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FHWA Has Taken Actions But Could Do More to Strengthen Oversight of Bridge Safety and States' Use of Federal Bridge Funding

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Mr. Chairman, Ranking Member Duncan, and Members of the Subcommittee:

Thank you for inviting me here today to discuss the Federal Highway Administration's (FHWA) oversight of the Highway Bridge Program and the National Bridge Inspection Program. Maximizing Federal surface transportation investments to improve bridge conditions is an important and major challenge. According to FHWA, about one-quarter of the Nation's more than 600,000[1] bridges have major deterioration, cracks in their structural components, or other deficiencies. FHWA has estimated that approximately $100 billion would be needed to address current bridge deficiencies and make other improvements.[2] The collapse of the Interstate 35W Bridge in Minneapolis, Minnesota, on August 1, 2007, focused attention on the need to maximize bridge investments and the importance of having strong bridge safety programs.

Over the last 4 years, we have issued three reports on FHWA's bridge oversight,[3] and while FHWA has responded positively to our recommendations, further actions are needed to enhance oversight of bridge safety and related funding. My testimony today focuses on FHWA's efforts to (1) implement a data-driven, risk-based approach to overseeing the Nation's bridges, (2) ensure that states comply with bridge inspection standards, and (3) strengthen its oversight of states' use of Federal bridge funding.

IN SUMMARY

FHWA has taken action to implement risk-based oversight in the bridge program and to enforce more consistently the National Bridge Inspection Standards (NBIS). For example, FHWA has developed a risk assessment program to identify high-priority bridge safety risks. FHWA also launched an initiative, which it is currently piloting, to determine states' overall compliance with the NBIS by using specific risk-based metrics that are linked to the standards, such as those for inspection frequency. Despite these actions, sustained management attention is needed to ensure that identified safety risks are addressed, and that planned improvements in the inspection oversight program are implemented in

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1 This estimate is based on 2009 data.

2 This is the most recent estimate, according to FHWA's 2008 Conditions and Performance report. The report is based primarily on 2006 data in constant 2006 dollars.

3 OIG Report Number MH-2006-043, "Audit of Oversight of Load Ratings and Postings on Structurally Deficient Bridges on the National Highway System," March 21, 2006. OIG Report Number MH-2009-013, "National Bridge Inspection Program: Assessment of FHWA's Implementation of Data-Driven, Risk-Based Oversight," January 12, 2009. OIG Report Number MH-2010-039, "Assessment of FHWA Oversight of the Highway Bridge Program and the National Bridge Inspection Program," January 14, 2010. OIG reports and testimonies are available on our website: www.oig.dot.gov.

time for FHWA's next inspection of states' compliance with Federal bridge standards.

Less progress has been made in acquiring data to evaluate states' use of Highway Bridge Program (HBP) funding. Current practices do not ensure that states are using this funding effectively to improve the condition of deficient bridges. We also identified concerns related to the effective use of bridge funds provided through the American Recovery and Reinvestment Act (ARRA). FHWA has expressed concern about taking action to acquire better data on bridge funding because its efforts could be affected by changes to the Federal-aid program and the HBP resulting from the next highway authorization bill. However, taking action now to develop improved tools for assessing the effectiveness of current bridge funding could put FHWA in a better position to quickly respond to new statutory requirements.

BACKGROUND

In the late 1960s, following the collapse of the Silver Bridge over the Ohio River, Congress determined, through a series of hearings, that addressing serious bridge safety concerns should be a national priority. In 1971, FHWA issued standards for identifying, inspecting, evaluating, and acting on bridge deficiencies to ensure that bridges are safe. Despite these standards, however, major bridge collapses occurred over the next several decades that investigations showed were caused at least in part by structural deficiencies created by climate and other environmental conditions.

