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Highway Bridges: Conditions and the Federal/State Role

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Highway Bridges:
Conditions and the Federal/State Role

Summary

The sudden failure and collapse of the I-35W Interstate System bridge in Minneapolis has raised policy concerns in Congress regarding the condition of the nation's transportation infrastructure in general, and in particular the federal role in funding, building, maintaining, and ensuring the safety of roads and especially bridges in the United States. The National Transportation Safety Board (NTSB) expects to determine probable cause of the collapse by the end of 2008. An interim NTSB finding implicated a flaw in the original bridge design as a contributing factor.

Of the 600,000 public road bridges listed in the National Bridge Inventory, roughly 12%, or 72,000, were classified as structurally deficient as of 2007. This is, however, roughly half the number classified as deficient in 1990. Given the I-35W collapse, however, even this lower number of deficient bridges leaves Americans potentially exposed to what some might consider an unacceptable level of risk. A policy question is how quickly can and should the remaining deficient bridges be replaced or improved? At current annual spending levels, roughly $10.5 billion (2004 dollars at all levels of government), the bridge investment backlog (in dollar terms) would be reduced by roughly half by 2024. Reducing the backlog to near zero during the same period would require an estimated annual spending rate of roughly $12.4 billion (in 2004 dollars).

The Emergency Relief Program (ER), administered by the Federal Highway Administration (FHWA), provides funding for bridges damaged in natural disasters or by catastrophic failures. The program provides funds for emergency repairs immediately after the failure to restore essential traffic, as well as for longer-term permanent repairs. The funds, for both the initial cleanup and for the replacement of the I-35W bridge, will come from this program. P.L. 110-56 authorized ER spending for the I-35W bridge.

In the broader context, most federal funding, for bridge reconstruction, replacement, or repair of structurally deficient or functionally obsolete bridges, is provided through the FHWA's Highway Bridge Program (HBP). Many credit this program as an important reason for the decline in the number of deficient bridges over the last 15 or so years. Although ER and HBP are federal programs, most of the money provided is under the control of the states. The state departments of transportation let the contracts, oversee the project development and construction process, and, in particular, provide for the inspection of bridges.

Among the congressional issues regarding the nation's highway bridge infrastructure are whether to increase spending on deficient bridges and accordingly modify the federal-aid highway programs; whether to enlarge the federal role in bridge inspection; and, within the context of large projected deficits in highway trust fund revenues, how to fund potential increased spending on highway bridges. A bill, H.R. 3999, ordered reported by the House Transportation and Infrastructure Committee, would address some of these issues.

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Highway Bridges: Conditions and the Federal/State Role

The sudden collapse of the I-35W Interstate System bridge in Minneapolis has raised policy concerns in Congress regarding the condition of the nation's transportation infrastructure in general, and in particular the federal role in funding, building, maintaining and assuring the safety of roads and especially bridges in the United States. Highway bridges are of particular interest both because of the recent tragedy in Minneapolis and the catastrophic results of a major bridge failure, in terms of loss of life and public interest impact. Both the federal government's response to catastrophic bridge failures and its role in helping states address structurally deficient bridges have come under increased public scrutiny since the August 1, 2007, bridge collapse. The National Transportation Safety Board's (NTSB) investigation of the I-35W bridge collapse is ongoing. Probable cause of the collapse is expected to be determined when the final report is presented to the NTSB, sometime before the end of 2008. The NTSB, on January 15, 2008, released an interim finding that an error in the original design appears to have contributed to the failure.[1]

This report examines the federal and state roles in the maintenance, inspection, reconstruction, and replacement of the nation's highway bridge infrastructure, as well as the emergency response and reconstruction role of the Department of Transportation (DOT). The report first describes what is known about the condition of the nation's bridges and whether the problem of structural deficiency is improving or worsening. It then briefly describes the programmatic and budgetary context, including federal efforts to reduce the number of deficient bridges, and examines highway bridge spending. The report discusses issues Congress is facing face in light of the I-35W bridge collapse and the emergence of questions about the appropriateness and effectiveness of related federal infrastructure policies, programs, and spending. Finally, the report describes a number of legislative initiatives that have been proposed.

Background

Bridge Characteristics

There are nearly 600,000 public road bridges in the United States, as documented in the National Bridge Inventory (NBI), that are subject to the National

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[1] See National Transportation Safety Board, *NTSB Urges Bridge Owners to Perform Load Capacity Calculations Before Modifications; I-35W Investigation Continues*, available at [http://www.ntsb.gov/Pressrel/2008/080115.html].

Bridge Inspection Standards.[2] Almost all of these bridges are owned by either state or local government, 48% and 51% respectively. Only 1% are owned by the federal government (these are primarily on federally owned land). About 40% of bridges serve local roads, 33% serve Interstate or other arterial highways, and 27% serve collectors.[3] Interstate bridges comprise about 9% of all bridges, with about half in urban areas and half in rural areas. Interstate and other arterial bridges carry almost 90% of average daily traffic (ADT). Urban Interstate bridges alone carried 35% of ADT in 2004.[4]

Bridge Conditions

Federal law requires states to periodically inspect public road bridges and to report these findings to the Federal Highway Administration (FHWA). This information permits FHWA to characterize the existing condition of a bridge compared with one newly built and to identify those that are deficient, either structurally or functionally. A bridge is considered structurally deficient

> if significant load-carrying elements are found to be in poor or worse condition due to deterioration and/or damage, or the adequacy of the waterway opening provided by the bridge is determined to be extremely insufficient to the point of causing intolerable traffic interruptions.[5]

A bridge classified as structurally deficient is not necessarily unsafe, but may require the posting of a vehicle weight restriction.

A functionally obsolete bridge, on the other hand, is one where its current geometric characteristics — deck geometry (such as the number and width of lanes), roadway approach alignment, and underclearances — are deficient compared with current design standards and traffic demands. A bridge can be both structurally deficient and functionally obsolete, but structural deficiencies take precedence. As a result, a bridge that is structurally deficient and functionally obsolete is classified in the FHWA NBI as structurally deficient. About half of structurally deficient bridges are also functionally obsolete.[6]

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[2] Bridges that are 20 feet (6.1 meters) in length or longer.

[3] Arterials, including Interstates, are roads designed to provide for relatively long trips at high speed and usually have multiple lanes and limited access. Collectors are typically two-lane roads that provide for shorter trips at lower speeds and collect and distribute traffic between arterials and local roads.

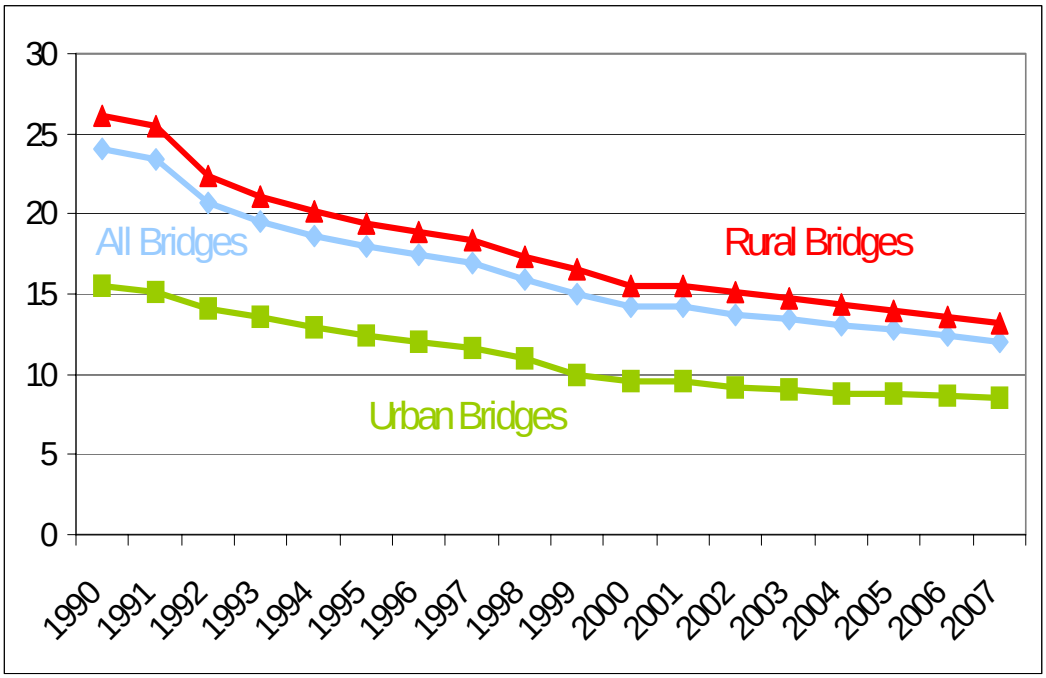
[4] Department of Transportation (DOT), Federal Highway Administration and Federal Transit Administration, *2006 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance*, Washington, 2007, chapter 2, at [http://www.fhwa.dot.gov/policy/2006cpr/index.htm]. Figures for 2007 provided by the Bureau of Transportation Statistics.

[5] Ibid., 3-14.

[6] Ibid., 3-16.

Overall, in 2007, about 26% of bridges were classified as structurally deficient, functionally obsolete, or both. About 12% of bridges in that year, approximately 72,000, were classified as structurally deficient. This is much lower than the number and share of bridges classified as structurally deficient in 1990 (see **Figure 1**). Indeed, over that period, the number of structurally deficient bridges has been cut almost in half.[7]

Figure 1. Structurally Deficient Bridges in the United States, 1990-2007 (percent)



Source: U.S. Department of Transportation Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics* (Washington, DC), table 1-27.

