

Even with the infusion of federal stimulus monies, America's roads, bridges and dams need more repair work than is available.

Kevin Cunningham reports

**KEVIN CUNNINGHAM** is the executive vice president of NBIS responsible for underwriting, claims adjusting, risk management, business development and operations including management of the exclusive sponsorship by SC&RA for the Member Insurance & Risk Management Program.



# More risk than cash (even with stimulus monies)

According to the American Society of Civil Engineers, we Americans spend 4.2 billion hours a year stuck in traffic at a cost to the economy of \$78.2 billion or \$710 per motorist. Poor conditions cost motorists an additional \$67 billion a year in repairs and operating costs. One-third of America's roads are in poor or mediocre condition, and 45 percent of major urban highways are constantly congested.

Current spending levels of \$20.3 billion per year for highway capital improvements are well below the estimated \$186 billion needed annually to substantially improve conditions.

Our nation's economy and our quality of life require a highway and roadway system that provides a safe, reliable, efficient and comfortable driving environment. Although highway fatalities and traffic-related injuries declined in 2007, the drop is arguably more attributable to less driving than improved risk management factors.

Still in 2007, 41,059 people were killed in motor vehicle crashes and 2,491,000 were injured. Motor vehicle accidents cost the US economy

\$230 billion per year – \$819 for each person in medical costs, lost productivity, travel delays, workplace costs, insurance costs and legal costs.

Next to safety, congestion has become the most critical challenge facing our highway system. Congestion continues to worsen to a point at which Americans spend entirely too much wasted time at a cost that severely hurts the whole US economy.

## Vicious circle?

In addition, poor road conditions lead to excessive wear and tear on vehicles which in turn, increase the number of accidents and more delays.

According to the Federal Highway Administration, while the percentage of vehicle miles travelled (VMT) occurring on roads classified as having "good" ride quality has steadily improved, the percentage of "acceptable" ride quality has steadily declined from 86.6 percent in 1995 to 84.9 percent in 2004, with the lowest acceptable ride quality, particularly in heavily trafficked urbanized areas.

Compounding the problem are steadily increasing demands on the system. From 1980-2005, while automobile (VMT) increased 94 percent and truck (VMT) increased 105 percent, highway lane-miles grew only 3.5 percent.

## Bridge Conditions

More than 26 percent, or one in four of the nation's bridges are either structurally deficient or functionally obsolete. While some progress has been made in recent years to reduce the number of deficient and obsolete bridges in rural areas, the number in urban areas is rising.

A \$17 billion annual investment is needed to substantially improve current bridge conditions. Currently, only

## Top 10 most congested cities in the U.S.

RANK	CITY	HOURS OF DELAY PER TRAVELER
1	Los Angeles/Long Beach-Santa Ana, CA	72
2	San Francisco-Oakland, CA	60
3	Washington, DC-VA-MD	60
4	Atlanta, GA	60
5	Dallas-Fort Worth-Arlington, TX	58
6	Houston, TX	56
7	Detroit, MI	54
8	Miami, FL	50
9	Phoenix, AZ	48
10	Chicago, IL-IN	46

Source: Urban Mobility Report, Texas Transportation Institute, 2007

\$10.5 billion is spent annually on the construction and maintenance of bridges.

Usually built to last 50 years, the average bridge in our country is now 43 years old. According to the Department of Transportation, of the 600,905 bridges across the country as of December 2008, 72,868 (12.1 percent) were categorized as structurally deficient and 89,024 were categorized as functionally obsolete.

Between the two categories (that clearly represent opportunities for the crane-rigging and heavy haul industry) there are 161,892 bridges that require some degree of repair or replacement.

A structurally deficient bridge may be closed or restrict traffic in accordance with weight limits because of limited structural capacity. These bridges are not unsafe, but must post limits for speed and weight. A functionally obsolete bridge has older design features and geometrics, and though not unsafe, cannot accommodate the current traffic volumes, vehicle size and weights.

With truck miles nearly doubling over the past 20 years and many trucks carrying heavier loads, the spike in traffic is a significant factor in the deterioration of America's bridges. Of the more than 3 trillion vehicle miles of travel over bridges each year, 223 billion miles come from trucks.