While states are responsible for ensuring that bridges within their jurisdictions are safe, FHWA is responsible for overseeing states' efforts and providing technical expertise and guidance in the execution of bridge inspection, repair and maintenance, and remediation activities. As of December 2009, approximately 6,000 of the more than 117,000 bridges in the National Highway System inventory were classified as “structurally deficient” due to major deterioration, cracks, or other deficiencies in their structural components (see fig. 1). In some cases, structurally deficient bridges require repair or closure. However, most bridges classified as structurally deficient can carry traffic safely if they are properly inspected, maximum load ratings are properly calculated, and maximum weight limits are posted, when necessary.

Figure 1: How a Bridge Can Become Structurally Deficient

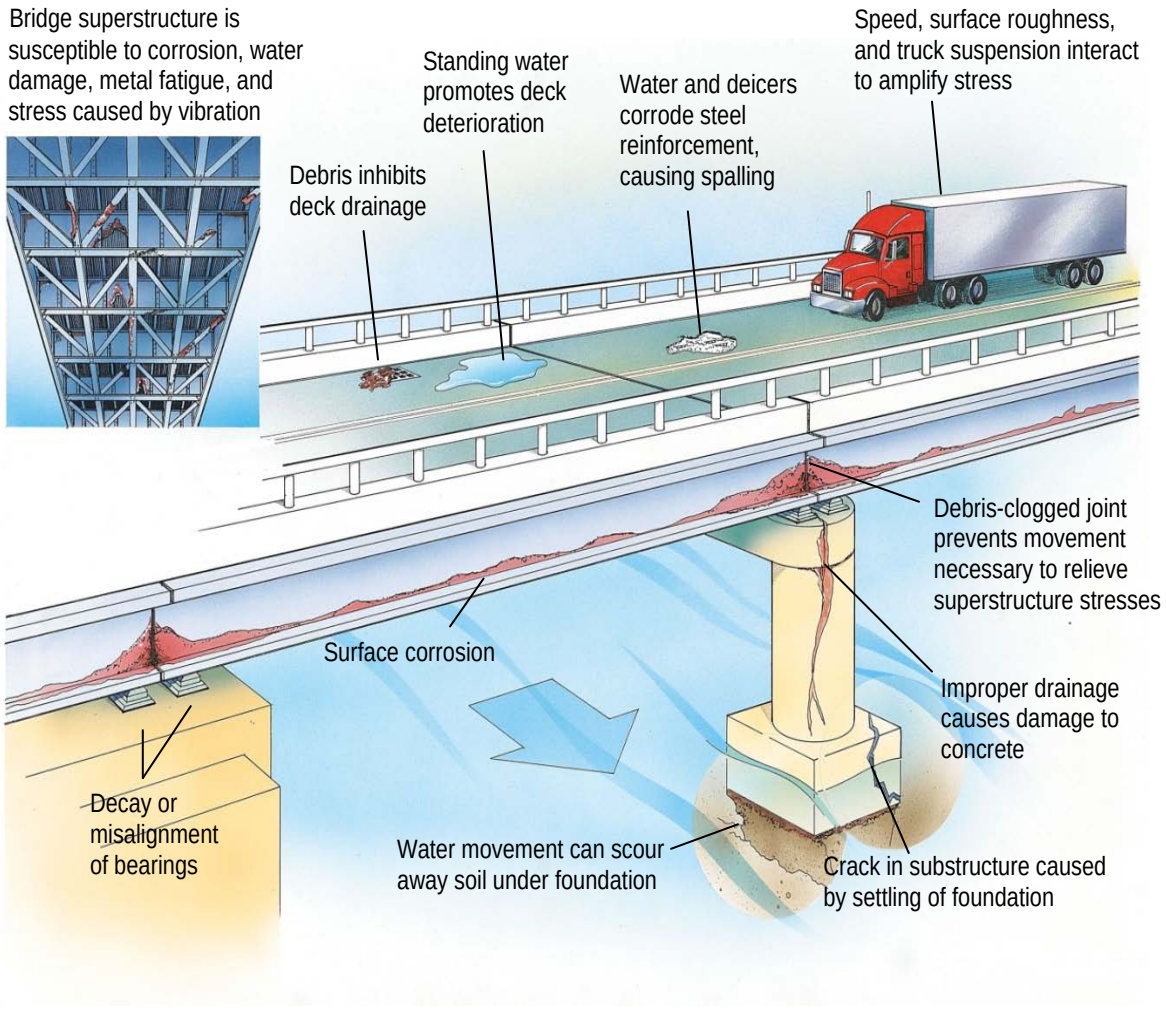

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Illustration first appeared in *Scientific American*, March 1993.