Bridges on the most heavily traveled roads, such as Interstates and other arterials, are less likely to be classified as structurally deficient than bridges on more lightly traveled routes. Despite the fact that traffic has grown markedly on Interstate and other arterials over the past decade, structural deficiencies have declined. The one exception to this trend is rural Interstate bridges. In 2004, FHWA classified about 5% of Interstate bridges and 8% of bridges serving other arterials as structurally deficient, compared with 12% serving collectors and 19% serving local roads. Between 1994 and 2004, the share of structurally deficient Interstate bridges declined from 6.0% to 5.1%, with the share of deficient Interstate bridges in rural areas increasing slightly from 4.0% to 4.2% and the share in urban areas declining from 8.3% to 6.0%. Over the same period, the share of structurally deficient other arterial bridges in rural areas declined from 9.5% to 6.9% and the share of those in

[7] Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *National Transportation Statistics* 2007, Washington, 2007, table 1-27, at [http://www.bts.gov/publications/national_transportation_statistics/].

urban areas declined from 12.7% to 8.6%.[8] For bridge deficiency and obsolescence rates by state see the table in **Appendix I**.

Future Bridge Funding Needs

Every two years, the U.S. Department of Transportation (DOT) assesses the condition and performance of the nation's highways, bridges, and transit systems; documents current spending by all levels of government; and estimates future spending needs to either maintain or improve current conditions and performance.[9] As with any attempt to forecast future conditions, there are a host of simplifying assumptions, omissions, and data problems that influence the results of the estimates of future funding needs. Among other things, the estimates of future needs rely on a forecast of travel demands and assumes that the most economically productive projects (i.e., projects with the highest benefits relative to costs) will be implemented first. Despite such uncertainties and assumptions, these estimates provide a way to assess the level of current spending compared with what will be needed in the future under different scenarios.

The most recent needs assessment shows that in 2004, $70.3 billion was spent on capital improvements to the nation's highways and bridges.[10] Of that amount, $58.3 billion was spent on roadways and $12.0 billion was spent on bridges. The expenditures on bridges are composed of $10.5 billion on the rehabilitation of existing bridges and $1.6 billion on the building of new bridges. Because of the modeling involved, DOT's future needs estimates for bridges are limited to fixing deficiencies in existing bridges, thus are comparable with the $10.5 billion figure. With that in mind, DOT estimates that it would cost a total of $65.3 billion to fix all existing bridge deficiencies (in 2004 dollars), which is called the existing bridge investment backlog.[11] This figure includes dealing with bridges classified as structurally deficient and functionally obsolete as well as other deficiencies, if the benefits outweigh the costs.

Of course, fixing all deficient bridges overnight, whatever the cost, is not possible. FHWA, therefore, estimates how this investment backlog will change at various levels of spending over the next 20 years, 2005 through 2024, taking into account the deterioration of existing bridges over that period. The results of this analysis can be seen in **Table 1**. All dollar figures are adjusted for inflation and expressed in 2004 dollars. To maintain the existing level of bridge deficiencies over the next 20 years (i.e., to keep the backlog at the current level in total dollar terms) would require $8.7 billion annually, less than the level of spending in 2004. Investment at the maximum economically justified level would be $12.4 billion annually, approximately 20% per year more than spending in 2004. At this level, the backlog of deficiencies would be entirely eliminated. Spending between the level

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[8] DOT, *Conditions and Performance*, 2007, exhibit 3-18.

[9] The "improve" scenario is the level of spending in which the investment is made in all projects where the economic benefits are equal to or greater than the economic costs.

[10] These spending figures do not include routine maintenance costs.

[11] DOT, *Conditions and Performance*, 2007, 9-13.

needed to maintain current conditions, $8.7 billion per year, and the maximum economically justifiable level, $12.4 billion per year, would improve the conditions of the nation's bridges but would not entirely eliminate the economic backlog. At the level of spending in 2004, $10.5 billion per year, the total dollar cost of deficiencies would be halved over the next 20 years. If spending is less than $8.7 billion per year, the economic backlog will grow.[12] Funding to build new bridges, $1.6 billion in 2004, would be in addition to these spending estimates.

DOT does not report in a comparative way on the federal share of all bridge capital expenditures, but instead reports on the share of capital spending on roadways and bridges as a whole. Of the $70.3 billion capital expenditures on roads and bridges, the federal share was 43.8%, amounting to $30.8 billion. The federal share of capital expenditures has hovered around 40% since the mid-1980s.[13]

Table 1. Projected Changes in 2024 Bridge Investment Backlog Compared with 2004 Levels for Different Possible Funding Levels

Average Annual Investment (billions of 2004 Dollars)	2024 Backlog (billions of 2004 dollars)	Percentage Change from 2004	Funding Level Description
12.4	0	-100.0%	Maximum economic investment scenario
11.1	21.4	-67.2%	
10.5	34.5	-47.2%	2004 spending on existing bridges
9.4	53.6	-17.8%	
8.7	65.3	0.0%	Maintain investment backlog
8.2	75.2	15.2%	
7.0	97.8	49.8%	
5.9	120.7	84.9%	

Source: U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration, *2006 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance* (Washington, DC, 2007), exhibit 9-8.

Bridge Infrastructure: The Federal/State Role

The Federal Highway Administration (FHWA) is the main federal player in regard to the maintenance and safety of highway bridges, as well as in the emergency response to reestablish mobility and reconstruct bridges after a catastrophic failure. The National Transportation Safety Board (NTSB), however, is the entity that usually

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[12] Ibid., 9-12, 9-13.

[13] Ibid., exhibit 6-8.

investigates the causes of bridge failures, and when a navigable waterway is involved, the Coast Guard and the Army Corps of Engineers may be involved in clearing and reopening the waterway.

A number of characteristics of the FHWA's Federal-Aid Highway Program need to be kept in mind during a discussion of the federal role in maintaining and improving the nation's highway bridge infrastructure. To begin with, although the federal-aid highway program provides federal money to highways and highway bridges, the money itself is normally under the control of the states. The state departments of transportation (state DOTs), within the federal programmatic framework, determine, for the most part, where and on what the money is spent (but have to comply with detailed federal planning guidelines as part of the decision making process). The state DOTs let the contracts, oversee the project development and construction process, and provide for the inspection of bridges. Most of the federal-aid highway program money provided to the state DOTs is apportioned to them through several large "core" formula-driven programs, including the Interstate Maintenance program (IM), the National Highway System (NHS), the Surface Transportation Program (STP), the Congestion Mitigation and Air Quality Improvement program (CMAQ), and the Highway Bridge Program (HBP). These programs were designed to meet certain policy goals. Over time, the state DOTs have been given increasing flexibility to shift funds from one program to another to help fulfill their state transportation plans. The HBP is the primary source of federal funds for highway bridge replacement, reconstruction, and capital maintenance (not for new bridge or bridge capacity expansion). States can, however, if they wish, transfer or "flex" up to 50% of their HBP apportioned funds to certain non-bridge programs. Theoretically, states can also transfer (or "flex") funds from other federal-aid highway programs to increase spending through the HBP. However, certain other formula program funds can be spent on bridge reconstruction and replacement without being flexed (i.e., some HBP-type projects are directly eligible under IM, NHS, and STP).

Also, a number of smaller discretionary programs nominally under the control of the FHWA were designed to provide funds to projects chosen through competition with other projects. In recent years, with the exception of FY2007, however, most of the discretionary program funding has been earmarked by Congress.[14]

The HBP includes $100 million annual set-aside of bridge project funds that are designated in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU; P.L. 109-59). The set-aside has been criticized by supporters of the HBP both because all of the money was designated to projects set forth in the text of the act and because a significant dollar amount of the set-aside is for new bridge construction, which would not be normally eligible under the HBP.

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[14] Congress did not earmark most FHWA discretionary programs under the FY2007 year-long continuing resolution (P.L. 110-5). Most of these funds were directed, however, by the Department of Transportation (DOT) to support DOT's Urban Partnership Agreements and Corridors of the Future initiatives. The initiatives were developed by DOT with minimal congressional participation.

The Federal-aid Highway program is funded from the Highway Account of the Highway Trust Fund (HTF). This Highway Account is experiencing financial difficulties and may go into deficit in FY2009. Consequently, an increase in federal spending for highway bridge repair would require a decrease in other highway spending, an increase in revenues to the trust fund (tax or fee increases), a draw-down of the HTF balances (and possibly an earlier deficit condition for the trust fund), or appropriations from the Treasury's general fund.

The Highway Bridge Program (HBP)[15]

The main federal source of funding for highway bridges is the HBP, also referred to as the Highway Bridge Replacement and Rehabilitation program (HBRR). The HBP is the primary federal program to fund the replacement or rehabilitation of structurally deficient or functionally obsolete bridges. The program's base authorization for FY2007 was $4.3 billion in contract authority. However, additional apportionments to the program, described in **Table 2**, raised the program's gross apportionments to roughly $5 billion. As mentioned earlier, the plans for the spending of these funds are under the control of the state DOTs. These funds are usually not to be spent on new bridges, but are available for

- the total replacement of a structurally deficient or functionally obsolete highway bridge on any public road with a new facility constructed in the same general traffic corridor;
- rehabilitation to restore structural integrity of a bridge on any public road or to correct major safety defects;
- replacement of certain ferryboat operations and bridges destroyed before 1965, low-water crossings, and bridges made obsolete by certain Corps of Engineers (COE) projects and not rebuilt with COE funds;
- bridge painting, seismic retrofitting, anti-scour measures, and de-icing applications; and
- systematic preventive maintenance[16] (SAFETEA-LU added this to the U.S. Code to clarify the eligibility of such work).

HBRR funds are apportioned to the states by formula based on each states' relative share of the total cost to repair or replace deficient highway bridges. Each state is guaranteed at least 1/4% of total program allocation, and no state may receive an allocation greater than 10%. The federal share under HBP is 80%, except that for Interstate bridges the federal share rises to 90%.

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[15] 23 U.S.C. 144. See also the FHWA website at [http://www.fhwa.dot.gov/federalaid/projects.cfm?progProj=curr#c29].

