

Bridging the Gap:

Restoring and Rebuilding the Nation's Bridges

Executive Summary

July 2008



At the anniversary of the August 1, 2007, Minnesota bridge disaster, Americans no doubt will be wondering about the status of the nation's 590,000 bridges. Carrying hundreds of thousands of commuters and other traffic as well as much of the nation's commerce, bridges are the fundamental backbone of this country's economy. At the same time, however, bridges are so common that they melt into the backdrop of everyday life, and their importance in the functioning of our society is often overlooked.

The collapse of the Interstate 35 West Bridge in Minneapolis cost the lives of 13 people and injured 144 more. Failures such as the one in Minneapolis are extremely rare, with the majority being attributed to naturally occurring events such as floods and earthquakes or man-made events such as bridges struck by barges. Rigorous state inspections combined with decades of repair have created a reliable and safe bridge system.

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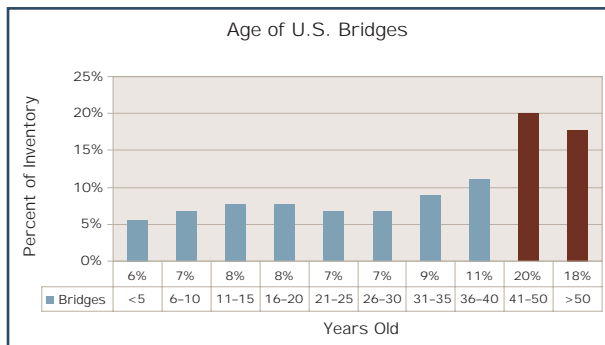
Aftermath and a New Beginning

Looking back at that tragic event, the response of federal, state, and local governments was remarkable. On August 2, standing with Minnesota Governor Tim Pawlenty at the site of the collapse where heroic efforts were still underway to assist in the recovery, U.S. Department of Transportation Secretary Mary Peters announced the award of \$5 million in federal relief. She also called on all states to immediately inspect their steel deck-truss bridges, the type of structure involved in the Minnesota collapse. On August 4, Congress authorized \$250 million to rebuild the bridge. That same day Minnesota DOT (MnDOT) issued a Request for Qualifications for a Design-Build Contract for the I-35W replacement project.

In Congressional testimony on September 5, Malcolm Kerley, Virginia's Chief Engineer and Chair of AASHTO's Subcommittee on Bridges and Structures, reported that, "Since August 1, in compliance with federal requests, every state has reviewed or is in the process of re-inspecting its steel deck-truss bridges. Based on the reports of this review, we can say that these bridges are safe." On October 8, MnDOT awarded a \$264 million contract for construction of a new bridge to Flatiron/Manson, which agreed to complete the project no later than December 24, 2008. On June 18, 2008, MnDOT announced that the new bridge may be completed two months ahead of the promised delivery date.



Photo courtesy of David Gonzalez, Minnesota Department of Transportation.



Baby Boomer Bridges Show Their Age

Unfortunately, the future health of the nation's bridges is at a turning point due to traffic and age. Usually built to last 50 years, the average bridge in this country today is 43 years old—and nearing the need for replacement. Almost one in four bridges, while safe to travel, is either structurally deficient, in need of repair, or functionally obsolete, which means they are too narrow for today's traffic volumes.

State departments of transportation are responsible for maintaining almost half of the nation's bridges including almost all of the large ones. Yet even with inspections,

improved materials, and ingenious repairs, nearly every state faces funding shortages that will prevent them from ongoing, stable investment in preventive maintenance, repair, and replacement. When repair is impossible, load limits and closings are the only options to ensure the public's safety, which, in turn lead to added congestion, delays, and hardships for those living at either side.

Despite the attention brought to bear on the condition of the nation's bridges as a result of the tragic collapse in Minneapolis, funding for repair, maintenance, and replacement has grown less certain. The Highway Trust Fund, which is the primary funding source for all federal aid for highways and bridges, is on the verge of massive shortfalls. Without new revenue, these shortfalls in 2010 could force a 50 percent reduction in funding below today's already inadequate investment levels.

In September 2009, the federal law that authorizes funding for the nation's transportation system will expire. During the next 15 months, discussions in Congress, the new Administration, and in the State Capitols of this nation will be focused on defining priorities and funding for the next decade of transportation needs.

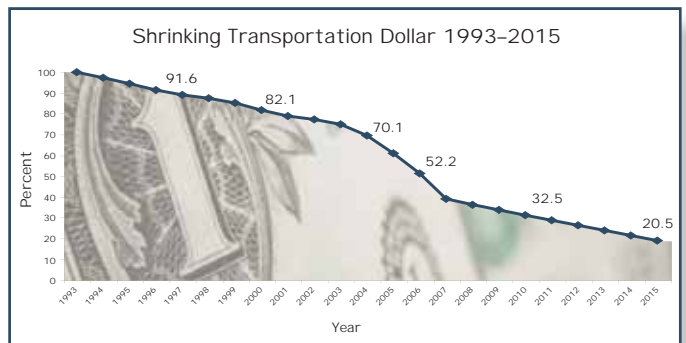
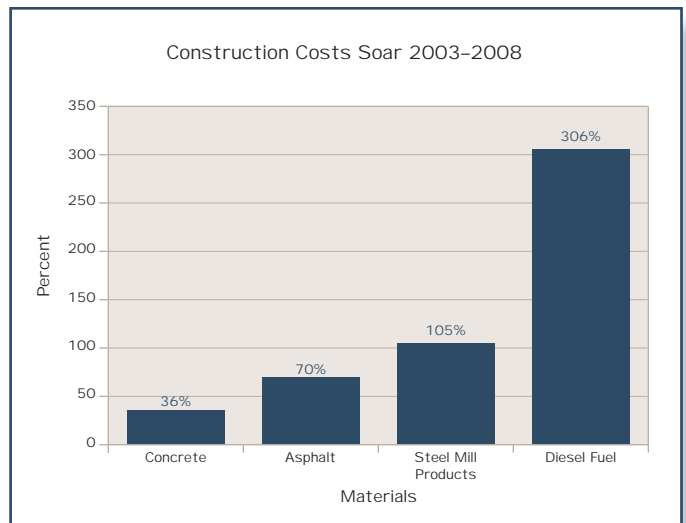
States Simply Cannot Keep Up with Bridge Maintenance