FULL IMPLEMENTATION OF PLANNED ACTIONS IS NEEDED TO TARGET HIGH-PRIORITY BRIDGE RISKS

A data-driven, risk-based approach to overseeing the Nation's bridges is critical to ensuring that Federal oversight activities target the most significant bridge safety risks. While FHWA has made progress in developing a risk-based oversight approach, its success hinges on the full implementation of initiatives with clear direction for Division Offices on how to address identified risks, and actions to ensure that new requirements are followed across the states.

In January 2009, we reported that FHWA had made limited progress in implementing a risk-based approach.[4] For example, only one-third of the bridge engineers at the 10 Division Offices we reviewed used FHWA's recommended guidance and tools, including National Bridge Inventory (NBI) data[5] reports. By not using the data reports, bridge engineers missed opportunities to coordinate with states to identify and remediate bridge safety risks. In addition, FHWA did not routinely exercise systematic data-driven oversight to comprehensively identify nationwide bridge safety risks, prioritize them, and target those higher priority risks for remediation in coordination with states.

To better ensure that higher-priority bridge deficiencies and safety risks are targeted, we recommended that FHWA develop a comprehensive plan to routinely conduct systematic, data-driven analysis to identify nationwide bridge safety risks, prioritize them, and target those higher priority risks for remediation in coordination with states. We also called for action to ensure prompt correction of inaccurate bridge data reported to FHWA.

Our preliminary review of actions taken to date indicates that FHWA has identified high-priority bridge safety risks nationwide, with input provided by its Office of Bridge Technology, which manages the National Bridge Inspection Program. FHWA also issued a February 2009 memorandum to Federal Lands Highway Division Engineers and Division Administrators notifying them that NBI data files submitted with significant errors would be returned to them for immediate resolution. Based on these actions, we closed the recommendation on developing a requirement for states to promptly correct inaccurate data submitted to FHWA for the NBI.

To fully implement its data-driven risk based approach and ensure that Federal oversight activities address the Nation's most significant safety risks, FHWA will need to carry out its commitment, made in response to our 2009 report, to direct Division Offices to work with states to mitigate high-priority bridge safety risks identified in past reviews of state bridge programs. Although we had not previously received a response on this matter, as we were finalizing our statement for this hearing, FHWA provided us with information that it states addresses this commitment. However, we will need to fully review this information to ensure that the recommendation is being carried out. Further, since data quality is critical to this approach, FHWA needs to ensure that its new policy on correcting data inaccuracies is followed.

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[4] OIG Report Number MH-2009-013.

[5] The National Bridge Inventory is a database maintained by FHWA using data states submit annually on the Nation's public highway bridges.

FHWA INITIATIVES TO ENSURE STATES COMPLY WITH BRIDGE INSPECTION STANDARDS MUST BE COMPLETED BY YEAR'S END TO INFORM THE NEXT INSPECTION CYCLE

Previously, we reported that FHWA Division Offices lacked sufficient guidance on conducting consistent reviews of states' compliance with the NBIS. FHWA has initiatives underway to address our prior recommendations to provide bridge engineers with criteria that would allow them to determine, with greater consistency, whether states demonstrate overall compliance with NBIS. FHWA is also developing risk-based guidance that defines the procedures that Division Offices should follow in enforcing compliance. However, to ensure the improved criteria and guidance are used during the next NBIS compliance inspection cycle, scheduled for 2011, these initiatives will need to be completed by the end of 2010.