[16] The use of HBP funds for preventative maintenance has been more broadly eligible than has been commonly assumed, see [http://www.fhwa.dot.gov/preservation/100804.cfm]

To be eligible for funding under the HBP, a bridge must be considered deficient and have a so-called sufficiency rating (on a scale of 0-100) of 50 or less to be eligible for replacement, and have a rating of 50 to 80 to be eligible for rehabilitation (i.e., bridges with a sufficiency rating more than 80 are not eligible). Further, the bridge must be at least 20 feet long and may not have been constructed or have undergone major reconstruction within the last 10 years.[17]

The most recent authorization act, SAFETEA-LU, provided a base authorization of $4.188 billion for FY2005, $4.254 billion for FY2006, $4.320 billion for FY2007, $4.388 billion for FY2008, and $4.457 billion for FY2009, for HBP. The program operates under a kind of budget authority, called contract authority, that permits the federal obligation (i.e., federal obligation to reimburse the states) of funds in advance of an appropriation. The actual apportionments to the HBP program were to be augmented by the Equity Bonus Program, and in some years by the Revenue Aligned Budget Authority (RABA) distributions. Over the life of the act, the program was to receive roughly 11% of all the contract authority apportioned by formula. Over the last 20 years, the percentage of actual annual HBP apportionments has varied roughly within the range of 11% to 14% of total annual apportionments.[18]

As with other federal-aid highway programs, the states have a great deal of control over how, where, and on what the HBP funds, allocated to their state transportation programs, are spent. In addition, the states have the option of not spending all of HBP on bridge projects. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA; P.L. 102-240) included a provision to allow up to 40% of a state's bridge program apportionment (the distribution of funds as prescribed by the bridge program formula) to be transferred, or flexed, to the National Highway System (NHS) or the Surface Transportation Program (STP); this authority continues to exist. The Transportation Equity Act for the 21st Century (TEA21; P.L. 105-178) increased the allowable transfer percentage to 50%. The amount of contract authority that has been transferred is significant. Since FY2000, 20 states and the District of Columbia have transferred $2.8 billion from the bridge program to other federal-aid highway programs (see the **Table 4** in **Appendix II**, for the transferred amounts broken out by year and state).[19]

It is, however, obligations rather than contract authority that best indicates the amount of "money" that will eventually be spent. Recent federal authorizing legislation has not specified the distribution of obligational authority across the core federal programs. This, in effect, allows states to shift the obligations among the various federal formula programs as long as the obligations in any of the individual programs do not exceed their authorized contract authority for the fiscal year. Some observers have argued that some states have regularly taken advantage of this device

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[17] For more information see [http://www.fhwa.dot.gov/bridge/bridgeload01.cfm]

[18] Based on FHWA data.

[19] Calculated by CRS from FHWA data.

to use bridge program obligations to fund non-bridge projects allowable under programs such as the STP.[20]

Table 2 displays the bridge program base authorizations, apportionments (after distribution of the Minimum Guarantee or Equity Bonus and any RABA), and obligation of federal funds under HBP for FY2002 through FY2007.[21]

Table 2. Highway Bridge Program Apportionments and Obligations

($ in millions)

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Authorization (base)	$3,552	$3,619	$3,971	$4,188	$4,254	$4,320
Apportionments (gross)	$4,406	$3,792	$5,021	$4,650	$4,539	$5,041
Obligations	$3,124	$3,112	$3,312	$2,986	$2,504	$3,125

Source: FHWA. FY2007 obligations are through August 10, 2007.

States may also, if they wish, spend funds from other large "core" formula program apportionments on their state's bridges (see **Appendix III**). In addition, there is nothing preventing a state from spending its own funds on bridge projects beyond the minimum local matching share. Federal funding for highways, since its inception, has been intended to be spending that is supplemental to state spending on highways — not as a substitute for states' spending.

As mentioned earlier, the HBP is restricted to the repair and replacement of deficient bridges. However, significant amounts of federal funds are also obligated for new or capacity-increasing bridge projects. If new bridges and capacity-increasing reconstruction projects are added to obligations for bridge replacement, rehabilitation, and minor bridge work, total annual obligation of federal funds for bridge projects from all FHWA programs averaged roughly $5.4 billion, for FY2002-FY2007.[22] Spending on totally new bridges, however, does not generally reduce the number of deficient bridges. The 2008 Consolidated Appropriations Act (P.L. 110-161) provided an additional $1 billion for the HBP.

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[20] See "Which States Place the Highest Priority On Bridge Spending?" *Transportation Weekly*, September 5, 2007, 8. For an earlier discussion see *The Federal Bridge Program (Decoding Transportation Policy and Practice #8)*, Surface Transportation Policy Project, 2003, available at [http://www.transact.org/library/decoder/Bridge-Decoder.pdf].

[21] Obligation figures in **Table 2** were provided by the FHWA. Apportionments (gross) were taken from FHWA's computational tables, various years.

[22] Federal Highway Administration, *Bridge Obligations by Fiscal Year and Program*, reproduced in Appendix III at the end of this report.

Bridge Inspection

Under the National Bridge Inspection Program (NBIP), all bridges longer than 20 feet (6.1 meters) are required to be inspected and reported on by state inspectors, based on federally defined requirements, and data from these inspections are reported by the states to the Federal Highway Administration. Federal agencies are also subject to the same requirements for federally owned bridges, such as those on federal lands. This program sets up a mechanism to identify the nation's deficient or functionally obsolete bridges, for states to identify which bridges need replacement and which need repair, and to form the statistical basis for developing the cost-to-repair estimates that are used at the federal level in the HBP apportionment formula.[23]

The federal government sets the standards for bridge inspection through the National Bridge Inspection Standards (NBIS; 23 CFR 650 subpart C). The NBIS sets forth how, with what frequency, and by whom bridge inspection is to be completed. Characteristics of the NBIS include the following:

- States are responsible for the inspection of all public highway bridges within the state (except for those owned by the federal government or that are tribally owned). Although the state may delegate some bridge inspection responsibilities to smaller units of government within the state, the responsibility for having the inspections done in conformance with federal requirements remains with the state.

- Inspections can be done by state employees or by certified inspectors employed by consultants under contract to a state DOT.

- Inspections of federally owned bridges are the responsibility of the federal agency that owns the bridge.

- The standards for the qualification and training of bridge inspection personnel.

- In general, the required frequency of inspection is every 24 months. States are to identify bridges that require less than a 24-month frequency. States can also, however, request FHWA approval to inspect certain bridges on an up to 48-month frequency. Frequency of underwater inspection is generally 60 months but may be increased to 72 months with the FHWA permission.

- The most common on-site inspection is a visual inspection by trained inspectors, one of whom must meet the requirements of a Team Leader. Damage and special inspections do not require the presence of a Team Leader.

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[23] The National Bridge Inspection Program was initiated in 1968 following the 1967 collapse of the so-called Silver Bridge over the Ohio River. The National Bridge Inspection Standards were first issued in 1971.

- Load rating of a bridge must be under the responsibility of a registered professional engineer. Structures that cannot carry maximum legal loads for the roadway must be posted.

The vast majority of inspections are done by state employees or consultants working for the states. FHWA inspectors do, at times, conduct audit inspections to assure that states are complying with the bridge inspection requirements. FHWA also provides on-site engineering expertise in the examination of the reasons for a catastrophic bridge failure. The time, however, that FHWA bridge engineers have available for bridge oversight is limited.[24]

FHWA's Emergency Relief Program

The Emergency Relief Program (ER) provides funding for bridges damaged in natural disasters or that are subject to catastrophic failures.[25] The program provides funds for emergency repairs immediately after the failure to restore essential traffic, as well as for longer-term permanent repairs.

ER is authorized at $100 million per year, nationwide. Funding beyond this is generally provided for in supplemental appropriations acts. ER also has a $100 million cap on the amount that can be spent in any one state, for any one disaster or catastrophic failure. In the case of most large disasters, additional funds are provided for in an appropriations bill (usually a supplemental appropriations bill) to meet the needs for additional ER funding. Usually, the $100 million state cap is waived legislatively in the same bill. In the past, this funding often came from the HTF, but with the HTF facing financial problems, any supplemental funding, under ER, for the Minneapolis Bridge would probably have to come from the Treasury's general fund.

The federal share for emergency repairs to restore essential travel during the first 180 days following a disaster is 100%. Later repairs, as well as permanent repairs such as reconstruction or replacement of a collapsed bridge, are reimbursed at the same federal share that would normally apply to the federal-aid highway facility. Recently, Congress has often legislatively raised the federal share under the ER program to 100%.

The ER program is considered by most in the transportation community to have a good track record in getting traffic alternatives (detours, transit, or ferryboat service) in place and using innovative contracting to accelerate the rebuilding of damaged federal-aid highway facilities. As is true with other FHWA programs, the ER program is administered through the state DOTs in close coordination with FHWA's division offices (there is one in each state). Most observers see this as a

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[24] Department of Transportation, Inspector General, *Federal Highway Administration's Oversight of Structurally Deficient Bridges*, Washington, 2007, 8. Available at [http://www.oig.dot.gov/StreamFile?file=/data/pdfdocs/OIG_Final_Bridge_Hearing_Statement_090507.pdf].

[25] For a more detailed discussion of the ER program, see CRS Report RS22268, *Repairing and Reconstructing Disaster-Damaged Roads and Bridges: The Role of Federal-Aid Highway Assistance*, by Robert S. Kirk.

strength of the program, in that FHWA staff at the state level have established and ongoing relationships with their state counterparts, which facilitates a quick, coordinated response to disasters.

