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SENATE

REPORT
110–482

NATIONAL HIGHWAY BRIDGE RECONSTRUCTION AND INSPECTION ACT OF 2008

SEPTEMBER 23, 2008.—Ordered to be printed

Mrs. BOXER, from the Committee on Environment and Public Works, submitted the following

R E P O R T

together with

ADDITIONAL VIEWS

[To accompany H.R. 3999]

[Including cost estimate of the Congressional Budget Office]

The Committee on Environment and Public Works, to which was referred a bill (H.R. 3999) to amend title 23, United States Code, to improve the safety of Federal-aid highway bridges, to strengthen bridge inspection standards and processes, to increase investment in the reconstruction of structurally deficient bridges on the National Highway System, and for other purposes, having considered the same, reports favorably thereon and recommends that the bill do pass.

PURPOSES AND SUMMARY OF THE LEGISLATION

H.R. 3999, the "National Highway Bridge Reconstruction and Inspection Act of 2008," amends the Highway Bridge Program and the National Bridge Inspection Program in an effort to improve the safety of Federal aid highway bridges. It would change bridge inspection standards and processes, and authorize $1 billion for the reconstruction of structurally deficient bridges on the National Highway System. An identical bill, S. 3338, was introduced by Senator Klobuchar and also referred to the Committee on Environment and Public Works.

69–010

GENERAL STATEMENT AND BACKGROUND

HIGHWAY BRIDGE CONDITIONS

Public attention was focused on the issue of bridge safety after 13 people died in the August 1, 2007 collapse of the I–35W Bridge across the Mississippi River in Minneapolis, Minnesota. The bridge was known to be structurally deficient since 1990, and was inspected annually by the Minnesota Department of Transportation since 1993. The National Transportation Safety Board has not yet released its findings on what caused the collapse.

Of the total of almost 600,000 bridges in the National Bridge Inventory, 72,524 (about 12%) are structurally deficient and 79,792 (about 13%) are functionally obsolete. Of the National Highway System's 116,145 bridges, 6,160 (about 5%) are structurally deficient—a reduction of almost 40% since 1997 when 9,930 of such bridges were structurally deficient. Approximately 26% of the total bridges were built 35–50 years ago, many of them designed for only 50 years of service. With age and changes in traffic demands comes deterioration and obsolescence. Since 1994, the percentage of the Nation's bridges that are classified as "structurally deficient" has declined from 19.4 percent to 12.4 percent. Although this is significant improvement, the overall number of deficient bridges is still of substantial concern.

SAFETEA–LU provided a total of $21.6 billion, with an average of $4.3 billion per year for the Highway Bridge Program. According to the latest available needs analysis by FHWA, the maximum economic level of investment is up to $12.4 billion per year over the next 20 years (by all units of government). If $8.7 billion were invested per year over the next 20 years in the most cost-effective manner, the current quality of bridges overall would remain the same. Total capital outlay on bridges by all units of government in 2004 (the latest available figure) from all sources was $10.5 billion. If one were to project forward the last ten year improvement rate, it would take 46 years to replace or repair all deficient bridges. The current capital investment by all levels of government on highways, excluding bridges, was a combined $26 billion in 2004. This level of investment is 63 percent below the $70.1 billion annual investment needed to maintain our highways according to FHWA. The maximum efficient investment by all levels of government is $119.3 billion—almost 5 times current spending.

FEDERAL HIGHWAY BRIDGE PROGRAMS

Inventory and inspection requirements have been incorporated into Federal law to encourage good practice by bridge owners. The Federal government uses a standardized set of factors such as square footage and cost for fixing or replacing worn out or inadequate structures in order to distribute federal funds. These factors were designed to reflect relative need.

Following the August 2007 collapse of the I–35W bridge in Minneapolis, Senators Barbara Boxer and James Inhofe, Chairman and Ranking Member of the Committee on Environment and Public Works, along with Senators Carl Levin and Norm Coleman, Chairman and Ranking Member of the Permanent Subcommittee on Investigations Committee on Homeland Security and Governmental Affairs asked the Government Accountability Office (GAO) to ex-

amine the Highway Bridge Program, the primary source of Federal funding for bridges nationwide. The GAO report, entitled "Highway Bridge Program: Clearer Goals and Performance Measures Needed for a More Focused and Sustainable Program", recommended that specific bridge program goals that are in the national interest be identified, performance measures be developed, and that best tools and practices be adopted.

H.R. 3999 would require States to develop risk-based criteria for replacing or rehabilitating their bridges and performance plans. It would also require FHWA to establish a process for assigning risk-based priorities.

The Committee is opposed to an approach that would simply require States to address bridges in the worst physical condition first. Other factors should be considered, including systematic preventative maintenance, relative importance within the system, a State's long-range transportation plan and overall asset management plan, and the most cost beneficial improvements. Furthermore, the Committee believes important State-specific needs, such as seismic retrofitting, are critical considerations when making decisions regarding bridge investments. The Committee stands ready to clarify this further if it becomes necessary.

BRIDGE INSPECTION PRACTICES

Bridges are rated as part of the inspection process, with the information transmitted to the FHWA. The sufficiency rating that is produced establishes eligibility for fixing or replacing the structure but alone is a poor tool for determining priority. By regulation, inspection procedures, standards, frequency and inspector qualifications have been adopted. States must meet the minimums but are influenced by competing demands for operational funds.

Currently, most bridges are inspected every 24 months but some bridges can be inspected every 48 months, and some bridges are inspected at intervals that are less than 24 months. Further, load ratings are not being kept up to date, even in connection with inspections. A DOT Office of Inspector General report from 2006 found that the load rating for 1 in 10 of the structurally deficient bridges on the National Highway System was inaccurate, calculations were not conducted properly in 10% of bridges, and signs were not posted on 7.8% of bridges where the ratings said that it would be required.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title

Section 1 designates the short title of the bill as the "National Highway Bridge Reconstruction and Inspection Act of 2008".

Section 2. Highway Bridge Program

Section 2 establishes a process by which bridge priorities are set and approved for eligibility under the Highway Bridge Program. It also establishes additional requirements for taking an inventory of bridges in accordance with that process. This section requires the Secretary to consult with the States during the development of the risk-based prioritization process. The Committee believes that the bridge program should continue to allow and not be biased against

bridge improvements such as seismic retrofitting, which is an eligible use of bridge funds and a top priority in some States.