FHWA bridge engineers,[6] in conjunction with other Division Office officials, are responsible for determining whether states comply with NBIS bridge safety requirements, including the frequency of inspections, inspection personnel qualifications, and the data that states are required to report. Annual NBIS compliance reviews include bridge field reviews, interviews with state bridge staff, and reviews of state bridge inspection data. To enforce NBIS requirements, FHWA may require a non-compliant state to develop a plan to correct a deficiency. FHWA can ultimately suspend Federal-aid highway funds if a deficiency is not corrected.

In January 2010, we reported that the ability of FHWA bridge engineers to determine states' overall compliance was hindered by a lack of clear and comprehensive guidance from FHWA.[7] For example, of the 11 bridge engineers we surveyed, 7 responded that FHWA's guidance did not adequately define when to suspend funds. Consequently, Federal-aid highway funds were provided to states with serious incidents of noncompliance. In one case, a bridge engineer reported to FHWA that a state was substantially compliant, despite the state's failure to close 96 bridges, as required by bridge inspection standards.

To strengthen enforcement of bridge inspection standards, we recommended that FHWA develop detailed criteria to help bridge engineers determine with greater consistency whether states demonstrate overall compliance with NBIS. We also recommended that FHWA develop a policy providing clear, comprehensive, risk-based guidance that defines the procedures that Division Offices should follow to enforce compliance with the NBIS. FHWA's enforcement actions, such as the

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[6] Typically, one bridge engineer is located in each Division Office. The person responsible for conducting the annual review could have a job title other than bridge engineer, such as structures engineer. Division Offices are located in each state, the District of Columbia, and Puerto Rico.

[7] OIG Report Number MH-2010-039.

amount of time states are given to remediate deficiencies and whether to suspend Federal-aid highway funds, should reflect the results of a data-driven assessment of each risk's significance and its possible effect on bridge safety. Stronger enforcement actions would be necessary for cases in which higher priority safety risks are identified.

According to FHWA officials, the agency is developing a uniform definition of NBIS compliance and data-driven, risk-based metrics for assessing state compliance, and focusing on identifying opportunities to improve current practices, establish minimum expectations, and increase uniformity in oversight practices. They also reported starting a pilot initiative in 12 Division Offices using the new metrics, and a prototype database for recording results and generating reports. According to FHWA, it plans to have a new process in place for conducting the 2011 annual compliance reviews of the states.

While FHWA's planned actions are consistent with our recommendations, their success will depend on the results of the ongoing pilot project using the new metrics, and FHWA's ability to evaluate results and translate them into specific lessons learned in a timely manner. We will continue to monitor FHWA's progress in meeting the December 31, 2010 target date for the nationwide roll-out of this program and ensuring consistent enforcement of bridge safety standards.

STRENGTHENED OVERSIGHT OF STATES' USE OF FEDERAL BRIDGE FUNDING IS NEEDED TO MAXIMIZE THE RETURN ON INVESTMENT

FHWA lacks sufficient data to evaluate whether the billions of dollars apportioned to states through the HBP,[8] and billions more in ARRA dollars, have been used to improve the condition of the Nation's most deficient bridges. In addition, FHWA regulations on value engineering studies—which states are required to conduct on high-cost highway and bridge projects—are out of date. Greater use of value engineering could help states stretch limited Federal dollars and put them to better use on other bridge projects.

FHWA Lacks Sufficient Data to Evaluate States' Use of HBP Funds

FHWA is responsible under Federal law for monitoring the efficient and effective use of Federal-aid highway funds.[9] However, FHWA lacks sufficient data to evaluate whether states are effectively using the billions of Federal dollars apportioned to them through HBP, which in fiscal year 2009 provided $5.2 billion

[8] HBP is the primary Federal program that funds the replacement and rehabilitation of bridges nationwide.
[9] 23 U.S.C. §106 (2006).

to states. To apportion funding to states for bridge remediation, HBP uses a needs-based formula based on data collected by state and local governments during inspections of public highway bridges. States that demonstrate greater need receive more funding.