On August 8, President Bush signed legislation providing $250 million for rebuilding the I-35W bridge.[26] ER spending on the bridge is not, however, limited to the $250 million because the ER program has an underlying "such sums as necessary" authorization which allows for additional spending from the general fund if there is appropriations action making the funding available. Secretary of Transportation, Mary Peters, announced on August 10, 2007, that FHWA would provide $50 million in immediate Emergency Relief funding (in addition to the $5 million released the morning of the collapse), for "clearing debris, setting up detours, and making repairs." In addition, DOT provided $5 million in Transit Bus and Bus Facilities funding (from the mass transit account of the highway trust fund) for increased transit operations to mitigate the loss of I-35W capacity. On November 5, 2007, $123.5 million additional ER funds were released for the I-35W bridge. This distribution of ER funds exhausted available ER program funds. Since the state of Minnesota had requested a total of $371.7 million for the I-35W bridge, this left $193.2 million in outstanding needs for the bridge. The 2008 Consolidated Appropriations Act (P.L. 110-161), however, included an additional ER appropriation of $195 million, which should cover the current outstanding requests for ER funds for the I-35W bridge replacement (See **Table 3**).

Table 3. ER Funding for the I-35W Bridge Collapse

Funding Requests & Allocations	Amount
Total Formal Request for ER Funds	**$371,700,000**
"Quick Release" Allocation of August 2, 2007	$5,000,000
"Quick Release" Allocation of August 9, 2007	$50,000,000
Allocation of FY2008 ER funds on November 5, 2007	$123,482,833
Total Allocated by FHWA as of November 5, 2007	**$178,482,833**
Total Made Available in P.L. 110-161[27]	**$195,000,000**
Total ER Funding for I-35W Bridge	**$373,482,833**

[26] P.L. 110-56 authorizes $250 million in ER funding for rebuilding the I-35W bridge. The bill also eliminates the $100 million state limitation, authorizes ER funds for transit, and lifts the federal share for reconstruction to 100%. Because the legislation specifically authorizes spending for the I-35W bridge replacement, questions about the eligibility of the bridge for ER funding are moot.

[27] As of this writing the $195 million provided by P.L. 110-161 has not been allotted to the FHWA by the U.S. Treasury.

On October 8, 2007, the Minnesota Department of Transportation announced the award of a $243 million design-build contract for the replacement of the bridge.[28] The difference between the $371.7 million total ER request and the $243 million replacement contract appears to include demolition and debris removal and clean up, traffic control following the collapse and possibly right-of-way acquisition, preliminary engineering and other activities that normally precede replacement bridge construction.

National Transportation Safety Board (NTSB) Investigation of the Bridge Collapse[29]

The National Transportation Safety Board (NTSB) has the general authority under 49 U.S.C. § 1131 to investigate selected highway accidents in cooperation with state authorities. The provision stipulates that NTSB investigations carried out under this authority shall have priority over any investigation by any other component of the federal government. However, the NTSB must provide for appropriate participation by other departments, agencies, or instrumentalities in the investigation. If, however, the Attorney General, in consultation with the NTSB chairman, were to determine that circumstances of an accident reasonably indicate that the event was caused by a criminal act, then the Federal Bureau of Investigation would assume investigative priority.

The statute allows the NTSB to select highway accidents to investigate. The NTSB selects those highway accidents it chooses to investigate based on a variety of factors and considerations, such as the severity of the incident, the suspected role of key transportation safety concerns or issues, media and public interest in the event, and stated or perceived congressional concern or interest in the event and its possible implications for public safety. The NTSB has deployed a seven-person team to the site of the August 1, 2007, interstate 35W bridge collapse in Minneapolis, MN.

The NTSB uses a "party" process in conducting its investigations, allowing entities that can contribute technical expertise and specific knowledge regarding the circumstances of an accident to participate in the fact-finding phase of an investigation. Parties to an investigation of a highway infrastructure failure or collapse may include, for example, structural engineers and other technical experts from state transportation departments and construction engineers or other technical specialists from private firms contracted to build or maintain the infrastructure involved in the event. As previously noted, the NTSB must accommodate participation from other federal entities, including components of the Department of Transportation (DOT), and does so by granting these federal entities status as a party to the investigation. While the various entities or parties, including federal, state,

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[28] The contract has been controversial because it went to the highest bidder based significantly on "technical merit." See "Minneapolis Bridge Rebuild Draws Fire," *ENR*, October 1, 2007, 10-11. Some observers in the transportation community have suggested that a lower bid and less elaborate design might have won if Minnesota DOT had not had access to 100% federal funding for virtually all the costs related to the bridge collapse and replacement.

[29] This section regarding the NTSB was written by Bart Elias, Specialist in Aviation Policy.

local, and private industry participants, are directly involved in the fact-gathering portion of the investigation, the NTSB retains sole responsibility for the analysis, investigative findings, and determination of probable cause.

Other major NTSB investigations of highway infrastructure damage, collapses, and failures since 1987 include the following:

- Ceiling Collapse in the Interstate 90 Connector Tunnel, Boston, Massachusetts, July 10, 2006 (NTSB Report HWY-06-MH-024).

- Highway Accident Brief — Passenger Vehicle Collision with a Fallen Overhead Girder Eastbound on Interstate 70 at the Colorado State Route 470 Overpass, Golden, Colorado, May 15, 2004 (NTSB Report HAB-06-01).

- Highway-Marine Accident Report — U.S. Towboat Robert Y. Love Allision with the I-40 Highway Bridge near Webbers Falls, Oklahoma, May 26, 2002 (NSTB Report HAR-04-05).

- U.S. Towboat Chris Collision with the Judge William Seeber Bridge, New Orleans, Louisiana, May 28, 1993 (NTSB Report HAR-94-03).

- Tractor-Semitrailer Collision with Bridge Columns on Interstate 65, Evergreen, Alabama, May 19, 1993 (NTSB Report HAR-94-02).

- Collapse of the Harrison Road Bridge Spans, Miamitown, Ohio, May 26, 1989 (NTSB Report HAR-90-03).

- Collapse of the Northbound U.S. Route 51 Bridge Spans over the Hatchie River near Covington, Tennessee April 1, 1989 (NTSB Report HAR-90-01).

- Collapse of the S.R. 675 Bridge Spans over the Pocomoke River near Pocomoke City, Maryland August 17, 1988 (NTSB Report HAR-89-04).

- Collapse of New York Thruway (I-90) Bridge over the Schoharie Creek, Near Amsterdam, New York, April 5, 1987 (NTSB Report HAR-88-02).

The NTSB's Interim Safety Recommendation.[30] On January 15, 2008, the NTSB issued a safety recommendation that the FHWA require bridge owners (mostly the states) of all steel truss bridges of similar design to the I-35W bridge, within the National Bridge Inventory, "conduct load capacity calculations to verify

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[30] National Transportation Safety Board, *Safety Recommendation, January 15, 2008*, Washington, NTSB, 5. Available at [http://www.ntsb.gov/Recs/letters/2008/H08_1.pdf] and [http://www.ntsb.gov/Recs/letters/2008/H08_1_Design_Adequacy_Report.pdf].

that the stress levels on all structural elements, including gusset plates, remain within applicable design requirements, whenever planned modifications or operational changes may significantly increase stresses." The safety recommendation noted that the FHWA estimated that recommendation would apply to 465 bridges within the National Bridge Inventory.

During wreckage recovery, investigators found that gusset plates at eight locations were fractured. Subsequent review of the original I-35W bridge design indicated that the original design process of the bridge led to a "serious error in sizing some of the gusset plates in the main truss." Gusset plates are riveted or welded steel plates that connect the beams in steel truss bridges. Bridge gussets are normally expected to be stronger than the beams they connect. According to the NTSB, the design error that led to the use of undersized gusset plates in the I-35W bridge made these gusset plates the weakest, rather than the strongest, members of the bridge.

Regarding the bridge inspection process, the NTSB recommendation notes that bridge inspections under the National Bridge Inspection Standards would not have identified the gusset design error. The standards do not address errors in original design but are directed toward detecting problems, such as corrosion or cracking, that may degrade the strength of the structure, once it has been built.

The I-35W bridge opened in 1967 and had undergone two major renovations, in 1977 and in 1988. The renovations added considerable weight to the bridge. In addition, on the day of the collapse, the bridge was being re-paved and an estimated 300 tons of construction equipment and materials were on the bridge.

Although the investigation revealed a design flaw that appears to have contributed to the failure, what caused the bridge to fail on August 1, 2007, is yet to be determined. The investigation is ongoing and the NTSB is expected to issue a determination of probable cause of the bridge collapse by the end of 2008.

Issues for Congress

Some see the I-35W bridge collapse as an example not only of the problem of structurally deficient bridges but for a purported infrastructure crisis in general. Ironically, as is indicated by the *Conditions and Performance Report*, the typical and aggregate condition of bridges has actually improved since 1990. However, the condition of roads has not experienced the same degree of improvement.[31] Despite the NTSB's interim finding that a design flaw in the I-35W bridge's original design likely contributed to the bridge collapse, the issues that emerged following the incident continue to attract public scrutiny within the context of discussion of the upcoming reauthorization of federal surface transportation programs.

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[31] For a more broadly defined discussion of trends on infrastructure, see Congressional Budget Office, *Trends in Public Spending on Transportation and Water Infrastructure, 1956 to 2004*, by Nathan Musick, Washington, 2007.

Condition of the Nation's Bridges

The number of deficient bridges in the United States has fallen to less than half the number identified in 1990. Some would argue that this casts doubt on the need for a major policy response to eliminate or more rapidly reduce the roughly 72,000 remaining deficient bridges. Even that lower number of deficient bridges leaves Americans exposed to what some might consider an unacceptable level of risk. The policy question is how quickly can or should the remaining deficient bridges be replaced or repaired. Some would argue that Congress should consider the spending levels (described in **Table 1**) that would more quickly reduce or even eliminate the nation's deficient bridges by 2024.

A related issue is one of terminology. The terms *structurally deficient* and *functionally obsolete* are not synonymous with unsafe. The goal of eliminating all structurally deficient bridges quickly could lead to inefficient spending if a significant percentage of these bridges do not actually have significant safety issues. Congress might, therefore, consider challenging FHWA to come up with a rating system and terminology more directly tied to risk.[32]

Providing More Money for Bridges

Given that the Highway Trust Fund (HTF) may go into deficit in FY2009, Congress may consider a number of financing options if it decides to increase spending on bridges.

