

BRIDGES



C

2006 Report Card for Pennsylvania's Infrastructure

Of Pennsylvania's 22,276 bridges, 25% are considered structurally deficient and 18% are considered functionally obsolete. This may be a contributing factor to traffic congestion and may also put local communities at risk – forcing ambulances and fire trucks to take lengthy detours because of speed and/or weight limitations. In its 2006-2007 budget, the state has taken a step in the right direction, allotting an additional \$20 million for bridge preservation and \$10 million for emergency highway and bridge repairs.

BACKGROUND

All bridges in Pennsylvania are inspected using the same criteria, and numeric ratings are assigned to various parts of the structure. All inspectors are required to attend inspection training to assure all inspection conditions are properly coded and recorded. These numeric codes are used to develop the structure's federal sufficiency rating (SR) which indicates the overall condition of the structure and how critical it is in relation to other structures throughout the country¹ (the higher the number - the more sufficient the bridge).

CONDITIONS

Based on 2004 statistics from the National Bridge Inventory², out of Pennsylvania's 22,276 bridges, 44% of bridges (9,902) have a sufficiency rating greater than 80, 38% (8,360) have a sufficiency rating between 50 and 80, and 18% (4,014) have a sufficiency rating lower than 50. The national statistics are 56% (346,638) for SR>80, 29% (178,539) with a SR between 50 and 80, and 16% (97,460) with a SR lower than 50. Pennsylvania has more bridges in the middle grade area compared to the national average, but less in the highest rated category.

Two categories typically used to determine the SR are structurally deficient and functionally obsolete. A structurally deficient bridge is closed or restricted to lighter vehicles because of at least one deteriorating structural component. While not necessarily unsafe, these bridges may have limits for speed and weight. A functionally obsolete bridge has older design features, and, while it is not unsafe for all vehicles, it may not adequately accommodate current traffic volumes, and vehicle sizes and weights. These restrictions are one contributing element to traffic congestion. They also pose inconveniences as school busses or emergency vehicles taking lengthy detours³. Twenty-five percent (25%)⁴ of the bridges in Pennsylvania are

¹ http://www.mcc.co.mercer.pa.us/engr/featured_bridge.htm

² National Bridge Inventory (NBI): U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory: Deficient Bridges by State and Highway System, Washington, DC: 2005, as reported by the National Bridge Inventory Study <http://www.nationalbridgeinventory.com/>

³ ASCE National Report Card

structurally deficient while the national percentage for structurally deficient bridges is 13%. Eighteen percent (18%) of the state's bridges are functionally obsolete while the national percentage for functionally obsolete bridges is also 13%.

The statistics indicate the discrepancy between the national average and Pennsylvania's bridges; however, a few items to consider are the following:

- Pennsylvania has some of the oldest highways in the nation (I-76 is advertised as the first interstate.)
- Pennsylvania has nearly the most lane miles of any other state that must deal with severe winters. Bridges are susceptible to cracking and expanding due to the temperature and weather changes (freeze/thaw cycles) in the state. Also, the salt used during snow/icy conditions decreases the life of a structure compared to a southern state.

Deterioration of the bridges is expected, but it can be monitored. Proactive response is necessary to decrease the number of structurally deficient and functionally obsolete bridges for the state.

POLICY OPTIONS

The key to a successful infrastructure program is to have funds to support bridge construction, rehabilitation and emergency situations. These three key aspects make possible the goals of accessibility, structural integrity, and safety that are needed for Pennsylvania's bridges.

The following table summarizes the highway funding for the State of Pennsylvania since 2000-01⁵.

Transportation – Key to Pennsylvania Growth and Opportunity

| | Total Pennsylvania Highway Funding | | | | Flexed Funds for Transit | | |
|---------|------------------------------------|-----------------|---------------|---------------|------------------------------|------------------|------------------|
| | (Dollar Amounts in Millions) | | | | (Dollar Amounts in Millions) | | |
| | State Funding | Federal Funding | Total Funding | Dollar Change | Percent Change | Standard Federal | "Crisis" Federal |
| 2000-01 | \$2,943 | \$1,112 | \$4,055 | – | – | \$46 | – |
| 2001-02 | \$2,940 | \$1,272 | \$4,212 | \$157 | 3.9% | \$36 | – |
| 2002-03 | \$2,949 | \$1,265 | \$4,214 | \$2 | 0.0% | \$31 | – |
| 2003-04 | \$2,966 | \$1,205 | \$4,171 | (\$43) | –1.0% | \$59 | – |
| 2004-05 | \$3,124 | \$1,081 | \$4,205 | \$34 | 0.8% | \$48 | \$74 |
| 2005-06 | \$3,518 | \$1,424 | \$4,942 | \$737 | 17.5% | \$25 | \$202 |
| 2006-07 | \$3,758 | \$1,436 | \$5,194 | \$252 | 5.1% | \$25 | \$138 |