Subsection (a)(1) of section 2 amends section 144(b) of title 23, United States Code, to direct the Secretary of Transportation, in consultation with the States, to inventory all bridges on Federal-aid highways and bridges on other public roads, identify each bridge inventoried that is either structurally deficient or functionally obsolete, assign a risk-based priority for replacement or rehabilitation of each such bridge after consideration of safety, serviceability, and essentiality for public use, including the potential impacts to emergency evacuation routes and to regional and national freight and passenger mobility if the serviceability of the bridge is restricted or diminished, and determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

Subsection (a)(1) also includes a provision stating that, at the request of a State the Secretary may also inventory bridges for historic significance. As well as a provision requiring the Secretary in consultation with the Secretary of the Interior to inventory Indian Reservation and Park Bridges, identify each bridge inventoried that is either structurally deficient or functionally obsolete, assign a risk-based priority for replacement or rehabilitation of each such bridge after consideration of safety, serviceability, and essentiality for public use, including the potential impacts to emergency evacuation routes and to regional and national freight and passenger mobility if the serviceability of the bridge is restricted or diminished, and determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

Subsection (a)(2) requires the Secretary of Transportation to establish a process for assigning risk-based priorities not later than 18 months after the date of enactment, reporting to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate on the process for assigning risk-based priorities.

Factors such as the dispersion of transport facilities, the presence of alternative routes, risk associated with the presence of earthquake faults, and reliance for critical regional and national trade and defense movements should be reflected in the consideration of priorities and thus risk. Activities such as seismic retrofitting are eligible uses of bridge funds and should continue to be allowed and encouraged under a risk-based system.

The risk-based priorities system should be designed so that State performance plans can be tailored to accommodate these realities. Funds are authorized to be appropriated for an independent review of this process by the National Academy of Sciences, to be completed within 2 years of enactment.

Subsection (b) defines the term "deficient bridge" as a bridge that is structurally deficient or functionally obsolete.

Subsection (c) sets new timelines for bridge inspections and load rating calculations required for participation in the Highway Bridge Program. States must inspect all highway bridges every 24 months in accordance with bridge inspection standards established under section 151 of title 23, United States Code. States must provide updated information on these bridges to FHWA for inclusion in the National Bridge Inventory. Within 24 months and every 24

months thereafter, States must calculate the load rating for structurally deficient bridges and ensure that the safe load-carrying capacities for such bridges are properly posted.

Subsection (c) also requires States to submit annually for approval by the Secretary of Transportation a five-year performance plan for the inspection of highway bridges and their rehabilitation and replacement of any structurally deficient or functionally obsolete bridges. Each State shall develop and use a bridge management system that can be integrated with such performance planning as described above. The first of these plans must be submitted within 2 years of enactment. A performance plan may provide for more frequent inspection of an historic bridge located in a State in lieu of replacement, if the bridge meets certain criteria.

Subsection (d) requires the Secretary of Transportation to submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate a report that represents oversight of the performance plan process. It must contain a description of the priority assigned, on a national basis and by State, for the replacement and rehabilitation of each structurally deficient or functionally obsolete bridge on a Federal-aid highway. The report also must contain a description of any project or activity carried out by a State that is inconsistent with the priorities assigned by the Secretary.

Subsection (e) restricts transfers by a State of Highway Bridge Program unobligated balances to any other apportioned program. A State can do so only if the State is able to demonstrate to the satisfaction of the Secretary of Transportation that the State has no structurally deficient bridges on the National Highway System located in the State that are eligible for replacement.

Subsection (f) defines "functionally obsolete", "structurally deficient", "rehabilitation", and "replacement" for purposes of the Highway Bridge Program.

Subsection (g) requires the Secretary of Transportation to ensure that information in the National Bridge Inventory is more readily available to the public and in a manner that is accessible and understandable and authorizes $2 million be available until expended for this purpose. The quality of this information should reflect the improved data collected and submitted for the National Bridge Inventory from the inspection routines required under this program as it is critical to quality performance planning.

Section 3. National Bridge Inspection Program

Section 3 Changes inspection standards under the National Bridge Inspection Program with mandatory compliance reviews, reporting of critical findings, increasing the frequency of inspections, and mandating additional qualifications for inspectors.

Subsection (b) directs that 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 be specified and used by FHWA. The provision specifies that critical findings relating to structural or safety deficiencies be reported to the Secretary of Transportation, along with plans for corrective actions, and that inspection standards provide for testing with state-of-the-art technology that de-

tects the growth of fatigue cracks on steel bridges exhibiting fatigue damage or with fatigue susceptible members.

Subsection (c) directs the Secretary of Transportation to issue regulations within 2 years of enactment on procedures for reporting critical findings and training related to these findings.

Subsection (d) directs the Secretary of Transportation to expand the current training programs to support the inspection requirements as amended in Subsection (f) below and required under this program.

Subsection (e) requires shorter intervals between inspections for bridges with the most risky conditions. Those found to be structurally deficient must be inspected annually, using the best practicable technologies and methods. In-depth inspections are required for fracture critical members. Upon the request of a State, the Secretary of Transportation may extend the time between required bridge inspections up to 4 years for non-structurally deficient bridges if the Secretary determines that the extension is appropriate based on the age, design, traffic characteristics, and any known deficiency of the bridge, the extension is consistent with the five-year performance plan, and granting the extension will increase the overall safety of the State's bridge inventory.

Subsection (f) requires the Secretary of Transportation to change the regulations relating to the qualifications of State highway bridge inspection personnel. Federal regulation currently sets minimum qualifications of the Program Managers and Team Leaders that carry out bridge inspections, as well as underwater bridge inspectors and individuals responsible for determining load ratings. The subsection requires that anyone serving as a Program Manager be a professional engineer licensed under the laws of that State. Similarly, an individual serving as a Team Leader for the inspection of complex bridges or follow-up inspections of bridges for which there has been a critical finding must be a licensed professional engineer. At least 10 years of bridge experience can be substituted for licensure for Team Leaders for the class of bridges requiring only a biannual inspection. This subsection provides an exemption for Team Leaders and Program Managers in place prior to the issuance of revised regulations.