- Provide a special treasury general fund transfer to the HTF dedicated to acceleration of the repair of the remaining structurally deficient bridges.

- Provide increased highway trust fund contract authority for the HBP. This could accelerate the approaching trust fund deficit, but it could provide increased funding in the near term. The FY2008 Consolidated Appropriations Act (P.L. 110-161) provides an additional $1 billion for the HBP from the HTF.

- The fuel taxes that provide the vast majority of revenues to the HTF were last raised in 1993. Some have proposed raising the fuel taxes to support the HTF generally, others have suggested an increase just for the bridge program.

- Some observers have suggested redirecting earmarked funds to the bridge program.

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[32] The DOT Inspector General has recommended that FHWA develop a "data-driven, risk-based approach to bridge oversight to better identify and target those structurally deficient bridges most in need of attention." H.R. 3999, summarized at the end of this report, includes bridge inventory provisions that would require a risk-based prioritization for the reconstruction of deficient bridges.

- Some have mentioned using public-private partnerships (PPPs) as a mechanism to help reduce the number of structurally deficient bridges. Many are skeptical of the use of PPPs because they require a funding stream, such as tolls, and could lead to the conversion of free bridges to toll facilities. One variant of the PPP alternative is the long-term leasing of toll facilities to private investors in return for a large up-front payment to the state. The state could, if it wished, use this lease-derived money to supplement its normal state and federal spending on bridge replacement and repair (or for other purposes). The state of Indiana has been using such funding for its 10-year infrastructure improvement program. This arrangement has been criticized on a number of grounds, including that toll payers continue to pay long after the up-front money is spent. Also some critics argue that it could create an incentive for states that are dealing with a constrained budgetary outlook to substitute the lease revenues for their state transportation tax revenues and redirect some of these revenues to pay for non-transportation needs. Another PPP variant that has attracted attention is the Missouri plan, which is discussed later in this report.

- Require the states to pay more of the costs. A GAO study found that since the mid-1990s, states had not maintained their level of effort in highway spending.[33]

- The Equity Bonus distribution could be rewritten to favor the bridge program. One way to do this is to shift the HBP out of the scope of the Equity Bonus program. This would make the program's funds "new" money for the states. This could, however, also require a change in the rate-of-return guarantee mechanism for the entire EB program. Such a change would reduce the percentage of highway spending subject to the equity adjustment and would likely be opposed by donor states.

Missouri's Safe and Sound Bridge Improvement Project

The Missouri Department of Transportation's (MoDOT) "Safe and Sound Bridge Improvement Project," hereafter referred to as the Missouri plan, has attracted attention as an alternative model for financing the expedited repair of deficient bridges.[34] The Missouri plan is designed to provide for the rehabilitation or replacement of 802 of Missouri's 4,433 deficient bridges before December 31, 2012. The majority of the bridges are small- or medium-sized deficient rural bridges on the Missouri state highway system. A single team of contractors is to bring the bridges up to good condition and then maintain them in good condition for 25 years.

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[33] Government Accountability Office, *Federal-Aid Highways: Trends, Effect on State Spending, and Options for Future Program Design* (August 2004), available at [http://www.gao.gov/new.items/d04802.pdf].

[34] See the project website at [http://www.modot.mo.gov/safeandsound/index.htm].

The financing of the Missouri plan is seen by many in the transportation community as especially innovative. Under this financing model the state of Missouri makes no payments for the initial construction (which could be completed as early as December 31, 2011). After construction, the state makes equal annual payments for a minimum of 25 years. The money for these payments is to come from anticipated federal-aid highway program funds and state funds. To finance the repair and replacement stage of the plan, the U.S. DOT has approved an allocation of up to $600 million of private activity bonds (PABs) with the Missouri Development Finance Board serving as the conduit issuer for the bonds. These PABs, provided for under the auspices of a provision in SAFETEA-LU, are allowed to retain their tax exempt status despite a greater level of private involvement than is normally allowed under the U.S. Internal Revenue Code. This provides the contractors with access to tax-exempt interest rates and will lower their finance costs, according to MoDOT, by about $70 million. The contractors pay off the bonds from the proceeds of their annual payments from MoDOT.

While the Missouri plan, as a model for other public private partnerships, has attractive attributes, it may also have some long-term characteristics that states may want to consider prior to adopting a similar strategy. Perhaps the most attractive attribute is that the Missouri plan quickly eliminates a large number of deficient bridges in the state without starving the other highway projects of funding during the three- to four-year construction stage of the plan. The plan also, through the use of bonds that are exempt from federal taxes, shifts a portion of the financing cost from the private participants to the federal Treasury. The plan is designed to maintain the bridges in good condition, perhaps freeing state maintenance resources for use on other bridges and highways over the 25-year life of the contract. The main drawbacks tend to be voiced by those who view the plan from a long-term or federal budget perspective. In the long-run, the use of tax-exempt bonds can be costly in terms of lost federal revenue. CBO and others have, in the past, raised concerns about the long-term costs to the U.S. Treasury of dependence on tax-exempt financing in comparison to appropriated spending.[35] In addition, committing a significant portion of a state's federal and state highway resources to a 25-year pay out period could become problematic. Also, because a state using this mechanism would have to make annual payments without fail, an unexpected decline in federal or state highway budgets could cause the cancellation or delay of the funding of other projects in the state's transportation plan.

Flexibility and Transferability Issues

In the aftermath of the collapse of the I-35W bridge, both discussions in the press and at congressional hearings have increased congressional interest in the transferability of HBP funds under the so-called "flexibility" mechanisms under Title 23 of the U.S. Code, which allow the movement of funds among the various federal highway programs. As mentioned earlier, since FY2000, 20 states and the District of Columbia have transferred roughly $2.8 billion from HBP to other FHWA

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[35] Congressional Budget Office, *A Comparison of Tax-Credit Bonds, Other Special-Purpose Bonds, and Appropriations in Financing Federal Transportation Programs,* Washington, CBO, 2003, 1-7.

programs (See **Appendix II** for transfers of bridge program funding by state for FY2000 to FY2007). For context, it is important to understand that all (excepting certain set-asides) of the "core" federal-aid highway program funds may be flexed up to the 50% of their base apportionment (i.e., not just HBP funds). Even higher percentages of Interstate Maintenance and NHS funds may be transferred to STP with DOT approval. Because STP has the broadest eligibility criteria, it is believed to be the favored destination of much of the transferred contract authority under the flexibility provisions.[36]

There is also concern that some states have exhibited a preference for programs other than the HBP in their distribution of obligational authority. Some believe that certain states have learned to game the system and commit federal funds to projects that are primarily state and local priorities to the disadvantage of federal priorities such as the HBP.[37]

A number of options have been proposed:

- Tighten the flexibility rules on the spending of HBP funds to require that all apportioned funds be spent on bridges and not flexed to other uses until a state repairs or replaces all of its deficient bridges.

- Return to a policy of specifying the distribution of the obligation limitation under each of the "core" federal-aid highway programs, thus assuring that states do not rely on HBP funds to support other federal-aid highway programs' projects.

- In future authorization acts, shift the HBP out of Title I, the construction title, to the safety title of the act, Title II, thereby preventing the shifting of spending to the other construction programs and making it clear that the congressional intent for the HBP is safety.

- Some STP funds are available for transfer to Federal Transit Administration (FTA) programs. Some observers suggest that this allows states to transfer HBP contract authority to STP as a means of ultimately freeing up STP funds for mass transit. Transfers of STP funds to FTA programs could be disallowed if HBP contract authority is transferred to STP.

- Some observers would make the case that the issue of the transfer of bridge program contract authority has been overblown and, with the

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[36] For a concise description of transferability between apportioned highway programs see "Appendix I" in *Financing Federal-Aid Highways*, Federal Highway Administration, Washington, FHWA, 2007, 57.

[37] See "Which States Place the Highest Priority On Bridge Spending?" *Transportation Weekly*, September 5, 2007, 8. For an earlier discussion see *The Federal Bridge Program (Decoding Transportation Policy and Practice #8)*, Surface Transportation Policy Project, 2003, available at [http://www.transact.org/library/decoder/Bridge-Decoder.pdf].

> exception of a few states, has only been done intermittently to synchronize the funding for bridge reconstruction and replacement with project timing or to avoid having the contract authority lapse.

H.R. 3999, the National Highway Bridge Reconstruction and Inspection Act of 2007, summarized later in this report, includes a provision regarding flexible funding. The provision would allow a state to transfer any of its HBP apportionments to other federal-aid highway programs only if the state demonstrates to the satisfaction of the Secretary of DOT, that the state has no structurally deficient bridges on the federal-aid highway system within the state.

The American Association of State Highway and Transportation Officials (AASHTO) released a letter the day after the bill was ordered reported by the House Transportation and Infrastructure Committee, that argued that states have

> wisely used the flexibility provided by the Congress under the federal Highway Bridge Program, and have invested double the amount of federal funds in the preservation and renovation of the nation's bridges. Because federal statistics fail to track this investment, AASHTO has conducted a survey to verify this fact. Reports alleging a diversion of federal bridge funding are misleading because they fail to look at the total picture of all the resources states commit to bridge improvements. In 2004, the federal Highway Bridge Program (HBP) provided some $5.1 billion to the states. That year, states actually spent $6.6 billion in federal-aid for bridge rehabilitation. On top of that, state and local funding added another $3.9 billion for bridge repairs. So even after accounting for the transfers between the FHP to other categories, a total of $10.5 billion was invested in bridge repair and rehabilitation that year. Transfers between federal programs are simply a project management tool, and data on such transfers do not reflect actual levels of state bridge spending.[38]

Supporters of limiting the flexing of HBP funds have asserted a number of arguments[39]

- Given the additional federal bridge spending proposed under H.R. 3999, if the transfer of HBP funding by the states to other federal transportation programs is not restricted, it would create a perverse incentive for states to substitute the additional funding provided in the bill for existing SAFETEA-LU bridge program contract authority, which could then be transferred to STP or other core federal programs for other uses.