Even after "flexing" some additional federal transportation funds to keep the state's 13 transit agencies operating, Pennsylvania highway spending is still growing substantially, with an anticipated \$252 million increase in total funds in 2006-07. Part of that increase is an additional \$130 million in state funds for the Commonwealth's highway and bridge infrastructure, including \$100 million for the Smoother Roads and Bridges program, \$20 million for the Bridge Preservation program and \$10 million for the Emergency Highway and Bridge Maintenance Repair program. Pennsylvania highway spending in 2006-07 is 23 percent, or \$980 million, higher than when Governor Rendell took office.

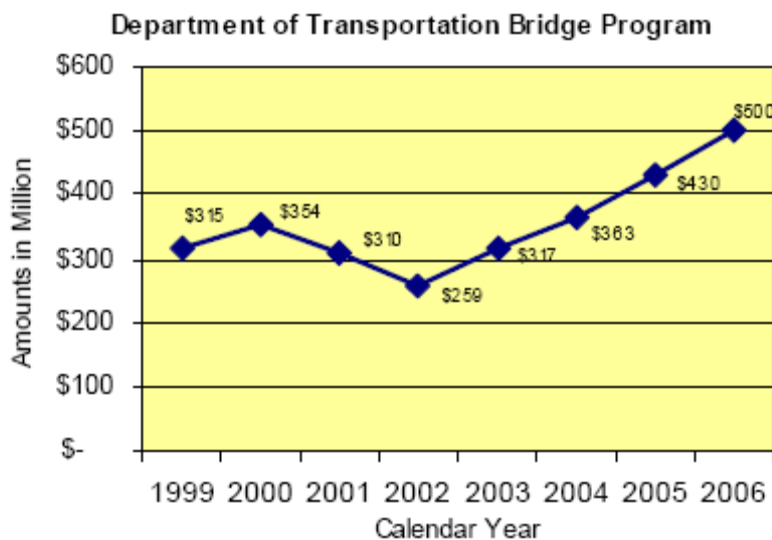
⁴ U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory: Deficient Bridges by State and Highway System, Washington, DC: 2005, available at <http://www.fhwa.dot.gov/bridge/britab.htm> as of Oct. 13, 2005.

⁵ PA State Budget 2006-07. "Transportation: Key to Pennsylvania Growth and Opportunity." Pp. 23-24.

Accessibility, structural integrity and safety are priorities set forth for the roads and bridges in the state of Pennsylvania. The Safe, Accountable, Flexible, Efficient Transportation Act, A legacy for Users (SAFETEA-LU) program is a federal law that created a dedicated funding source for states' highway safety improvement programs. ASCE's Pennsylvania Sections recommend that the Highway Maintenance Safety Projects appropriation be increased by \$5 million as a state match for a projected \$34 million grant from this federal program.

In order to meet the priorities listed above, \$130 million of additional new investment has already been allotted within the state's 2006-2007 budget, for smoother roads and safer bridges. The money will be spent in the following ways⁶:

- **Smooth Roads and Bridge Priority.** \$100 million, which is a 200% increase in the budget, will allow for highway maintenance and resurfacing of 550 miles of roadway in 2006 and 530 miles in 2007.
- **Bridge Preservation.** \$20 million, to repair 200-250 additional bridges and to further increase the bridge restoration program. The following diagram shows PennDOT's annual spending on the bridge program from 1995-2006.



- **Emergency Highway and Bridge Repair.** \$10 million, which is a 54% increase in the budget, will be set aside to have the capability to handle 20-25 emergency repair situations such as sink holes, storm repair and slide conditions.

⁶ PA State Budget 2006-07. "Transportation: Key to Pennsylvania Growth and Opportunity." Pp. 23-24.

RECOMMENDATIONS

ASCE's Pennsylvania Sections support the following recommendations:

- Set a state goal that only 10% of the state's bridges be classified as structurally deficient by 2016.
- Set a state goal that only 10% (or the national average whichever is less) of the state's bridges be classified as functionally obsolete by 2016.
- Continue to increase dedicated funds for bridge maintenance/replacement.
- Encourage the use of life-cycle cost analysis principles to evaluate the total cost of projects.

SOURCES

ASCE Report Card for America's Infrastructure, 2005

Mercer County Engineer's Office website

Pennsylvania State Budget 2006-07, "Transportation: Key to Pennsylvania Growth and Opportunity"

U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory: Deficient Bridges by State and Highway System, 2005



Central PA • Lehigh Valley
Philadelphia • Pittsburgh

www.pareportcard.org