Subsection (g) sets the deadline for modifying both the national bridge inspection standards and expanding the training program for bridge inspectors.

Subsection (h) requires the Secretary to report to Congress no later than 15 days after a critical finding determination is made by a State that results in a bridge closure.

Section 4. GAO study

Within a year of enactment, the Government Accountability Office is to conduct and report on a study of construction delays on bridge rehabilitation projects.

Section 5. Surface transportation research

Section 5 expands the activities eligible to receive funding under the highway research program, emphasizing research into advanced technologies such as non-destructive inspection technologies to assess structural integrity.

Section 6. Authorization of appropriations

Subsection (a) of section 6 authorizes $1 billion to be appropriated in FY 2009 to repair, reconstruct, and replace structurally deficient bridges on the National Highway System.

Subsection (b) distributes the funds authorized by this legislation by formula pursuant to Federal-aid Highway apportionments for Federal-aid highway bridges under the Highway Bridge Program. This provision makes these funds, once appropriate, available until expended. It prohibits the transfer of these funds to other Federal-aid highway programs.

Subsection (c) prohibits any Congressional or Administration earmarks of funding provided under this program.

Subsection (d) prohibits the use of funds appropriated under subsection (a) to employ workers in violation of section 274A of the Immigration and Nationality Act (8 U.S.C. 1324a).

Section 7. Bridge advanced condition assessment pilot program

Section 7 of the bill requires the DOT to establish and implement, within 180 days of enactment, a two-year pilot program to evaluate the effectiveness, accuracy, and reliability of the use of advanced condition assessment inspection processes and technologies (including fiber optic, vibrating wire, acoustical emissions, and peak strain displacement technologies) in monitoring and evaluating the health of a highway bridge. A one-time authorization is made available for appropriation of $5 million to carry out the program, to remain available until expended. The Secretary is required to submit a report on the effectiveness and benefits of the pilot program to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate later than 6 months after the last day of the pilot program.

Section 8. Effectiveness of bridge rating system

Section 8 requires that no later than February 2009, the Government Accountability Office conduct and report on a study of the effectiveness of the bridge rating system established in accordance with this program.

Section 9. Use of carbon fiber composite materials in bridge replacement and rehabilitation projects

Section 9 requires within 180 days of enactment, the Secretary of Transportation to conduct and report on a study of the cost and benefits of using carbon fiber composite materials in bridge replacement and rehabilitation projects instead of traditional construction materials.

Section 10. Sense of Congress

Section 10 states that in preparing and implementing the performance plans required under this program, it is the sense of the Congress that corrosion mitigation and prevention methods should be integrated into the design of new bridges and maintenance of existing bridges.

Section 11. Flood risks to bridges

Section 11 requires that within 2 years of enactment, the Secretary of Transportation, in consultation with the States, shall conduct and report on a study of risks posed by floods to the Nation's bridges.

Section 12. National Tunnel Inspection Program

Section 12 creates a new inspection and inventory regimen for all highway tunnels comparable to the programs for bridge structures. The Secretary of Transportation, in consultation with States and knowledgeable experts, shall establish inspection standards designed to ensure safety and uniformity. These standards are to include the inspection methods, the interval between inspections, qualifications for inspectors, procedures for compliance reviews. In addition, the Secretary shall establish a national inventory of highway tunnels, and training and certification programs for tunnel inspectors are to be established to foster use of the best and latest techniques.

Section 12 also clarifies that funds made available from the Surface Transportation Program are eligible for improvement of and inspection of such tunnels.

LEGISLATIVE HISTORY

H.R. 3999 was introduced in the House of Representatives on October 30, 1997 by Chairman Oberstar as the National Highway Bridge Reconstruction and Inspection Act of 2007. Having passed the House of Representatives on July 24, 2008, it was referred to the Committee on Environment and Public Works on July 25, 2008. An identical bill, S. 3338, was introduced by Senator Klobuchar and also referred to the Committee on Environment and Public Works. The Committee met on September 17, 2008, to consider H.R. 3999 and it was ordered to be reported favorably without amendment.

HEARINGS

The Committee on Environment and Public Works held two hearings relating to the Highway Bridge Program during the 110th Congress. A full Committee oversight hearing was held on September 20, 2007 to examine the condition of our Nation's bridges. A full Committee legislative hearing was held on September 10, 2008 entitled "Improving the Federal Bridge Program: Including an Assessment of S. 3338 and H.R. 3999."

ROLLCALL VOTES

The Committee on Environment and Public Works met to consider H.R. 3999 on September 17, 2008. A quorum of the Committee being present, H.R. 3999 was reported favorably without amendment by a voice vote.

REGULATORY IMPACT STATEMENT

In compliance with section 11(b)(2) of rule XXVI of the Standing Rules of the Senate, the Committee estimates that no regulatory impact is expected by the passage of the bill. The bill will not affect

the personal privacy of individuals. As noted below, the Congressional Budget Office has concluded that the bill will not establish any private-sector mandates.

MANDATES ASSESSMENT

In compliance with the Unfunded Mandates Reform Act of 1995 (Public Law 104–4), the Committee finds, consistent with the determination of the Congressional Budget Office, that H.R. 3999 would impose no Federal intergovernmental unfunded mandates on State, local or tribal governments. The Committee further agrees with the Congressional Budget Office that the bill does not impose private sector mandates.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

SEPTEMBER 18, 2008.

Hon. BARBARA BOXER,
Chairman, Committee on Environment and Public Works,
U.S. Senate, Washington, DC.

DEAR MADAM CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 3999, the National Highway Bridge Reconstruction and Inspection Act of 2008.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Sarah Puro, who can be reached at 226–2860.

Sincerely,

PETER R. ORSZAG.

Enclosure.

H.R. 3999—National Highway Bridge Reconstruction and Inspection Act of 2008

Summary: H.R. 3999 would expand the national program to inspect bridges and authorize appropriations for replacing and rehabilitating highway bridges. The act also would require the Department of Transportation (DOT) to complete several reports on the status of bridges nationwide and to increase its efforts to train bridge inspectors. Assuming appropriation of the necessary amounts, CBO estimates that implementing the legislation would cost $976 million over the 2009–2013 period. Enacting H.R. 3999 would not affect direct spending or revenues.