- Because 50% (and for NHS and IM, up to 100% to STP with DOT permission) of all the other core federal-aid highway programs may be flexed, the states do not really need the HBP contract authority for overall funding management, as the states assert.

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[38] *AASHTO Journal*, November 9, 2007, 22-23.

[39] Op. Cit.

- If the states are still spending more than the apportioned HBR levels on bridges, as is argued by flexibility supporters, then it is doubtful that states really need HBP transferability.

- In a broader sense, some also argue that the overall transferability issue is connected to the states' lagging "maintenance of effort," in regard to spending on highways. Historically, federal funding was provided to supplement state spending on highways, not to substitute for it. A GAO study found that since mid-1998 states, as a whole, have failed to maintain a financial level of effort proportional to federal spending increases.[40] Some critics of flexibility would argue that it is not coincidental that the weakened maintenance of effort by the states occurred after flexibility was expanded (including the ability to move obligations among programs) under the two major surface transportation authorization bills passed during the 1990s.[41]

In reaction to the introduction of H.R. 3999, some within the transportation community have suggested a number options in regard to the bill's flexibility provisions. Instead of requiring a no deficient bridges bench mark, a low deficient bridge percentage goal could be set for a state to retain flexibility over its HBP funds. Another option would be to apply such a benchmark to just the National Highway System bridges in the state, rather than all federal-aid highway bridges. The restriction on transferability could be limited to the two-year period that the additional bridge money would be available under the bill. Finally, to mitigate the possible impact of the loss of HBP transferability on state project and state transportation planning, all HBP funds could be made available until expended, thereby eliminating the state's concern that left over HBP contract authority might lapse if not transferred.

Spending of HBP Funding on Off-Federal-Aid System Bridges

Since 1978, a minimum of each state's apportionment was to be spent on bridges that were off the federal-aid highway system (i.e., bridges on local roads and rural minor collectors). Until the enactment of SAFETEA-LU in 2005, there was also a maximum, 35%, that could be spent off system. SAFETEA-LU eliminated the 35% ceiling, opening up the entire state allocation under the HBP to spending on non-system bridges. Some have argued that the ceiling should be reestablished. If a new source of funding for bridge replacement on the major arterials (such as the Interstate System and the National Highway System) be established, the absence of a ceiling on HBP off-system bridge spending could create an incentive to use the new funding program for the major roads and increase the amount of HBP spending on off-system roads.

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[40] GAO, *Federal-Aid Highways: Trends.*

[41] U.S. Congress, House, Committee on Transportation and Infrastructure, *Structurally Deficient Bridges*, Hearing, September 5, 2007. Flexibility and maintenance of effort were discussed during questioning.

Maintenance vs. Replacement and Reconstruction

Historically, one of the questions that has arisen from time to time is whether some federal-aid highway programs, and the HBP in particular, have too strong an orientation toward facility replacement or reconstruction, and have too little a focus on preventive maintenance. Within the context of the HBP, the question is whether the program structure and sufficiency ratings encourage states to substitute bridge replacement for maintenance-type projects. During FY2002-FY2005, of the total obligation of federal funds from all FHWA sources, on average, 8% was obligated for new bridges, 60.5% was obligated for bridge replacement, 5% was for major rehabilitation, and 26.5% was for minor bridge work. Although these figures indicate that the lion's share of bridge funding has been obligated for new and replacement bridges, these percentages are less than they were in the late 1990s. The percentage for minor bridge work has increased significantly recently. During the FY1997 to FY2001 period, minor bridge work averaged only 9%.[42] Still, the case can be made that as the number of deficient bridges decreases, rather than reducing the bridge program size it might make sense to shift the focus on the spending over time toward preventive maintenance.

As was mentioned earlier, eligibility of HBP funding for preventive maintenance is broader than is often presumed at the state level. In addition, SAFETEA-LU clarified that systematic preventive maintenance is an eligible HBP cost. Whether to spend a state's HBP funds on preventive maintenance versus reconstruction or replacement projects, however, is up to the states.

Oversight and Inspection Issues

Risk-Based Approach to Federal Bridge Oversight. As was mentioned earlier in this report, the terms deficient and obsolete are not synonymous with unsafe. This can lead to a less than optimally focused response by policy makers. The DOT Inspector General has proposed that the FHWA develop a "data-driven, risk-based approach to bridge oversight to better identify and target those structurally deficient bridges most in need of attention."[43] FHWA has already initiated efforts to improve oversight of deficient bridges, but the IG asserts that more action is needed. Although much of the IG's proposal is aimed at focusing FHWA's bridge oversight activities, the risk-based approach could also assist policy makers by providing statistics that more clearly identify the unsafe bridges than existing bridge statistics.

Oversight of State Transportation Implementation Plans (STIPs). Congress could require more FHWA review of the composition and priorities inherent in the state transportation implementation plans (STIPs) that direct program funding and require that states meet certain bridge deficiency benchmarks before states could flex any of their core formula funds to any program other than the HBP.

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[42] Federal Highway Administration, "Obligation of Federal Funds for Bridge Projects Underway by Improvement Type," *Highway Statistics*, Washington, FHWA, various years.

[43] DOT, IG, *FHWA's Oversight of Structurally Deficient Bridges*, 7.

Oversight of Bridge Design. The NTSB, which found a flaw in the original bridge design, noted that for the most part, "State departments of transportation rely on bridge designers to perform accurate calculations and to check their work. Thus, beyond the designer's internal review, there does not appear to be a process in place to identify original design errors in bridges."[44] Congress may wish to consider requiring an outside review of the design of bridges of a certain type or size that are built with federal aid.

Inspection Auditing. FHWA could be directed to take a more active role in ensuring that inspections done by the states or their contractors are done in conformance with the National Bridge Inspection Standards, including on-site audits of state inspections. However, to have an impact, FHWA would have to be provided with sufficient funding to hire additional engineers and support personnel at FHWA Division offices and dedicate these resources to oversight of the inspection program. The DOT Inspector General found that time constraints

> restricted bridge engineers' reviews to only a small percentage of the total number of bridges in the state. For example, one FHWA engineer in a large state informed us that he spent only about 15 percent of his time on oversight of the bridge inspection program. The majority of his time was spent providing technical assistance, construction inspection, and in committee meetings, among other tasks.[45]

Inspector Training and Personnel Qualifications. Current federal regulations do not set a training requirement for front line inspectors.[46] The National Highway Institute and some state-based organizations offer FHWA approved training and certification programs. Some believe training of front line inspectors should be both comprehensive and mandatory.[47] Some states certify highway maintenance and other highway department staff to perform inspection duties. Others argue that this kind of multitasking makes inspection staff subject to frequent use for non-inspection duties. Also, since on-the-job inspection experience is critical to the development of inspection expertise, multitasking can delay the process of building the inspector's knowledge level. However, some defend multitasking, arguing that the practice enhances productivity and allows state DOTs to train more inspectors than they need on average so that they have the extra inspection personnel to rapidly expand bridge inspections in response to unforseen events such as the collapse of the I-35W bridge. The American Society of Civil Engineers (ASCE) believes that most inspection activities should be performed by licensed professional engineers with non-licensed inspectors and technicians being used only for routine inspection procedures and

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[44] NTSB, *Safety Recommendation, January 15, 2008*, 3.

[45] DOT, IG, *Federal Highway Administration's Oversight of Structurally Deficient Bridges*, 8-9.

[46] Underwater bridge inspectors and individuals responsible for determining load ratings, however, must meet certain minimum training requirements. See [http://www.fhwa.dot.gov/bridge/nbis/].

[47] H.R. 3999 would amend 23 U.S.C. Section 151(c) to require DOT to expand the scope of the training program to ensure that all persons conducting highway bridge inspections receive appropriate training and certification under the program.

records.[48] Their recommendation could require states and inspection consulting firms to hire a significant number of civil engineers.

H.R. 3999 includes a more limited provision, than discussed above, that would require that an individual serving as an inspection team leader for a state be a professional engineer licensed under the laws of the state or have at least 10 years of bridge experience. Because of the number of state employees with 10 or more years of inspection experience, this provision would probably not have a major impact on inspections done by state personnel. However, a significant number of states rely extensively on consulting firms who provide inspection services.[49] These consultants are more likely to have to rely on hiring professional engineers as team leaders.

Emergency Relief Issues

For some disasters, Congress has legislatively raised the federal share for ER projects to 100%. This has also happened in regard to the I-35 bridge in Minneapolis which, as mentioned earlier, was made eligible for 100% federal funding in P.L. 110-56. The Government Accountability Office has called for a reexamination of this increasingly common occurrence.[50] When federal ER funding is provided to cover all of a failed bridge's replacement costs, there is less of an incentive for a state DOT to restrain project costs. Others argue that because the maintenance and inspection of the bridge was the responsibility of the state, the state should shoulder some of the cost of a failed bridge's replacement.

Caveats on Spending Statistics

Statistics on bridge spending in the United States are compiled and set forth in different ways and with differing content. Most observers consider obligations to be the most meaningful indicator of the amount of federal monies being committed each year through the program. Federal obligations for bridge projects occur when the FHWA approves individual project grant agreements. These obligations are tracked in FHWA's Federal Management Information System (FMIS) which generated the totals set forth in Table 5 in Appendix III. FMIS cannot, however, distinguish between spending on deficient and non-deficient bridges.[51] The available statistics on transfers of HBP resources are contract authority statistics. Programmatic analysis using obligational authority as opposed to contract authority can lead to very different representations of spending trends.

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[48] American Society of Civil Engineers, *Testimony before the House Committee on Transportation and Infrastructure on Structurally Deficient Bridges in the United States, Hearing, Sept. 5, 2007,* 4.

[49] See FHWA, *Highway Bridge Inspection: State-of-the-Practice Survey*, Washington, FHWA, 2001, 75.

