fascination with the new bridge project, MnDOT included three features on their web site: "Project Fun Facts" which contained a range of interesting trivia about the project; "Faces of the Project" which held short bios and photos of members of the team working on the project; and "Sidewalk Talks" which was a scheduled on-site briefing

made by project managers to members of the public.

(<http://projects.dot.state.mn.us/35wbridge/index.html>)

The lessons learned from the collapse of the I-35W Bridge were still evident a year later at the American Public Works Association (APWA) International Public Works Congress & Exposition. More than one conference workshop that year focused on the results that could be realized by jurisdictions and agencies working together to clean up and rebuild following a catastrophe. The trail of government documents described in this paper are evidence of how the coordinated efforts of every level of government facilitated recovery from one such catastrophe.

(<http://www.apwa.net/meetings/congress/2008/attendee/speakerHandouts.asp>)

Bibliography

“City Council Resolution 2007R-418, Declaring a State of Emergency in the City of Minneapolis.” ONLINE. Available: <http://www.ci.minneapolis.mn.us/council/2007-meetings/20070803/20070803-proceedings.pdf>

“City Council Resolution 2007R-505, Approving the August 21, 2007 Highway Project Review Package submitted by the Minnesota Department of Transportation pertaining to the reconstruction of the Interstate 35W Bridge over the Mississippi River from Washington Av S to University Av SE, referred to as State Project 2783-120.” ONLINE. Available: <http://www.ci.minneapolis.mn.us/council/archives/proceedings/2007/20071005-proceedings.pdf>

Governor Tim Pawlenty, “State of Minnesota Executive Department, Emergency Executive Order 07-09, Declaring a State of Emergency in the State of Minnesota.” ONLINE. Available: <http://www.governor.state.mn.us/priorities/governorsorders/executiveorders/2007/PROD008246.html>

Federal Emergency Management Agency, Department of Homeland Security. “Emergency Declaration, FEMA-3278-EM, for the Bridge Collapse in Minnesota August 1 to August 15, 2007.” ONLINE. Available: <http://www.leg.state.mn.us/webcontent/lrl/issues/bridge/PresidentialDeclaration.pdf>

President George W. Bush issued emergency declaration FEMA-3278-EM to facilitate recovery from the collapse of the I-35W Bridge. Governor Pawlenty had requested a “Major Disaster” declaration because that designation would bring in more funds with fewer restrictions. The President chose to declare the situation an emergency rather than a disaster, thereby committing federal resources for up to 75% of the eligible costs of recovery and requiring the state and local governments to make up the difference.

U.S. House and U.S. Senate. 1110th Congress, 1st Session. *H.R. 3311*, additional funds for emergency repair and reconstruction. ONLINE. Available: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h3311enr.txt.pdf

Federal Highway Administration. *Technological Advisory 5140.27: Immediate inspection of Deck Truss Bridges containing fracture critical members*. ONLINE. 2007. Available: <http://www.fhwa.dot.gov/bridge/ta514027.cfm>

With this document, the Federal Highway Administration strongly advised that all State Transportation Agencies and other bridge owners immediately re-inspect all steel deck truss bridges with fracture critical members. At a minimum, State Transportation Agencies and other bridge owners should review inspection reports, including those for routine, in-depth, fracture critical, and underwater, to determine whether more detailed inspections are warranted.

Minnesota Legislature. Joint Committee to Investigate the I-35W Bridge Collapse. *Investigative Report to Joint Committee to Investigate the I-35W Bridge Collapse*. ONLINE. May 21, 2008. Gray Plant Mooty (firm) Available:
<http://www.commissions.leg.state.mn.us/jbc/gpm.htm>

The Legislature retained the law firm of Gray Plant Mooty to conduct an independent investigation of the Minnesota Department of Transportation relating to the collapse of the I-35W Bridge. The investigation entailed extensive review of documents and interviews of current and former elected officials and MnDOT staff. The report concluded the following:

- MnDOT policies were not followed in critical respects;
- Decision-making responsibility was diffused and unclear;
- The flow of information was informal and incomplete;
- Expert advice was not effectively utilized;
- Financial consideration may have adversely influenced decision-making; and
- Organizational structure did not adequately address Bridge conditions and safety.

National Transportation Safety Board. *Collapse of I-35W Highway Bridge, Minneapolis, Minnesota, August 1, 2007. (Highway Accident Report NTSB/HAR-08/03.)* ONLINE. 2007. Available: <http://www.nts.gov/publictn/2008/HAR0803.pdf>

Major safety issues identified in this investigation include insufficient bridge design firm quality control procedures for designing bridges, and insufficient Federal and State procedures for reviewing and approving bridge design plans and calculations; lack of guidance for bridge owners with regard to the placement of construction loads on bridges during repair or maintenance activities; exclusion of gusset plates in bridge load rating guidance; lack of inspection guidance for conditions of gusset plate distortion; and inadequate use of technologies for accurately assessing the condition of gusset plates on deck truss bridges.

Minnesota Office of Legislative Auditor. *State Highways and Bridges*. ONLINE. 2008. Available: <http://www.auditor.leg.state.mn.us/ped/pedrep/trunkhwy.pdf>

CHAPTER 152-H.F.No. 2800. An act relating to transportation finance. Minnesota Legislature, First Session, 2008. ONLINE. Available:
<https://www.revisor.leg.state.mn.us/laws/?doctype=Chapter&year=2008&type=0&id=152>

Transportation finance bill appropriating money for highway maintenance, local roads, emergency relief related to the I-35W bridge collapse, establishing a bridge improvement program; issuing bonds; and modifying motor fuel taxes. Governor Pawlenty vetoed HF 2800 and the veto was overridden on February 22, 2008.

According to the web site for local television station KARE-11, overriding a governor's veto is extremely rare in Minnesota. In the years from 1939 to 1999, there were just four successful overrides. (http://www.kare11.com/news/news_article.aspx?storyid=500264)