H.R. 3999 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 3999 is shown in the following table. The costs of this legislation fall within budget function 400 (transportation).

	By fiscal year, in millions of dollars—					
	2009	2010	2011	2012	2013	2009–2013
CHANGES IN SPENDING SUBJECT TO APPROPRIATION						
Expansion of the Bridge Program:						
Authorization Level [a]	1,000	0	0	0	0	1,000
Estimated Outlays	270	410	160	50	40	930
New Requirements for Federal Agencies that Own Bridges:						
Estimated Authorization Level	15	0	0	0	0	15

	By fiscal year, in millions of dollars—					
	2009	2010	2011	2012	2013	2009–2013
Estimated Outlays	4	6	2	1	1	14
Other Specified Programs:						
Authorization Level	9	0	0	0	0	9
Outlays	3	4	2	0	0	9
Reports, Guidance, and Assessments:						
Estimated Authorization Level	5	5	5	5	5	25
Estimated Outlays	3	5	5	5	5	23
Total Changes:						
Estimated Authorization Level	1,029	5	5	5	5	1,049
Estimated Outlays	280	425	169	56	46	976

[a] Public Law 109–59 provides contract authority, a mandatory form of budget authority, of $4.5 billion in 2009 for the Bridge Program codified in section 144, title 23, U.S. Code. Spending of those amounts is controlled by obligation limitations contained in appropriation acts.

Basis of estimate: For this estimate, CBO assumes that H.R. 3999 will be enacted near the start of fiscal year 2009, that the authorized amounts will be appropriated each year, and that outlays will follow the historical rate of spending for these programs.

The act would authorize the appropriation of just over $1 billion for fiscal year 2009. In addition, CBO estimates that appropriations of $40 million over the 2009–2013 period would be needed to implement the legislation. CBO estimates that implementing the legislation would cost $976 million over the 2009–2013 period, assuming appropriation of the necessary amounts.

EXPANSION OF THE BRIDGE PROGRAM

Under current law, states receive about $4 billion annually in contract authority (a mandatory form of budget authority) for repairing, rehabilitating, and replacing bridges on public roadways. Spending of those amounts, however, is typically controlled by limits on annual obligations set in appropriation acts (known as obligation limitations). H.R. 3999 would authorize the appropriation of an additional $1 billion in fiscal year 2009 for that program. CBO estimates that implementing this provision would cost about $930 million over the 2009–2013 period.

The appropriation of additional funds for DOT's bridge program could result in an increase in the contract authority available to states because of DOT's equity bonus program. That program adjusts the amount of contract authority available to a state based on a variety of factors, including that state's contributions to the Highway Account of the Highway Trust Fund and the amount it received under the previous authorization for highway programs. Any additional contract authority due to the equity bonus program would be provided by a subsequent appropriation act; thus, CBO has not estimated any increase in contract authority as a result of implementing H.R. 3999.

INCREASED REQUIREMENTS ON FEDERAL AGENCIES THAT OWN BRIDGES

H.R. 3999 would increase the frequency of inspections of federally owned bridges and would increase the training requirements for inspectors of those bridges. Current regulations require that federal agencies that own and operate bridges on public roads comply with all safety requirements established under DOT's bridge program. There are about 9,000 such bridges nationwide, mostly

owned by the Departments of Agriculture, Defense, and the Interior. Based on information from DOT, CBO estimates that implementing this provision would cost $14 million over the 2009–2013 period.

OTHER PROGRAMS

CBO estimates that other provisions of the bill would cost $32 million over the 2009–2013 period, including:

- Almost $5 million annually for DOT to train more state bridge inspectors, increase oversight of state plans to address bridge safety, and produce several reports on the safety of the nation's bridges;
- $5 million for grants to states to use certain advanced technologies to assess the safety of bridges;
- $2 million for the National Academy of Sciences to report on DOT's process in assessing the risk of bridge failure; and
- $2 million for DOT to make information contained in that National Bridge Inventory more readily available to the public.

Intergovernmental and private-sector impact: H.R. 3999 contains no intergovernmental or private-sector mandates as defined in UMRA. The bill would require recipients of federal highway funds to inspect and manage highway bridges and tunnels. The bill also would establish a grant program for five states to test the effectiveness of certain technology in bridge inspections. Any costs to state, local, or tribal governments would result from complying with conditions of federal assistance.

Previous CBO estimate: On December 3, 2007, CBO transmitted a cost estimate for H.R. 3999 as ordered reported by the House Committee on Transportation and Infrastructure on October 31, 2007. That version of the legislation authorized the appropriation of $1 billion for the bridge program in fiscal year 2008 and did not authorize a grant program to use certain advanced technologies to assess the safety of bridges. The CBO cost estimates reflect those differences.

On September 8, 2008, CBO transmitted a cost estimate for H.R. 3999 as passed by the House of Representatives. This cost estimate is identical to our estimate for the House-passed legislation.

Estimate prepared by: Federal Costs: Sarah Puro; Impact on State, Local, and Tribal Governments: Elizabeth Cove; Impact on the Private Sector: Jacob Kuipers.

Estimate approved by: Theresa Gullo, Deputy Assistant Director for Budget Analysis.

ADDITIONAL VIEWS

BACKGROUND

The Highway Bridge Program in its current form needs to be reformed to make it more useable for States. Unfortunately, H.R. 3999 hinders, rather than strengthen States' abilities to address their greatest bridge priorities. It would force States to follow a risk-based system developed in Washington to prioritize the replacement or rehabilitation of bridges. There is great concern that this one-size-fits-all approach would not allow for important local factors, such as seismic retrofit. This legislation also forces States to spend scarce resources on new procedures that will provide little or no new information to State bridge engineers.

SAFETEA–LU will expire on September 30, 2009, just 12 months from the filing of this report. Any major policy changes at this point in the process will distract from the overall goal of completing a comprehensive bill on time. For that reason, a policy change of this magnitude should be handled in the context of reauthorization. Furthermore, it is counterproductive to attempt to fix our crumbling infrastructure through piecemeal efforts. Comprehensive reform is necessary and should be addressed in a holistic approach in the reauthorization bill this Committee will work on in the coming months.