[50] Government Accountability Office, *Highway Emergency Relief: Reexamination Needed to Address Fiscal Imbalance and Long-Term Sustainability,* GAO-07-245, at [http://www.gao.gov/new.items/d07245.pdf].

[51] DOT, IG. *Federal Highway Administration's Oversight of Structurally Deficient Bridges*, 6.

Because of the reimbursable nature of the federal-aid highway programs, the states pay project costs and then submit vouchers for the work done and the Treasury reimburses the states through electronic funds transfers to the states' bank accounts. Once the outlays are made to the states, the money is fungible. Also, there is no direct connection between the outlay and the projects other than the previously submitted vouchers. As mentioned earlier, bridge spending includes significant amounts of state monies which are used both to fund the state matching share for federally-funded projects and also state spending in addition to their required share or for 100% state-funded bridge projects. Different states have somewhat different statistical systems and may classify the type of work done and paid for in different ways. In addition, complicating classification, many bridge projects have components that alone would be considered a road project and some road projects include bridge components. Transfers of contract authority or obligational authority can also complicate the tracking of spending. This adds difficulty to the development of useful statistics in regard to spending trends and leads to a variety of aggregate estimates of total spending on bridges in general and deficient bridges in particular and can complicate policy decision making.[52]

Legislative Initiatives

Before leaving for its 2007 Summer District Work Period, Congress enacted legislation to provide the aforementioned funding authorization for the reconstruction of the I-35W bridge. When Congress returned in September, it began consideration of congressional bridge policy. The House Committee on Transportation and Infrastructure (T&I) and the Senate Environment and Public Works Committee, for example, began holding hearings on the state of the nation's bridges.[53]

When the T&I Committee held its hearings, it considered a legislative proposal put forward by Committee Chairman Oberstar that would have created a special multi-element initiative to repair structurally deficient bridges on the national highway system (NHS), of which the interstate highways are a part.[54] Chairman Oberstar's proposal would have created a separate trust fund for this effort funded by an increase in the federal motor fuels tax (5 cents per gallon) and/or a tax on each

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[52] *AASHTO Journal.* November 9, 2007, attachment. In a letter to the Chairs and ranking members of the House Transportation and Infrastructure Committee and the Senate Environment and Public Works Committee, AASHTO President, Pete Rahn, in discussing the transfer of HBP funds, complained that the FHWA tracks transfers out of the HBP but fails to track overall state use of federal funds for preservation and renovation of the nation's bridges. AASHTO conducted a survey of its members to support its contention that states spend more federal-aid funds for bridge rehabilitation than the total allocated to the states under the HBP.

[53] U.S. Congress, House, Committee on Transportation and Infrastructure, *Structurally Deficient Bridges*, Hearing, September 5, 2007. Senate, Environment and Public Works Committee, *Oversight Hearing on the Condition of our Nation's Bridges*, Hearing, September 20, 2007.

[54] See [http://transportation.house.gov/Media/File/Full%20Committee/NHS_Bridge_Reconstruction_Initiative.pdf].

barrel ($1 barrel) of imported oil refined into motor fuels. These taxes, which could have raised approximately $25 billion over three years, were viewed as temporary, as was the initiative. The new program would have focused only on National Highway System bridges (including Interstate Bridges), and the earmarking of the program's funds would not have been allowed. The proposal, which would have distributed funding to the states on a needs basis, was withdrawn in favor of H.R. 3999, which is discussed below.

President Bush reacted to the proposal by stating that he opposed any increase in the fuels tax at this time and suggested instead that Congress revisit the funding priorities in existing transportation legislation, especially as regards to earmarking.[55] The Ranking Member of the T&I Committee, Representative Mica, also suggested that Congress needed to revisit its transportation spending priorities, stating that the existing program lacked "a true comprehensive transportation strategy."[56] In her written testimony before the T&I Committee, Secretary of Transportation, Mary Peters, set forth the Bush Administration view, arguing that

> [i]ncreases in Federal taxes and spending would likely do little, if anything, ... because tax revenues are deposited into a centralized Federal trust fund and re-allocated on the basis of political compromise, major decisions on how to prioritize investments — and thus, spend money — are made without consideration of underlying economic or safety merits.

The Secretary argued that congressional earmarking by Congress and the growth of the number of "special interest programs," as well as the limited use of benefit cost analysis and performance measures, constrains the effectiveness of federal spending on highways.

Several other Members of Congress have also expressed an interest in seeing federal spending for bridge infrastructure increased. Among them is Senator Clinton, who has suggested establishment of an emergency $10 billion repair fund, and, as discussed earlier, and Senator Murray, who added $1 billion by amendment to what eventually became the FY2008 Consolidated Appropriations Act (P.L. 110-161), for bridge repair and replacement.[57]

The T&I initiative faced significant opposition, primarily because of the proposed fuel taxes. On October 30, 2007, Chairman Oberstar introduced a substantially modified verison of the initiative in the National Highway Bridge Reconstruction and Inspection Act of 2007 (H.R. 3999).

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[55] Rutenberg, Jim, "Bush Opposes Raising Gas Tax for Bridge Repairs," *The New York Times*, August 9, 2007.

[56] See [http://republicans.transportation.house.gov/News/PRArticle.aspx?NewsID=218].

[57] "Bridge Collapse Continues to Spur Legislative Proposals, Funding Discussion," *Daily Report for Executives*, August 10, 2007, p. A-11.

National Highway Bridge Reconstruction and Inspection Act of 2007 (H.R. 3999)

On October 31, 2007 the House Transportation and Infrastructure Committee approved and ordered reported H.R. 3999, a bill to make changes in the HBP, the National Bridge Inspection Program, and to provide additional funding for the repair and replacement of deficient bridges on the National Highway System. The forerunner of H.R. 3999 was the proposal put forth by the T&I Committee in the days immediately following the I-35 bridge collapse. H.R. 3999 does not propose, as did the earlier T&I initiative, a federal fuels tax increase to support increased bridge spending.

Bridge Inventory Provisions. H.R. 3999 would make a number of changes to Title 23, Section 144, regarding the National Bridge Inventory (NBI). It is important to keep in mind that bridge inspection and the NBI are linked in that much of the information for the bridge inventory (including deficiency classification) is derived from the mandated inspections. Section 2 of the bill requires that

- DOT, in consultation with the states, inventory all bridges on the federal-aid highways, identify those that are structurally deficient or functionally obsolete;
- DOT assign a risk-based priority for replacement or rehabilitation of the bridges identified as structurally deficient or functionally obsolete;
- DOT determine the cost of replacing or rehabilitating each of such bridges;
- DOT must, after modifying the national bridge inspection standards in accordance with the bill (discussed later) but within 18 months of enactment, establish a process of assigning risk based priorities as required under the bill and submit a report describing the process to the T&I Committee and the Senate Environment and Public Works Committee (EPW);
- requires the National Academy of Sciences (NAS) to conduct an independent review of the DOT's process for assigning risk-based priorities and report to the T&I and EPW committees with the results of the NAS review within two years of enactment.

Frequency of Bridge Inspections. The bill would make as a statutory condition for providing assistance to a state under the HBP that the state

- inspect bridges located within the state within two years of enactment and every two years thereafter in accordance with

requirements of the National Bridge Inspection Program (Title 23 Section 151);[58]

- within two years of enactment and every two years thereafter calculate the load rating for highway bridges within the state that have a structural deficiency in a load-carrying member and ensure that such bridges are properly posted.

National Bridge Inspection Program (NBIP) Provisions. The bill adds a policy statement that the "standards established under this subsection shall be designed to ensure uniformity among the states in the conduct of such inspections and evaluations." H.R. 3999 also makes a number of changes to the NBIP, including that DOT is

- to establish procedures for conducting annual compliance reviews of state inspections, quality control and quality assurance procedures, load ratings and weight limit postings of structurally deficient bridges;

- to establish standards for state bridge management systems to improve the bridge inspection process and the quality of data collected for inclusion in the NBI;

- to expand the scope of the training program to ensure that all persons conducting highway bridge inspections receive appropriate training and certification under the program;

Frequency of Bridge Inspections. At a minimum, standards are to provide for

- annual inspections of structurally deficient highway bridges using best practicable technologies and methods;

- annual hands-on inspections of fracture critical members;

- biennial inspections of non-structurally deficient highway bridges;

- DOT may extend the period of time up to four years under certain conditions.

Program Manager and Team Leader Qualifications. Would require that an inspection program manager of a state be a professional engineer licensed under the laws of that state and that individuals serving as inspection team leaders be

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[58] As was mentioned earlier in this report, under the NBIS regulatory structure, the general required inspection is 24 months, however, states may request FHWA approval to inspect bridges on an up to 48-month frequency under certain conditions. Under H.R. 3999 some of these features of the NBIS would become statutory rather than regulatory and implies that funding could be withheld from a state that failed to adhere to these requirements.

either a professional engineer licensed in the state or have at least ten years of bridge inspection experience.

Surface Transportation Research. The bill would add language to broaden the scope of bridge research to explicitly include research to enhance the safety of bridge structures including research on nondestructive tests to assess the structural integrity of bridge facilities.

Authorization. The bill would authorize $1 billion for each year FY2008 and FY2009 for use under the HBP. The funds would be limited to use on National Highway System deficient bridges. The funds are not transferable and remain available until expended. None of the funds may be earmarked by Congress or any federal department or agency for a specific project or activity.

Performance Plans. The bill also has a statutory condition for providing assistance to a state under the HBP that the state establish within two years of enactment, and update annually, a five-year performance plan for the inspection of highway bridges within the state and the rehabilitation and replacement of any such bridges that are structurally deficient or functionally obsolete. The state must also establish and implement a bridge management system that complies with the National Bridge Inspection Program. The plans must be submitted to DOT for approval.