The U.S. Department of Transportation's 2006 *Condition and Performance Report* (C&P), notes that more than \$12.4 billion would be needed annually to actually improve bridge conditions on the federal-aid eligible system to a level that would help relieve congestion and reduce accidents. Fixing all bridge needs would cost even more.

According to data from the FHWA, it would cost \$140 billion in 2006 dollars to immediately repair every bridge that is deficient in the country. Since immediate total repairs would be impossible to undertake, that cost would increase with inflation over time.

To address bridge needs, states use federal funds, as well as substantial funding from state and local resources. Because states consider bridge safety to be such a priority, they spend dramatically more money on bridges than is provided under the federal Bridge Program. To illustrate, in 2004 the federal Highway Bridge Program provided \$5.1 billion to the states for bridge rehabilitation. However, with other federal funding, and state and local funds, a total of \$10.5 billion was invested in bridge improvements. The U.S. DOT's C&P report concluded that this level of spending over 20 years would still leave a backlog in needed bridge investment of over \$34 billion.

At the same time, states are finding that dollars available for bridges, in fact for all categories of highway and transit investment, are buying less and less in the marketplace. With oil nearly quadrupling in price in the past four years, construction costs have soared. The costs of steel, asphalt, concrete, and earthwork have risen by at least 50 percent with further increases expected. Thirty months of unprecedented construction inflation are forcing state officials to delay important bridge replacement projects.



Needed: A National Commitment to Significant Investment in Transportation Infrastructure

The National Surface Transportation Policy and Revenue Study Commission estimates that the United States should be investing about \$225 billion annually for the next 50 years on all modes of transportation. Today, the United States is spending about 40 percent of that.

All levels of government—federal, state, and local—will have to significantly increase transportation investment if the nation is to preserve what has been built and to ensure the transportation modernization essential for future growth. A significant portion of that additional investment would be needed to improve, expand, and widen bridges.

The Nation Cannot Fix Its Congestion Problems Without Fixing Its Bridge Problems

The nation's bridges have become chokepoints on the country's freeway system, particularly at interchanges and major river crossings. The top 10 chokepoints cause more than 1.5 million hours of truck delays each year. Between 1995 and 2004, annual travel on the Interstate Highway System grew by 28 percent, at the same time that the system was expanded by only one-half of one percent. Truck travel nearly doubled in the past 20 years and is projected to double again by 2035, adding significantly more loads to the already heavily traveled bridge system.



Workers operate concrete pump in the building of the I-94 Business loop of Memorial Bridge in North Dakota. Photo courtesy of Mike Kopp, North Dakota Department of Transportation, 2008.

Top 5 Bridge Problems

- Age and Deterioration
- Congestion
- Soaring Construction Costs
- Maintaining Bridge Safety
- New Bridge Needs

Top 5 Bridge Solutions

- Increasing Investment
- Research and Innovation
- Systematic Maintenance
- Public Awareness
- Financial Options

The staggering costs of new bridges and their related interchanges dwarf original construction costs. New bridges are needed to address congestion in major urban areas, but state and local officials are at a loss as to how to raise the massive amount of funds necessary for construction.

Innovation and Technology Can Add To Bridge Safety If Implemented

To ensure the safety of the nation's bridges, every state conducts a thorough and continual bridge inspection and rehabilitation program. Federal regulations require that, with some exceptions, bridges over 20 feet in length be inspected every 24 months by trained and qualified bridge inspectors. States often develop more detailed programs appropriate to unique circumstances.

Advances in technology such as electronic gauges are also enhancing the ability of inspectors to assess bridge conditions.



Snooper truck inspection.
Photo courtesy of Duluth Shipping News.



Bridge inspector examines high beam on the I-29 Overpass at 52nd Avenue South in Fargo, North Dakota.
Photo courtesy of Terry Wiklund, North Dakota Department of Transportation, 2008.

New materials are now available for bridge building such as high-strength steel, high-performance concrete, rustproof components, and fiber-reinforced polymer composites.

The nation's departments of transportation face a frustrating contradiction. They have better engineering, materials, and construction techniques than ever before, ensuring that a new generation of safe and longer-lasting bridges can be built for the future. However, without a national commitment to increasing bridge investment, more and more bridges will spiral toward deterioration and face ultimate closure to protect the traveling public from the danger of collapse.

To read or download the full report, *Bridging the Gap: Restoring and Rebuilding the Nation's Bridges*, go to the American Association of State Highway and Transportation Officials' website, www.transportation.org.