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## Rough Roads Ahead

America's \$1.75 trillion public highway system is in jeopardy. Years of wear and tear, non-stop traffic, an increased use of heavy trucks, deferred maintenance, harsh weather conditions, and rising construction costs have taken their toll on America's roads.

Driving on rough roads costs the average American motorist approximately \$400 a year in extra vehicle operating costs. Drivers living in urban areas with populations over 250,000 are paying upwards of \$750 more annually because of accelerated vehicle deterioration, increased maintenance, additional fuel consumption, and tire wear caused by poor road conditions.

**Rough Roads Ahead: Fix Them Now or Pay for It Later**, a report released by the **American Association of State Highway and Transportation Officials (AASHTO)** and **The Road Information Program (TRIP)**, identifies the conditions of the nation's major highways, costs to preserve the highway system, added costs to motorists due to poor pavement, and state solutions to shore up their highways. The report states that one-third of the nation's major highways, including Interstates, freeways and major roads, are in poor or mediocre condition. Roads in urban areas, which carry 66 percent of the traffic, are in much worse shape.

Delayed and deferred maintenance leads to higher repair and reconstruction costs—pay me now or pay me more, lots more, later.

According to Kirk Steudle, director of the **Michigan Department of Transportation (MDOT)**, "The American people are paying for rough roads multiple times. Rough roads lead to diminished safety, higher vehicle operating costs and more expensive road repairs. It costs \$1 to keep a road in good shape for every \$7 you would have to spend on reconstruction. It's another drag on the economy."

While the **American Reinvestment and Recovery Act (ARRA)** will provide \$27 billion for highway projects, that money will barely make a dent in highway maintenance, preservation and reconstruction needs. The recent **AASHTO Bottom Line report** documented the need for all levels of government to invest \$166 billion each year in highways and bridges. More than half of that amount would be needed for system preservation.



"The federal stimulus program is providing a helpful down payment towards repairing some of the nation's rough roads," said Frank Moretti, TRIP's director of Policy and Research. "But it will take a significant long-term boost in investment by all levels of government to provide Americans with a smooth ride."

Saving America's highways demands more than short-term stimulus funds and quick fixes based on available funding. It will require a greater and smarter investment of transportation dollars to ensure a new and better transportation program.

**This report examines the condition of America's roads and what it will take to save them:**



### What's Wrong with Our Roads?

**Killer potholes.** In a flash they can dislodge a hubcap, shred a tire, or even worse, cause a driver to lose control of a car. But they can also be a symptom of a much deeper problem—deteriorating pavement that takes much more to repair than a simple patch.

As fundamental as our transportation system is to our daily lives, our highways and bridges are aging, under-funded and inadequate to

meet the demands we place upon them today, much less the future. And across America motorists are paying the price.

For state departments of transportation, preserving the condition and performance of the transportation system we have built is the top priority.

In Pennsylvania, for example, work will begin later this year on more than 240 projects to repair and improve 608 miles of highway and 399 bridges. The projects will be financed with \$1 billion in federal economic-stimulus money combined with about \$2 billion in federal and state funds. This represents the most the **Pennsylvania Transportation Department** has ever committed to construction in a single year.

New technology, materials, and procedures are helping extend the life of our highways and bridges. States are also spending "smart" by making the investments needed to keep a road in good repair, rather than paying more later to address greater deterioration.

But the needs are enormous and poor-quality pavement is reflected in the increased operating costs that motorists must pay.

This report, developed by AASHTO in conjunction with TRIP, a national transportation research group, documents the preservation needs of the nation's highways and the solutions that can be applied. As we look to the next authorization of federal-aid surface transportation programs, rebuilding and improving our nation's core transportation structure must be a fundamental goal.

Allen D. Biehler  
Secretary, Pennsylvania Department of Transportation  
President, AASHTO

### ROUGH ROADS LEAD TO HIGHER COSTS

**Only half of the nation's major roads are in good condition**, based on an analysis of recent **Federal Highway Administration** data. The situation is worse in high traffic, urban areas where one in four roads is in poor condition. In some major urban centers, more than 60 percent of roads are in poor condition.

The American public pays for poor road conditions twice -- first through additional vehicle operating costs and then in higher repair and reconstruction costs. For the average driver, rough roads add \$335 annually to typical vehicle operating costs. In

urban areas with high concentrations of rough roads, extra vehicle operating costs can be as high as \$746 annually.

Sustaining deteriorating roads costs significantly more over time than regularly maintaining a road in good condition. Costs per lane mile for reconstruction after 25 years can be more than three times the costs of preservation treatments over the same 25-year period.

## CHALLENGES FACING AMERICA'S HIGHWAYS

### Unrelenting traffic is tough on roads.

Traffic growth has far outpaced highway construction, particularly in major metropolitan areas. The number of miles driven in this country jumped more than 41 percent from 1990 to 2007—from 2.1 trillion miles in 1990 to 3 trillion in 2007. Nearly 66 percent of that driving passed over urban roads, which are showing the most wear and tear. In some parts of the country, dramatic population growth has occurred without much of an increase in road capacity, placing enormous pressure on roads that, in many cases, were built 50 years ago.