Despite assurances from the former FHWA Administrator that the agency could obtain data on how much HBP funding has been spent on structurally deficient bridges,[10] FHWA's accounting system, the Fiscal Management Information System (FMIS), lacks the details needed to link expenditures to bridge improvements. Specifically, the system tracks expenditures at the project level.[11] However, this tracking provides insufficient information for determining how states use HBP funds on individual project components, including non-deficient bridges, tunnels, and roads. For example, in a prior report, we pointed out that Michigan used almost $3 million in HBP funds on a single Federal-aid project that involved preventive maintenance on three bridges that were not classified as deficient, as well as four that were. FMIS lacked the capability to determine how much Federal aid goes toward improving the condition of the project's deficient bridges.

Understanding how bridge funds are spent is critical to targeting those structurally deficient bridges that carry the majority of the Nation's bridge traffic. According to the NBI, the total number of structurally deficient bridges decreased about 15 percent from 2001 through 2009 (see table 1). However, the deck area of structurally deficient National Highway System bridges, which carry a majority of bridge traffic, increased by 8 percent over the same period.

Table 1. Structurally Deficient Bridges in 2001 and 2009

	All Highway Systems			National Highway System		
	2001	**2009**	**Change**	**2001**	**2009**	**Change**
Bridges	83,630	71,179	(14.9)%	6,643	5,977	(10.0)%
Deck Area (meters^2)	31,505,907	31,199,863	(1.0)%	12,455,463	13,499,718	8.4%

Source: OIG analysis using NBI data, as of December 2009.

[10] Hearing on Structurally Deficient Bridges held September 5, 2007, before the U.S. House of Representatives Committee on Transportation and Infrastructure.

[11] A project is defined as an undertaking by a state for highway construction, including preliminary engineering, rights-of-way acquisition, and actual construction; for planning and research; or for any other work or activity to carry out laws for the administration of Federal highway aid (23 C.F.R. §1.2 (2008)).

To strengthen its oversight of Federal-aid funds, we recommended that FHWA:

- Collect and analyze HBP expenditure data on a regular basis to identify states' efforts to improve the condition of the Nation's deficient bridges, such as replacement and rehabilitation.

- Report regularly to internal and external stakeholders on the effectiveness of states' efforts to improve deficient bridges based on the analysis of HBP expenditure data and an evaluation of progress made in achieving performance targets.

- Collaborate with states in setting quantifiable performance targets to measure progress in the improvement of deficient bridges.

While FHWA concurred with our recommendations, it has shown little progress in addressing them to date. In its response to our January 2010 report, FHWA targeted May 1, 2010 to fully respond to the first two recommendations, and stated that its planned actions included evaluating the integration of current stand-alone systems to improve bridge project information and collecting more detailed project information. FHWA noted in its formal comments on our January 2010 report that it seeks to strike a balance between what is achievable in the near term with existing resources, systems, and data, and what may be achievable in the future. Specifically, FHWA stated that its efforts to obtain information on states' use of Federal funding for deficient bridges and the resulting improvements could be significantly affected by changes to the Federal-aid program and the HBP as a result of the next highway authorization bill. During our preparations for this hearing, FHWA informed us that more detailed information on bridge projects would be included in FMIS by fiscal year 2012. We will need to obtain and assess additional details on this reported action, including a specific implementation schedule, before closing our recommendation.

We recognize that possible reauthorization modifications to HBP and other changes could impact requirements for specific information gathered on states' use of bridge funding, but we maintain that taking action now could lead to near term improvement and make it easier to carry out potential mandates. New requirements might include monitoring state use of Federal funding, setting performance targets for states to reduce the deck area of bridges classified as structurally deficient, and directing states to report on their use of Federal funding and progress made towards meeting performance targets. Given the challenges posed by such requirements, implementation of feasible near term enhancements could produce immediate results while better preparing FHWA to implement new mandates.