There has been a lot of press about the poor condition of the nation's bridges in the wake of the Minnesota tragedy. Our bridges are certainly in need of additional investment, but the roads on the National Highway System (NHS) are actually in greater need. According to the Federal Highway Administration (FHWA), the nation's bridges receive an average of 15 percent less funding from all levels of government than the maximum amount that could be economically invested. In contrast, the roads on the NHS receive 78 percent less funding than the maximum economic level.

This is not to say that there are not enormous bridge needs. These are simply 20 year averages, and much more could be economically invested in the short term. According to the same study by the FHWA, $62 billion could be invested immediately in a cost-beneficial basis. It is critical, however, to view investment in the nation's highways and bridges in a comprehensive fashion.

PROHIBITS TRANSFERS

Many States rely on the flexibility allowed under the federal highway program to transfer money in between core highway programs as an important cash and program management tool. This flexibility in the bridge program is needed by States as bridges are enormous, "lumpy" investments and it often becomes necessary for States to wait a few years between major bridge replacements. If they did not do so, bridges would consume too much of their high-

way resources to address non-bridge needs. This bill would prohibit all transfers from the bridge program on the incorrect assumption that all transfers are bad.

Many States find the bridge program requirements too bureaucratic and prefer to replace or rehabilitate structurally deficient bridges using more flexible programs. These States transfer money out of the bridge program and then obligate those same dollars to structurally deficient bridges. Also, when bridges are being replaced or rehabilitated as a part of a larger project, States frequently transfer money into a single category of funding that can be used on the entire project. Because of the narrow eligibility of Highway Bridge Program funds, the flexibility to transfer funds is oftentimes necessary and does not necessarily detract from the goals of the Highway Bridge Program.

H.R. 3999 incorrectly assumes that all bridge construction and reconstruction is done through the bridge program. In fact, only about 55 percent of obligations on bridges are through the Highway Bridge Program. The remaining obligations of funds on bridges, about $2.4 billion, are done using other categories of funding. By prohibiting transfers, H.R. 3999 would effectively punish States that are spending more on bridges than is provided in bridge funding, by denying them an important cash and program management tool.

RISK BASED MANAGEMENT

H.R. 3999 requires States to follow a risk-based system developed in Washington to prioritize the replacement or rehabilitation of bridges. Many fear that this will produce a "worst first" approach to replacing and rehabilitating our bridges—an approach that is widely criticized among economists as it costs far more money than a targeted approach. In many aspects of government this is a prudent method to make decisions, but the approach set forth in this bill lacks the cumulative factor analysis required to make the most cost-beneficial and safety-driven bridge investment decisions. Under H.R. 3999's risk-based system, a lower rated bridge that is rarely used and poses no public safety threat could be prioritized ahead of a slightly higher rated bridge with more traffic, greater relative importance to the rest of the system, and overall more need for investment. This bill would create yet another level of bureaucracy to a bridge program over-burdened with red tape, as State risk-management plans will have to be approved by the Department of Transportation.

The requirements for the risk management system set forth in H.R. 3999 are vague and unspecific. However, there is a wide concern among State departments of transportation that they will be interpreted by FHWA to force one-size-fits-all federal standards that ignore local considerations and variations in risk factors across the country, such as seismic retrofit.

States are already using a highly effective bridge management system to address risk when making state-wide bridge investment decisions; this bill will disrupt these efforts.

JOHN BARRASSO.
KIT BOND.
L. E. CRAIG.
JIM INHOFE.
JOHNNY ISAKSON.
GEORGE VOINOVICH.

CHANGES IN EXISTING LAW

In compliance with section 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill as reported are shown as follows: Existing law proposed to be omitted is enclosed in **[**black brackets**]**, new matter is printed in *italic*, existing law in which no change is proposed is shown in roman:

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TITLE 23—HIGHWAYS

CURRENT THROUGH PUBLIC LAW 109-1, APPROVED JAN. 7, 2005

CHAPTER 1—FEDERAL-AID HIGHWAYS

SUBCHAPTER I—GENERAL PROVISIONS

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TITLE 23—HIGHWAYS

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§ 101. Definitions and declaration of policy

(a) DEFINITIONS.—* * *

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§ 133. Surface transportation program

(a) ESTABLISHMENT.—The Secretary shall establish a surface transportation program in accordance with this section.

(b) ELIGIBLE PROJECTS.—A State may obligate funds apportioned to it under section 104(b)(3) for the surface transportation program only for the following:

(1) Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for highways*, tunnels that are eligible for assistance under this title (including safety inspection of such tunnels),* (including Interstate highways) and bridges (including bridges on public roads of all functional classifications), including any such construction or reconstruction necessary to accommodate other transportation modes, and including the seismic retrofit and painting of and application of calcium magnesium acetate, sodium acetate/formate, or other environmentally acceptable, minimally corrosive anti-icing and de-icing compositions on bridges and approaches thereto and other elevated structures, mitigation of damage to wildlife, habitat, and ecosystems caused by a transportation project funded under this title.

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§ 144. Highway bridge replacement and rehabilitation program

(a) FINDING AND DECLARATION.—Congress finds and declares that it is in the vital interest of the United States that a highway bridge program be carried out to enable States to improve the condition of their highway bridges over waterways, other topographical barriers, other highways, and railroads through replacement and rehabilitation of bridges that the States and the Secretary deter-

mine are structurally deficient or functionally obsolete and through systematic preventive maintenance of bridges.

[(b) The Secretary, in consultation with the States, shall (1) inventory all those highway bridges on any Federal-aid system which are bridges over waterways, other topographical barriers, other highways, and railroads; (2) classify them according to serviceability, safety, and essentiality for public use; (3) based on that classification, assign each a priority for replacement or rehabilitation; and (4) determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

[(c)(1) The Secretary, in consultation with the States, shall (1) inventory all those highway bridges on public roads, other than those on any Federal-aid system, which are bridges over waterways, other topographical barriers, other highways, and railroads, (2) classify them according to serviceability, safety, and essentiality for public use, (3) based on the classification, assign each a priority for replacement or rehabilitation and (4) determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

[(2) The Secretary may, at the request of a State, inventory bridges, on and off the Federal-aid system, for historic significance.