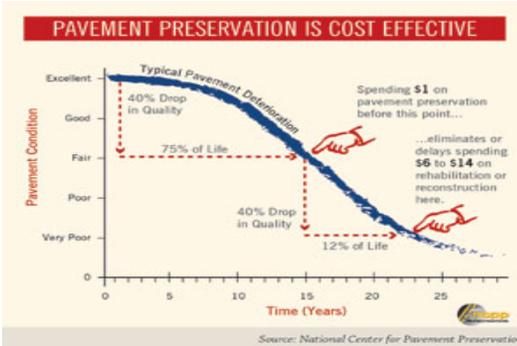


**Soaring construction costs during the past five years are straining state and local budgets.** By the summer of 2008, asphalt prices were up 70 percent, concrete 36 percent, and steel 105 percent. Diesel fuel, used to operate heavy construction equipment, soared 305 percent, including a 63 percent jump in one year. Over time, these higher costs have eroded states' purchasing power on construction projects. In the past few months, however, the economic recession appears to have moderated some of these costs. In fact, many bids for stimulus projects are coming in below engineers' estimates.

**The explosion of freight truck traffic is punishing aging highways.** The **Interstate system** is bearing the brunt of truck traffic and showing the impact. Today, on average, every mile of Interstate highway sees 10,500 trucks a day. More than 80 percent of freight tonnage moving across the United States is carried by trucks driving on the 50-year-old Interstate system.

**"Managing a highway system is like playing chess. You have to look at the whole board, the whole system, not just the next move. Sure we do reactive things, but our best strategy is when we look down the road eight years or more, look at every section of road, and budget to keep**

**those roads in good condition."**  
—Gary Ridley, Director, **Oklahoma Department of Transportation**



**Investment has not kept up with maintenance and preservation needs.** Michigan DOT Director Kirk L. Steudle said, "It is important to slow the rate of decline in the good road so that it stays in good shape rather than slipping into fair or poor condition." But soaring construction costs, tight budgets, and increasing needs make it hard for states to sustain preservation programs. That is why most states are using their stimulus funds to make up for lost time from deferred maintenance and preservation.

### Highway Maintenance Needs Exceed Available Funds

Keeping good roads in good condition is the most cost-effective way to save America's highways. But the needs are high and the available funding limited. For example:

- **Oregon** needs \$200 million annually over the next 10 years to maintain roads at the current levels. It has \$130 million available annually.
- **Texas** needs \$73 billion during the next 22 years to maintain current conditions. The Department is spending \$900 million per year and losing ground.
- **Rhode Island** needs \$640 million annually to preserve its highway system and has only \$354 million available each year.

### Stimulus funds will fill in some of the gaps.

- **Oregon** will use half of its \$224 million of stimulus funds for pavement resurfacing and preservation projects.
- **Texas** is spending \$800 million in stimulus funds to stabilize pavement and bridge conditions for the next few years.
- **Rhode Island** will use its \$137 million primarily for preservation and maintenance projects. The extra funds provide about 5 percent of the projected shortfall in preservation funds over the next 10 years.
- **South Dakota's** stimulus allocation will provide about one year's worth of preservation funding to help with the backlog of needs.

**Strategies For Saving America's Highways Use the best materials throughout the life of a road.** From filling a pothole to

reconstructing a major highway, using materials designed to meet specific climate and traffic conditions will extend the service life of a road and reduce costs over the long run. Research into new materials, constant monitoring of pavement conditions, and matching materials to traffic and weather conditions all contribute to long-term durability of a road.

**Keep good roads good.** Maintaining a road in good condition is easier and less expensive than repairing one in poor condition. Achieving that goal involves a carefully planned and consistently funded pavement preservation program that makes proactive improvements in good roads to keep them good. "You can spend too much time and money chasing after potholes while watching the system fall farther and farther behind," said Pennsylvania DOT Secretary Allen Biehler.

### Create a Multi-Modal Freight Strategy.

Ensuring that roads can handle the projected growth in freight bearing trucks involves more than building sturdier roads. It will require a commitment to a multi-modal freight strategy that may include: (1) building a network of dedicated truck lanes; (2) expanding rail capacity to sustain its share of freight movement; (3) fixing bottlenecks and reducing congestion in metropolitan areas; (4) improving conditions from ports and distribution centers to the Interstate and rail systems; and (5) a funding model that includes freight-related user fees to implement the strategy.

### View highways as public assets to be managed rather than projects to be fixed.

Asset management is a comprehensive approach to ensuring the most cost-effective return on investments for operating, maintaining, upgrading, and expanding transportation systems. It starts from the assumption that the nearly 4 million miles of public roads are a valuable national asset, essential to the vitality of the American economy.