DOT Has Not Assessed the Impact of ARRA-Funded Highway and Bridge Projects

Of the $48 billion in ARRA funding designated to the Department of Transportation (DOT), $27.5 billion, or 57 percent, went to FHWA for highway and bridge infrastructure projects. Despite this large investment, DOT is not evaluating the impact of ARRA funds on the U.S. transportation system, including the billions that states have spent on bridge-related projects, according to a recent Government Accountability Office (GAO) report.[12] DOT data on obligations by project type indicate that ARRA highway obligations, as of July 2, 2010, included $1.4 billion in bridge replacements, $1.2 billion in bridge improvements, and $581 million in new bridge construction. Yet, similar to HBP funding, decision makers cannot determine how much, if any, of this funding was actually spent on the Nation's most deficient bridges because FHWA uses the same accounting system, FMIS, to track ARRA. DOT has reported that it is considering ways to improve its measurement and understanding of ARRA impacts.

Some States Did Not Conduct Federally Required Value Engineering Studies

In June 2010, we issued an ARRA Advisory[13] after our ongoing audits of FHWA's oversight of highway infrastructure investments funded through ARRA revealed that some states did not conduct federally required value engineering (VE) studies on selected projects. While benefits gained from VE studies on specific projects may vary, VE can improve performance, reliability, quality, and safety, and reduce life-cycle costs. We determined that: FHWA's VE policy was out-of-date; changes to VE requirements were not included in the Code of Federal Regulations (C.F.R.); and VE was not discussed in most of the states' Stewardship and Oversight Agreements with FHWA.

Recommendations from a VE study conducted prior to a project's construction can result in reductions in project cost estimates, allowing funds to be released and re-programmed to other Federal-aid highway and bridge projects. Federal law requires all federal-aid highway and bridge projects with estimated total costs equal to or exceeding $25 million and $20 million, respectively, to undergo VE studies during project concept and design. These cost thresholds also apply to the $27.5 billion in FHWA highway infrastructure projects funded through ARRA.

Our ARRA Advisory urged FHWA to take timely action before the September 30, 2010 deadline for obligating ARRA funds. Specifically, we advised that FHWA

[12] GAO Report Number GAO-10-604, "Recovery Act: States' and Localities' Uses of Funds and Actions Needed to Address Implementation Challenges and Bolster Accountability," May 26, 2010.

[13] OIG Advisory AA-2010-001, "ARRA Advisory on FHWA's Oversight of the Use of Value Engineering Studies on ARRA Highway and Bridge Projects," June 28, 2010.

needs to (1) update 23 C.F.R. § 627, Value Engineering, to include 2005 VE legislative changes;[14] (2) ensure that FHWA, state, and local staff are fully informed regarding VE legislative requirements and FHWA's revised VE policy; and (3) require states, the District of Columbia, and Puerto Rico to include VE requirements in their Stewardship and Oversight Agreements with FHWA.

According to FHWA, its revised VE policy, issued in May 2010, addresses the timeliness of VE studies and provides effective guidance while regulatory updates proceed. Further, while not directly requiring states to include VE in their Stewardship and Oversight Agreements, FHWA contends that its new performance measures provide integration of VE into FHWA and state practices. As part of our ongoing ARRA audits, we plan to review FHWA's implementation of its policy and performance measures and to further assess VE issues and FHWA's actions.

CONCLUSION

We recognize FHWA's progress in implementing a data-driven, risk-based approach to bridge oversight and support its efforts to address our related recommendations. Given the volume of needs of the Nation's nearly 600,000 bridges, and the limited funding available to repair and replace bridges, FHWA must target its oversight efforts at higher priority bridge safety risks and strengthen its oversight of states' use of federal bridge funding. In particular, more needs to be done to enable FHWA to evaluate the impact of the billions in Federal bridge money that have been allocated to states in recent years for improving the condition of deficient bridges. Accordingly, we will continue our monitoring activities until FHWA demonstrates that it has been fully responsive to all our recommendations. Although no work is scheduled in this area, we will initiate future audit work on FHWA's bridge oversight, as appropriate.

Mr. Chairman, that concludes my remarks. I would be happy to answer any questions that you or other members of the subcommittee may have.

[14] Pub. L. No. 109-59, Sec. 1904 (2005), the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), required that all bridge projects with an estimated total cost of $20 million or more undergo a VE study.