[(3) INVENTORY OF INDIAN RESERVATION AND PARK BRIDGES.—As part of the activities carried out under paragraph (1), the Secretary, in consultation with the Secretary of the Interior, shall (A) inventory all those highway bridges on Indian reservation roads and park roads which are bridges over waterways, other topographical barriers, other highways, and railroads, (B) classify them according to serviceability, safety, and essentiality for public use, (C) based on the classification, assign each a priority for replacement or rehabilitation, and (D) determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.]

(b) BRIDGES ON FEDERAL-AID HIGHWAYS.—The Secretary, in consultation with the States, shall—

(1) inventory all bridges on Federal-aid highways that are bridges over waterways, other topographical barriers, other highways, and railroads;

(2) identify each bridge inventoried under paragraph (1) that is structurally deficient or functionally obsolete;

(3) assign a risk-based priority for replacement or rehabilitation of each such bridge after consideration of safety, serviceability, and essentiality for public use and public safety, including the potential impacts to emergency evacuation routes and to regional and national freight and passenger mobility if the serviceability of the bridge is restricted or diminished; and

(4) determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

(c) BRIDGES ON OTHER PUBLIC ROADS.—

(1) INVENTORY OF BRIDGES.—The Secretary, in consultation with the States, shall—

(A) inventory all those highway bridges on public roads, other than those on any Federal-aid highway, which are bridges over waterways, other topographical barriers, other highways, and railroads;

(B) identify each bridge inventoried under subparagraph (A) that is structurally deficient or functionally obsolete;

(C) assign a risk-based priority for replacement or rehabilitation of each such bridge after consideration of safety, serviceability, and essentiality for public use and public safety, including the potential impacts to emergency evacuation routes and to regional and national freight and passenger mobility if the serviceability of the bridge is restricted or diminished; and

(D) determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

(2) INVENTORY OF BRIDGES FOR HISTORIC SIGNIFICANCE.—The Secretary may, at the request of a State, inventory bridges, on and off Federal-aid highways, for historic significance.

(3) INVENTORY OF INDIAN RESERVATION AND PARK BRIDGES.—As part of the activities carried out under paragraph (1), the Secretary, in consultation with the Secretary of the Interior, shall—

(A) inventory all those highway bridges on Indian reservation roads and park roads which are bridges over waterways, other topographical barriers, other highways, and railroads;

(B) identify each bridge inventoried under subparagraph (A) that is structurally deficient or functionally obsolete;

(C) assign a risk-based priority for replacement or rehabilitation of each such bridge after consideration of safety, serviceability, and essentiality for public use and public safety, including the potential impacts to emergency evacuation routes and to regional and national freight and passenger mobility if the serviceability of the bridge is restricted or diminished; and

(D) determine the cost of replacing each such bridge with a comparable facility or of rehabilitating such bridge.

* * * * * * *

(e) Funds authorized to carry out this section shall be apportioned among the several States on October 1 of the fiscal year for which authorized in accordance with this subsection. Each deficient bridge shall be placed into one of the following categories: (1) Federal-aid system bridges eligible for replacement, (2) Federal-aid system bridges eligible for rehabilitation, (3) off-system bridges eligible for replacement, and (4) off-system bridges eligible for rehabilitation. The deck area of deficient bridges in each category shall be multiplied by the respective unit price on a State-by-State basis, as determined by the Secretary; and the total cost in each State divided by the total cost of the deficient bridges in all States shall determine the apportionment factors. For purposes of the preceding sentence, if a State transfers funds apportioned to the State under this section in a fiscal year beginning after September 30, 1997, to any other apportionment of funds to such State under this title, the total cost of deficient bridges in such State and in all States to be determined for the succeeding fiscal year shall be reduced by the amount of such transferred funds. No State shall receive more than 10 per centum or less than 0.25 per centum of the total apportion-

ment for any one fiscal year. The Secretary shall make these determinations based upon the latest available data, which shall be updated annually. Funds apportioned under this section shall be available for expenditure for the period specified in section 118(b)(2). Any funds not obligated at the expiration of such period shall be reapportioned by the Secretary to the other States in accordance with this subsection. The use of funds authorized under this section to carry out a project for the seismic retrofit of a bridge shall not affect the apportionment of funds under this section. *In this subsection, the term "deficient bridge" means a bridge that is structurally deficient or functionally obsolete.*

* * * * * * *

(d) PARTICIPATION.—

(1) BRIDGE REPLACEMENT AND REHABILITATION.—On application by a State or States to the Secretary for assistance for a highway bridge that has been determined to be eligible for replacement or rehabilitation under subsection (b) or (c), the Secretary may approve Federal participation in—

(A) replacing the bridge with a comparable facility; or

(B) rehabilitating the bridge.

(2) TYPES OF ASSISTANCE.—On application by a State or States to the Secretary, the Secretary may approve Federal assistance for any of the following activities for a highway bridge that has been determined to be eligible for replacement or rehabilitation under subsection (b) or (c):

(A) Painting.

(B) Seismic retrofit.

(C) Systematic preventive maintenance.

(D) Installation of scour countermeasures.

(E) Application of calcium magnesium acetate, sodium acetate/formate, or other environmentally acceptable, minimally corrosive anti-icing and de-icing compositions.

(3) BASIS FOR DETERMINATION.—The Secretary shall determine the eligibility of highway bridges for replacement or rehabilitation for each State based on structurally deficient and functionally obsolete highway bridges in the State.

(4) SPECIAL RULE FOR PREVENTIVE MAINTENANCE.—Notwithstanding any other provision of this subsection, a State may carry out a project under paragraph (2)(B), (2)(C), or (2)(D) for a highway bridge without regard to whether the bridge is eligible for replacement or rehabilitation under this section.

(5) REQUIREMENTS FOR STATE PARTICIPATION.—

(A) IN GENERAL.—As a condition for providing assistance to a State under this section, the Secretary shall require the State to take the following actions:

(i) INSPECTIONS.—Not later than 24 months after the date of enactment of this paragraph, and at least once every 24 months thereafter (except as otherwise provided by section 151(d)), the State shall inspect all highway bridges described in subsections (b) and (c) that are located in the State in accordance with the standards established under section 151 and provide updated information on such bridges to the Secretary for inclusion in the national bridge inventory.