Information and Reports. The bill would require DOT, if necessary, to revise on an annual basis, information required under Title 23 Section 144 for the national bridge inventory. Concurrently with the President's annual budget submission to Congress, the DOT is to submit, to the T&I Committee in the House and the EPW Committee in the Senate, a report containing a description of projects and activities under the HBP, a description of the revised information, discussed above, including descriptions of the priority assigned for the replacement or rehabilitation of each structurally deficient or functionally obsolete bridge on a federal-aid highway. The report is also to include any project carried out by a state that is inconsistent with the priorities assigned by the DOT for bridge replacement or rehabilitation. The Secretary of DOT may also recommend improvements to the program. Within one year of enactment the DOT is directed to make the information contained in the national bridge inventory more readily available to the public.

Flexible Funding. The bill places a limitation on the ability of a state to transfer contract authority apportioned to the state under the HBP to the other core federal-aid highway programs. The transfers would only be allowed if the state could demonstrate that the state has no structurally deficient bridges on federal-aid highways in the state.[59]

Definitions. The bill codifies the DOT's administrative and regulatory definitions of functionally obsolete, structurally deficient, rehabilitation, and replacement within the context of the HBP.

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[59] See the flexibility and transferability issues discussion in the earlier Issues for Congress section of this report.

Appendix A. Bridge Condition by State

Table 4. Bridge Condition by State as of August 13, 2007

State	All Bridges (number)	Structurally Deficient (number)	Functionally Obsolete (number)	Percent of State Bridges	
				Structurally Deficient	Functionally Obsolete
ALABAMA	15,882	1,899	2,159	12%	14%
ALASKA	1,289	151	301	12%	23%
ARIZONA	7,389	187	594	3%	8%
ARKANSAS	12,535	997	1,874	8%	15%
CALIFORNIA	24,199	3,139	3,986	13%	16%
COLORADO	8,389	580	808	7%	10%
CONNECTICUT	4,175	358	1,042	9%	25%
DELAWARE	857	20	112	2%	13%
DISTRICT OF COLUMBIA	245	24	128	10%	52%
FLORIDA	11,666	306	1,713	3%	15%
GEORGIA	14,563	1,031	1,878	7%	13%
HAWAII	1,105	152	357	14%	32%
IDAHO	4,113	355	629	9%	15%
ILLINOIS	25,998	2,499	1,839	10%	7%
INDIANA	18,494	2,030	2,005	11%	11%
IOWA	24,776	5,151	1,457	21%	6%
KANSAS	25,464	2,991	2,372	12%	9%
KENTUCKY	13,639	1,362	2,931	10%	21%
LOUISIANA	13,342	1,787	2,194	13%	16%
MAINE	2,387	350	468	15%	20%
MARYLAND	5,128	388	981	8%	19%
MASSACHUSETTS	5,019	585	1,988	12%	40%
MICHIGAN	10,924	1,583	1,304	14%	12%
MINNESOTA	13,068	1,158	427	9%	3%
MISSISSIPPI	17,013	3,005	1,316	18%	8%
MISSOURI	24,071	4,433	3,110	18%	13%
MONTANA	5,045	481	738	10%	15%
NEBRASKA	15,453	2,370	1,287	15%	8%
NEVADA	1,704	48	160	3%	9%
NEW HAMPSHIRE	2,363	244	493	10%	21%
NEW JERSEY	6,448	750	1,501	12%	23%
NEW MEXICO	3,854	411	291	11%	8%
NEW YORK	17,361	2,128	4,518	12%	26%
NORTH CAROLINA	17,783	2,272	2,810	13%	16%
NORTH DAKOTA	4,458	743	249	17%	6%
OHIO	27,999	2,863	4,001	10%	14%
OKLAHOMA	23,530	5,793	1,612	25%	7%

State	All Bridges (number)	Structurally Deficient (number)	Functionally Obsolete (number)	Percent of State Bridges	
				Structurally Deficient	Functionally Obsolete
OREGON	7,261	560	1,434	8%	20%
PENNSYLVANIA	22,325	5,588	4,003	25%	18%
RHODE ISLAND	748	164	232	22%	31%
SOUTH CAROLINA	9,221	1,260	809	14%	9%
SOUTH DAKOTA	5,925	1,216	261	21%	4%
TENNESSEE	19,841	1,326	2,772	7%	14%
TEXAS	50,272	2,186	7,851	4%	16%
UTAH	2,854	235	260	8%	9%
VERMONT	2,713	501	469	18%	17%
VIRGINIA	13,425	1,212	2,255	9%	17%
WASHINGTON	7,717	415	1,911	5%	25%
WEST VIRGINIA	7,008	1,056	1,526	15%	22%
WISCONSIN	13,800	1,300	788	9%	6%
WYOMING	3,038	390	243	13%	8%
PUERTO RICO	2,146	241	822	11%	38%
UNITED STATES TOTAL	**597,876**	**72,033**	**80,447**	**12%**	**13%**
TOTAL (incl.	**600,022**	**72,274**	**81,269**	**12%**	**14%**

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics; based on data from Federal Highway Administration, National Bridge Inventory, Deficient Bridges by State and Highway System, special tabulation. Data as of Aug. 13, 2007.

Note: Explanations for the terms Structurally Deficient and Functionally Obsolete can be found on pages 14 and 15 in Chapter 3 of the Federal Highway Administration, 2006 Conditions and Performance Report; the following is a link to Chapter 3 of the report: [http://www.fhwa.dot.gov/policy/2006cpr/pdfs/chap3.pdf].

Appendix B. Transfers from the Highway Bridge Program

Table 5. HBR Transfers to Other FHWA Programs: FY2000-August 8, 2007

(Dollars)

STATE	FY2007	FY2006	FY2005	FY2004	FY2003	FY2002	FY2001	FY2000
ALABAMA	0	0	0	58,275,000	0	0	0	0
ALASKA	0	2,301,354	0	53,265,175	0	0	0	0
CALIFORNIA	0	305,586,671	0	0	24,389,622	104,359,161	150,675,640	0
DISTRICT OF COLUMBIA	0	0	0	0	0	0	8,000,000	447,584
HAWAII	0	0	4,000,000	0	0	0	0	0
IOWA	0	0	0	0	20,159,264	0	0	0
KANSAS	0	30,000,000	0	0	0	0	0	0
MARYLAND	0	32,520,170	0	0	0	0	34,155,134	0
MASSACHUSETTS	0	0	0	0	0	56,044,772	58,208,934	51,557,299
MINNESOTA	0	54,675,799	26,865,000	0	0	0	0	0
NEVADA	0	1,871,425	0	0	0	0	0	0
OHIO	76,686,876	10,000,000	0	0	0	0	0	0
OKLAHOMA	0	0	0	40,550,000	0	0	0	0
OREGON	13,855,532	8,000,000	4,842,469	0	9,499,036	0	10,235,764	0
PENNSYLVANIA	260,000,000	185,000,000	184,990,000	191,800,000	150,000,000	110,000,000	125,000,000	135,000,000
RHODE ISLAND	25,000,000	15,000,000	0	10,000,000	0	0	0	0
UTAH	0	0	0	0	9,990,075	0	0	0
VERMONT	0	2,700,000	0	0	0	0	0	0
VIRGINIA	0	0	0	35,234,226	0	0	110,000,000	0
WASHINGTON	0	0	0	31,935,406	0	0	0	1,828,820
WISCONSIN	0	0	0	0	0	0	0	6,492,372
Grand Total	**375,542,408**	**647,655,418**	**220,697,469**	**421,059,807**	**214,037,997**	**270,403,933**	**496,275,472**	**188,833,703**

Source: Federal Highway Administration, *Transfer of Bridge Program Funds to a Federal-Aid Highway Program*.

Appendix C. Federal Bridge Obligations

Table 6. Bridge Obligations by Fiscal Year and Program, FY2000-FY2007: as of August 10, 2007

(Dollars)

	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Interstate Maintenance	553,845,337	460,131,978	578,417,190	446,369,521	568,899,693	293,511,921	374,198,689	514,330,389
National Highway System	584,760,653	503,150,365	540,675,608	664,817,921	801,137,370	849,208,854	528,760,397	459,557,539
Surface Transportation Program	374,621,087	486,961,610	335,503,025	445,757,023	307,070,715	370,972,702	252,571,856	396,783,906
Bridge Programs	1,608,086,717	1,899,135,479	3,123,713,060	3,111,602,276	3,311,724,943	2,986,469,119	2,504,417,429	3,124,750,405
Congestion Mitigation And Air Quality	43,187,699	29,069,431	7,601,152	8,957,591	21,128,790	22,215,157	(4,881,145)	27,196,801
Appalachian Development Highway System	49,977,391	51,760,378	76,310,115	62,904,598	798,553	70,047,672	34,910,091	19,561,972
Recreational Trails								
Metropolitan Planning								
1% Metropolitan Planning								
High Priority Projects	129,369,125	161,409,985	124,125,418	206,218,027	39,715,436	38,703,517	109,948,959	120,888,157
Minimum Guarantee - TEA-21	354,139,069	335,857,697	259,152,587	195,226,108	174,926,286	148,529,114	55,245,312	75,447,839
Equity Bonus Exempt Lim						2,435,632	26,233,597	29,103,294
Coordinated Border Infrastructure Program							753,888	41,711
Safe Routes To School								
Planning And Research					3,058,625	156,251	200,384	301,600
All Others	7,953,126,621	899,772,367	627,255,693	408,808,440	142,087,790	473,742,975	1,154,071,720	524,369,350
Total	11,651,113,697	4,827,249,292	5,672,753,848	5,550,661,507	5,370,548,202	5,255,992,914	5,036,431,176	5,292,332,965

Source: FHWA, August 23, 2007.

Note: FY2007 figures are through August 10, 2007. The totals are not limited to work on deficient bridges and include the following types of work: Bridge, New Construction; Bridge Replacement, Added Capacity; Bridge Replacement, No Added Capacity; Bridge Rehabilitation, Added Capacity; Bridge Rehabilitation, No Added Capacity; Special Bridge; Preventative Maintenance.