### Resiliency is a must

The reliable and efficient flow of people, commodities, and emergency services within our road way system relies on the nation's bridge system, which overall is highly resilient.

According to the American Road & Transportation Builders Association, there are three key components to maintaining an efficient bridge restoration plan for our nation:

- 1 system redundancy and work arounds
- 2 recovery measures including rapid restoration ability
- 3 security and robustness against hazards (both natural and man-made).

Therefore, resiliency must be part of the evaluation criteria in risk-analysis to justify and prioritize bridge investment. That investment includes activities that range from non-structural measures to the structural and from the design of new bridges to the rehabilitation and replacement of old bridges.

### Dam conditions

According to the American Society of Civil Engineers, as dams age and downstream development increases, the number of deficient dams has risen to more than 4,000, including 1,819 high

hazard potential dams. Over the past six years, for every deficient, high hazard dam repaired, nearly two more were declared deficient. These are more than 85,000 dams in the US, and the average age is just over 51 years old.

Dams provide essential benefits, including drinking water, power generation, flood protection, irrigation and recreation. They may be publicly owned and operated by federal agencies, states, cities and municipalities or privately owned and operated by businesses and corporations.

Typically earth embankments or concrete structures, dams can reach heights of up to 770 feet and store billions of gallons of water. A dam's "hazard potential" is classified on the basis of anticipated consequences of failure, not the condition of the dam (very similar to the hazard potential of crane-rigging and heavy haul operators). The classifications include "high hazard potential" (anticipated loss of life in the case of failure), "significant hazard potential" (anticipated damage to buildings and important infrastructure), and "low hazard potential" (anticipated loss of dam or damage to floodplain, but no expected loss of life).

The National Inventory of Dams (NID), which is maintained by the US Army Corp of Engineers shows that the number of dams has increased to more than 85,000, but the federal government owns or regulates only 11,000 of those dams.

Responsibility for ensuring the safety of the rest of the nation's dams falls to state dam safety programs. However, many state dam safety programs do not have sufficient resources, funding, or staffing to conduct dam safety inspections, to take the appropriate enforcement actions, or to ensure proper construction by reviewing plans and performing construction related inspections.

For example, Texas has only seven engineers and an annual budget of \$435,000 to regulate more than 7,400

dams. That means each inspector is responsible for more than 1,050 dams. Worse still, Alabama does not have a dam safety program despite the fact that there are more than 2,000 dams in the state.

Similar problems exist across the US as the number of dams determined to be unsafe or deficient has risen from 3,500 in 2005, to 5,800 in 2007. The illustration of number of deficient dams in the US by repair status provided by the Association of State Dam Officials demonstrates the increase in the number of high hazard dams that need to be repaired compared to the number of completed repairs to high hazard dams, remains flat.

Obviously, the rate of dam repairs is not keeping pace with the increase in the number of high hazard dams that need rehabilitation.

### Partial solution

While the fiscal stress remains high for the states, the federal stimulus bill includes \$27.5 billion for highways- roads and bridges.

And energy-related projects are supported by the stimulus bill's \$30.6 billion in spending and tax incentives.

Certainly, the combined highway-road, bridge, and energy funding of \$58.1 billion is better than a hot poker in the eye... However, it is nowhere near the amount needed to make a material impact when compared to the actual need.

So it begs the question: Will there be another stimulus plan? Well there is enough statistics to support the need from a risk management standpoint considering the factors provided by the American Society of Civil Engineers, Federal Highway Administration, American Road & Transportation, and Association of State Dam Officials.

Maybe the current administration on Capitol Hill will eventually stop trying to solve all the world's problems and see the solution is right under our own two feet. **act**



### Number of deficient dams in the United States by repair status

YEAR	# OF DEFICIENT DAMS	# OF HIGH HAZARD DEFICIENT DAMS	# OF HIGH HAZARD REPAIRED DAMS	# OF HIGH HAZARD DAMS NEEDING REPAIR
2001	1,348	488	124	364
2002	1,536	646	163	483
2003	2,004	648	120	528
2004	3,000	979	100	879
2005	3,271	1,367	138	1,229
2006	3,346	1,308	139	1,169
2007	4,095	1,826	83	1,743

Source: Association of state dam safety officials