(ii) CALCULATION OF LOAD RATINGS.—The State shall—

(I) not later than 24 months after the date of enactment of this paragraph, calculate the load rating for all highway bridges described in subsections (b) and (c) that are located in the State;

(II) at least once every 24 months thereafter, reevaluate and, as appropriate, recalculate the load rating for each such bridge; and

(III) ensure that the safe load-carrying capacities for such bridges are properly posted.

(iii) PERFORMANCE PLAN.—The State shall develop, not later than 24 months after the date of enactment of this paragraph, update annually, and implement a 5-year performance plan for—

(I) the inspection of highway bridges described in subsections (b) and (c) that are located in the State; and

(II) the rehabilitation and replacement of any of such bridges that are structurally deficient or functionally obsolete.

(iv) BRIDGE MANAGEMENT SYSTEM.—Notwithstanding section 303(c), the State shall develop and implement a bridge management system that meets the requirements of section 303.

(B) APPROVAL OF PERFORMANCE PLANS.—

(i) SUBMISSION TO THE SECRETARY.—A State that establishes a 5-year performance plan under subparagraph (A)(iii) shall submit the plan and each update of the plan to the Secretary for approval.

(ii) CRITERIA FOR APPROVAL.—Not later than 1 year after the date of enactment of this paragraph, the Secretary shall establish criteria for the approval of performance plans and updates submitted under clause (i).

(iii) APPROVAL AND DISAPPROVAL.—The Secretary shall approve or disapprove each 5-year performance plan and update submitted by a State under this subparagraph. If the Secretary disapproves a plan or update, the Secretary shall inform the State of the reasons for the disapproval and shall require the State to resubmit the plan or update with such modifications as the Secretary determines necessary.

(C) HISTORIC BRIDGES.—

(i) IN GENERAL.—A 5-year performance plan of a State under subparagraph (A)(iii) may provide for more frequent, in-depth inspection of a historic bridge located in the State in lieu of replacement of the bridge if the Secretary determines that—

(I) it is appropriate based on the age, design, traffic characteristics, and any known deficiency of the bridge; and

(II) granting the exception will increase the overall safety of the State's bridge inventory.

(ii) HISTORIC BRIDGE DEFINED.—In this subparagraph, the term "historic bridge" means any bridge that is listed on the National Register of Historic Places.

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[(h) Notwithstanding any other provision of law, the General Bridge Act of 1946 (33 U.S.C. 525–533) shall apply to bridges authorized to be replaced, in whole or in part, by this section, except that subsection (b) of section 502 of such Act of 1946 and section 9 of the Act of March 3, 1899 (30 Stat. 1151) shall not apply to any bridge constructed, reconstructed, rehabilitated, or replaced with assistance under this title, if such bridge is over waters (1) which are not used and are not susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce, and (2) which are (a) not tidal, or (b) if tidal, used only by recreational boating, fishing, and other small vessels less than 21 feet in length.]

(h) INFORMATION AND REPORTS.—

(1) UPDATES OF INFORMATION.—The Secretary shall annually revise, as necessary, the information required under subsections (b) and (c).

(2) REPORTS TO CONGRESS.—Concurrently with the President's annual budget submission to Congress under section 1105(a) of title 31, the Secretary shall submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate a report containing—

(A) a description of projects and activities approved under this section;

(B) the information updated under paragraph (1), including a description of the priority assigned, on a national basis and by State, for the replacement or rehabilitation of each structurally deficient or functionally obsolete bridge on a Federal-aid highway;

(C) a description of any project or activity carried out by a State under this section in the preceding fiscal year that is inconsistent with the priorities assigned by the Secretary under subsection (b)(3), (c)(1)(C), and (c)(3)(C); and

(D) such recommendations as the Secretary may have for improvements of the program authorized by this section.

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(r) ANNUAL MATERIALS REPORT ON NEW BRIDGE CONSTRUCTION AND BRIDGE REHABILITATION.—Not later than 1 year after the date of enactment of this subsection, and annually thereafter, the Secretary shall publish in the Federal Register a report describing construction materials used in new Federal-aid bridge construction and bridge rehabilitation projects.

[(s) FEDERAL SHARE.—

[(1) IN GENERAL.—Except as provided under paragraph (2), the Federal share of the cost of a project payable from funds

made available to carry out this section shall be determined under section 120(b).

[(2) INTERSTATE SYSTEM.—The Federal share of the cost of a project on the Interstate System payable from funds made available to carry out this section shall be determined under section 120(a).]

(s) TRANSFERABILITY OF FUNDING.—Notwithstanding section 126 or any other provision of law, a State may transfer funds apportioned to the State under this section for a fiscal year to another apportionment of funds to the State under this title only if the State demonstrates to the satisfaction of the Secretary that there are not any bridges on the National Highway System located in the State that are eligible for replacement.

(t) DEFINITIONS.—In this section, the following definitions apply:

(1) FUNCTIONALLY OBSOLETE.—The term "functionally obsolete" as used with respect to a bridge means a bridge that no longer meets current design standards relating to geometrics, including roadway width, shoulder width, and approach alignment, for the traffic demands on the bridge.

(2) STRUCTURALLY DEFICIENT.—The term "structurally deficient" as used with respect to a bridge means a bridge that has—

(A) significant load-carrying elements that are in poor or worse condition due to deterioration or damage, or both;

(B) a load capacity that is significantly below current truckloads and that requires replacement; or

(C) a waterway opening causing frequent flooding of the bridge deck and approaches resulting in significant traffic interruptions.

(3) REHABILITATION.—The term "rehabilitation" means major work necessary to restore the structural integrity of a bridge and work necessary to correct a major safety defect.

(4) REPLACEMENT.—The term "replacement" as used with respect to a structurally deficient or functionally obsolete bridge means a new facility constructed in the same general traffic corridor that meets the geometric, construction, and structural standards, in effect at the time of such construction, required for the types and volume of projected traffic of the facility over its design life.

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§ 149. Congestion mitigation and air quality improvement program

(a) ESTABLISHMENT.—* * *

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§ 150. National tunnel inspection program

(a) NATIONAL TUNNEL INSPECTION STANDARDS.—The Secretary, in consultation with State transportation departments and interested and knowledgeable private organizations and individuals, shall establish national tunnel inspection standards for the proper safety inspection and evaluation of all highway tunnels. The stand-

ards established under this subsection shall be designed to ensure uniformity among the States in the conduct of such inspections and evaluations.