**Invest to save America's highways.** When the Interstate system was first designed in the 1940s, lines were put on a map to describe the vision for a country connected by a network of limited access highways. "Planners said this is what we want it to look like. Now let's figure out how to pay for it," said Oklahoma DOT Director Ridley. "Now we work in the reverse. We say here's how much money we have, and let's decide what we want to do with that. That approach doesn't produce the best decisions." Rebuilding for the future requires a national commitment to significant and sustained investment in transportation infrastructure based on a vision of what we want our transportation system to look like in the 21st century and beyond.

It is time for a greater and smarter investment of transportation dollars to ensure a new and

better transportation program.

Are we there yet? No—but we can be.

**“We as stewards of the transportation system have no choice but to drive home the message that maintaining an acceptable condition for our highways—preserving the system—is vital to our country’s future.”**

**Allen D. Biehler, AASHTO President; Secretary, Pennsylvania Department of Transportation**

### Highways to Everywhere

A well-connected highway system, maintained in good condition, is critical to the nation’s economy. With a current value of \$1.75 trillion, preserving the system of roads and highways so they last for generations and meet changing needs should be a top priority for all levels of government. Even with continued growth in public transit, enhanced rail services, and a national commitment to reduce greenhouse gas emissions from vehicles, roads remain a vital component of the system that moves people and goods throughout the country.

### Roads are essential to everyday life.

- Nearly 24 million children—55 percent of the country’s kindergarten through high school population—ride 450,000 school buses 180 days per year.
- Every year, 50,000 ambulances make 60 million trips—that is an average of 164,000 trips per day.
- A fire department responds in one or more vehicles to a fire alarm in the United States every 20 seconds.
- Trucks in the United States carry 32 million tons of goods valued at \$25 billion every day.
- The country’s 240 million registered vehicles travel more than 2.9 trillion miles annually.

Those vehicles and the people who drive and ride in them, rely on the nation’s nearly 4 million miles of public roads—from Interstate highways to neighborhood streets—to get somewhere to do something.

Highways are a backbone of American life connecting people, goods, and services. But many roads, particularly in metropolitan areas and population growth centers, are in poor condition.

Despite the recent downturn in travel in 2008, the number of miles driven on the nation’s roadways has increased 41 percent from 1990 to 2007. Large commercial truck traffic, which places significant stress on pavements, has increased 50 percent during the same timeframe.

In some parts of the country, dramatic population growth with minimal capacity expansion has placed enormous pressure on

highways. For example, in Utah, between 1990 and 2007, population grew by 47 percent and miles driven by 71 percent—but highway capacity grew by only 4 percent.

Transportation officials across the country are focusing on how to preserve and protect their part of this national asset by building smarter, investing in systematic maintenance programs, and using new technologies to produce longer-lasting roads.

### Quick Facts:

- One-third of the nation’s highways – interstates, freeways and major roads – are in poor or mediocre condition.
- More than one-quarter of major urban roads, which carry the brunt of national traffic, are in poor condition.
- Major urban centers have the roughest roads – more than 60 percent of the roads in the greater Los Angeles, San Jose, San Francisco-Oakland, Honolulu and Washington, DC, areas offer a poor ride.
- Rough roads add an average of \$335 to the annual cost of owning a car – in some cities an additional \$740 more – due to damaged tires, suspensions and reduced fuel efficiency.
- Every \$1 spent in keeping a good road good precludes spending \$6-\$14 to rebuild one that has deteriorated.

### THE NATION’S HIGHWAYS BY THE NUMBERS

**Total miles of public roads—3,967,159**

#### Total miles of roads by ownership

- **Federal**—128,378 miles (3.2 percent)
- **State**—783,643 miles (19.8 percent)
- **Local**—3,055,138 miles (77 percent)

#### Total miles of rural and urban roads

- **Rural** - 2,939,042 (74 percent)
- **Urban** - 1,028,107 (26 percent)

**Total Interstate Highway miles—47,000**

**Annual miles driven in cars and trucks—2.9 trillion**

**Percent of miles driven on urban roads—65.6 percent**

**Tons of freight moved on America’s highways annually—15 billion**

### EARLY HISTORY OF UNITED STATES ROAD BUILDING

**1625** Earliest known paved American road—Pemaquid, Maine

**1795** First engineered American road—Philadelphia to Lancaster toll turn-

pike

**1823** First macadam road constructed in America—Maryland

**1872** First asphalt paved roads in North America—Pennsylvania Avenue in Washington, DC, and Fifth Avenue in New York, NY

**1893** First rural brick road—Ohio

**1906** First bituminous macadam road—Rhode Island Hammond Surface Streets, Hammond, Indiana

**Note:** The full report is available at:

[http://www.tripnet.org/RoughRoadsReport\\_May2009.pdf](http://www.tripnet.org/RoughRoadsReport_May2009.pdf) or

<http://roughroads.transportation.org>.

AASHTO is the “Voice of Transportation” representing State Departments of Transportation in all 50 states, the District of Columbia and Puerto Rico. A nonprofit, nonpartisan association, AASHTO serves as a catalyst for excellence in transportation. TRIP is a national highway research group based in Washington, DC. Rough Roads is part of Are We There Yet? We Can Be!, AASHTO’s effort to build awareness and support for the nation’s transportation system.

**Greg Sitek**