(b) MINIMUM REQUIREMENTS FOR INSPECTION STANDARDS.—The standards established under subsection (a) shall, at a minimum—

(1) specify, in detail, the method by which highway tunnel inspections shall be carried out by the States;

(2) establish the maximum time period between the inspections based on a risk-management approach;

(3) establish the qualifications for those charged with carrying out the inspections;

(4) require each State to maintain and make available to the Secretary upon request—

(A) written reports on the results of the inspections together with notations of any action taken pursuant to the findings of the inspections; and

(B) current inventory data for all highway tunnels located in the State reflecting the findings of the most recent highway tunnel inspections conducted;

(5) establish procedures for national certification of highway tunnel inspectors;

(6) establish procedures for conducting annual compliance reviews of State inspections and State implementation of quality control and quality assurance procedures; and

(7) establish standards for State tunnel management systems to improve the tunnel inspection process and the quality of data collected and reported by the States to the Secretary for inclusion in the national tunnel inventory to be established under this section.

(c) TRAINING AND CERTIFICATION PROGRAM FOR TUNNEL INSPECTORS.—The Secretary, in cooperation with State transportation departments, shall establish a program designed to ensure that all individuals carrying out highway tunnel inspections receive appropriate training and certification. Such program shall be revised from time to time to take into account new and improved techniques.

(d) NATIONAL TUNNEL INVENTORY.—The Secretary shall establish a national inventory of highway tunnels reflecting the findings of the most recent highway tunnel inspections conducted by States under this section.

(e) AVAILABILITY OF FUNDS.—To carry out this section, the Secretary may use funds made available pursuant to the provisions of sections 104(a) and 502.

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§ 151. National bridge inspection program

(a) NATIONAL BRIDGE INSPECTION STANDARDS.—The Secretary, in consultation with the State transportation departments and interested and knowledgeable private organizations and individuals, shall establish national bridge inspection standards for the proper safety inspection and evaluation of all highway bridges. *The standards established under this subsection shall be designed to ensure*

uniformity among the States in the conduct of such inspections and evaluations.

(b) MINIMUM REQUIREMENTS OF INSPECTION STANDARDS.—The standards established under subsection (a) shall, at a minimum—

(1) specify, in detail, the method by which such inspections shall be carried out by the States;

(2) establish the maximum time period between inspections *in accordance with subsection (d)*;

(3) establish the qualification for those charged with carrying out the inspections;

(4) require each State to maintain and make available to the Secretary upon request—

(A) written reports on the results of highway bridge inspections together with notations of any action taken pursuant to the findings of such inspections;[and]

(B) current inventory data for all highway bridges reflecting the findings of the most recent highway bridge inspections conducted; and

(5) establish a procedure for national certification of highway bridge inspectors[.]*;*

(6) 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 highway bridges;

(7) establish procedures for States to follow in reporting to the Secretary—

(A) critical findings relating to structural or safety-related deficiencies of highway bridges; and

(B) monitoring activities and corrective actions taken in response to such a finding; and

(8) provide for testing with a state-of-the-art technology that detects growth activity of fatigue cracks as small as 0.01 inches on steel bridges exhibiting fatigue damage or bridges with fatigue susceptible members.

(c) TRAINING PROGRAM FOR BRIDGE INSPECTORS.—The Secretary, in cooperation with the State transportation departments, shall establish a program designed to train appropriate governmental employees to carry out highway bridge inspections. Such training program shall be revised from time to time to take into account new and improved techniques. *The secretary shall expand the scope of the training program to ensure that all persons conducting highway bridge inspections receive appropriate training and certification under the program.*

(d) FREQUENCY OF BRIDGE INSPECTIONS.—

(1) IN GENERAL.—Subject to paragraph (2), the standards established under subsection (a), at a minimum, shall provide for—

(A) annual inspections of structurally deficient highway bridges using the best practicable technologies and methods;

(B) annual in depth inspections of fracture critical members, as such terms are defined in section 650.305 of title 23, Code of Federal Regulations (as in effect on the date of enactment of this paragraph); and

(C) biennial inspections of highway bridges that have not been determined to be structurally deficient.

(2) EXTENSIONS.—Upon the request of a State, the Secretary may extend, to a maximum period of 48 months, the time between required inspections of a highway bridge that has not been determined to be structurally deficient if the Secretary determines that—

(A) the extension is appropriate based on the age, design, traffic characteristics, and any known deficiency of the bridge;

(B) the extension is consistent with the 5-year performance plan of the State approved under section 144(d)(5)(B); and

(C) granting the extension will increase the overall safety of the State's bridge inventory.

[(d)**]***(e)* AVAILABILITY OF FUNDS.—To carry out this section, the Secretary may use funds made available pursuant to the provisions of section 104(a), section 502, and section 144 of this title.

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§ 502. Surface transportation research

(a) BASIC PRINCIPLES GOVERNING RESEARCH AND TECHNOLOGY INVESTMENTS.—

(1) COVERAGE.—* * *

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(d) CONTENTS OF RESEARCH PROGRAM.—The Secretary shall include in surface transportation research, technology development, and technology transfer programs carried out under this title coordinated activities in the following areas:

(1) Development, use, and dissemination of indicators, including appropriate computer programs for collecting and analyzing data on the status of infrastructure facilities, to measure the performance of the surface transportation systems of the United States, including productivity, efficiency, energy use, air quality, congestion, safety, maintenance, and other factors that reflect system performance.

(2) Methods, materials, and testing to improve the durability of surface transportation infrastructure facilities and extend the life *and enhance the safety* of bridge structures, including—

(A) new and innovative technologies to reduce corrosion;

(B) tests simulating seismic activity, vibration, and weather; and

(C) the use of innovative recycled materials.

(3) Technologies and practices that reduce costs and minimize disruptions associated with the construction, rehabilitation, and maintenance of surface transportation systems, including responses to natural disasters.

(4) Development of nondestructive evaluation equipment **[**for use with existing infrastructure facilities and with next-generation infrastructure facilities**]***for assessing the structural in-*

tegrity of existing infrastructure facilities and next-generation infrastructure facilities that use advanced materials.

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