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Breached Levees, Fallen Bridges: Is American Infrastructure in Crisis?



Courtesy of Timothy A. Clary/AFP/Getty Images

A destroyed tow truck sits in a hole in the ground at the site of an underground steam pipe explosion on July 18, 2007, in New York City. The explosion tore a crater in Lexington Avenue near Grand Central Terminal, sending residents running for cover amid a towering geyser of steam and leaving asbestos in the dust that settled, but city officials said tests indicated the air was safe of the carcinogen.



Courtesy of Kevin Rofidal/U.S. Coast Guard

Cars rest on the collapsed portion of I-35W Mississippi River Bridge, after the collapse on August 1, 2007. This was featured as one of the 12 most powerful photos of 2007 on ABC News on-line.

Editor's Introduction

In January 2009, the American Society of Civil Engineers (ASCE) issued its Report Card for America's Infrastructure. In compiling the grades, ASCE analyzed the conditions of a range of the nation's critical facilities, from roads and bridges to dams and levees. The results were deeply troubling. No aspect of U.S. infrastructure warranted a grade higher than a C+, while such vital components as drinking water, wastewater treatment and disposal, levees, roads, and inland waterways each earned a D-. In all, the combined grade point average (GPA) for all American infrastructure was a disappointing D. According to ASCE calculations, an investment of \$2.2 trillion dollars over the next five years was required to bring these facilities up to speed.

While President Barack Obama's national stimulus package, the American Recovery and Reinvestment Act of 2009, allotted considerable money towards infrastructure improvements, it did not approach the \$2.2 trillion figure called for by ASCE, and given record budget deficits and a difficult economic picture, the necessary funding will not materialize anytime soon. As a consequence, ASCE's goals are likely to remain unmet for the foreseeable future.

Of course, not everyone agrees with ASCE's grim assessment, and while few would claim that our infrastructure is in peak condition, many believe the dire warnings about an infrastructure crisis are overblown. The articles in this chapter attempt to ascertain just what sort of condition our critical facilities are in, noting which sectors are especially in need of revitalization and how such ends might be achieved.

For Burt Solomon, the author of the first selection, "The Real Infrastructure Crisis," the problem with our public facilities is not their physical condition, but rather an overall lack of investment. Our infrastructure functions adequately for the most part, he observes, but we are not building for the future. Since the 1980s, he contends, the American taxpayer has been reluctant to pay for improvements while infrastructure spending itself has taken on increasingly political overtones. We need to choose "between a world-class infrastructure and muddling through," Solomon says, adding that the decision will be made in what he calls "the political marketplace." "If Americans get disgusted enough, they'll do what it takes," he concludes. "Otherwise, they won't."

In the congressional elections of 2010, the Republican Party won control of the U.S. House of Representatives and critical governorships across the country. In “Reverse Gears: A New Reality for Public Works?” John McCarron discusses how these outcomes are likely to affect infrastructure funding and various public works projects. A foreshadowing of this change of gears occurred shortly before the elections, in the state of New Jersey, when Republican governor Chris Christie pulled the plug on the planned construction of a new Hudson River tunnel connecting New Jersey to New York City. Since the election, McCarron points out, Republican governors in Ohio and Wisconsin refused hundreds of millions of dollars in federal funding for passenger rail construction. Whether wrongheaded or not, McCarron notes, these decisions represent a sea change in infrastructure planning. As Steve Elkins, a city councilman from Bloomington, Minnesota, observes, “The building binge is over. Now our mantra has got to be ‘fix it first.’”

In the subsequent entry, “Look Out Below! America’s Infrastructure Is Crumbling,” Eric Kelderman reports on some alarming statistics: more than a quarter of U.S. bridges are obsolete or require major repairs; one in three major thoroughfares are in poor condition; failing sewer systems annually spill around 1.26 trillion gallons of raw sewage into the environment; while an increasing number of dams are in danger of collapsing. Such figures lead Donald F. Kettl of the University of Pennsylvania to observe, “Much of America is held together by Scotch tape, bailing wire and prayers.”

In “American Collapse,” Sarah Goldhagen attributes what she perceives as our increasingly substandard infrastructure to two principle causes. First, our settlement and transport patterns have evolved from the “city-suburb-exurb-farmland” model to one dominated by metropolitan regions. The earlier setup could be adequately managed by the federal-state-local government structures that were in place. Metropolitan regions are not so easily organized, however, as they often stretch across several states and numerous distinct municipalities, making coordination and long-term planning difficult. The second reason, Goldhagen observes, is that the federal government has increasingly delegated infrastructure responsibility to the states, which often lack the funds and the will to invest in the ambitious projects needed to build 21st century facilities.

Jonathan Masters considers what the next steps in infrastructure development ought to be by speaking with four experts: Robert Puentes, a Senior Fellow at the Brookings Institution; Stephen Goldsmith, New York City Deputy Mayor for Operations; Richard Little, Director of the Keston Institute for Public Finance and Infrastructure Policy; and Felix G. Rohatyn, a former investment banker and U.S. ambassador to France.

Erik Sofge, in “Rebuilding America Special Report: How to Fix American Infrastructure,” discusses an investigation into the state of the nation’s infrastructure by *Popular Mechanics*. While noting the many shortcomings illuminated by the inquiry, Sofge also highlights some innovative solutions that might be put to use to address them.

In the final piece, “A New Bank to Save Our Infrastructure,” Rohatyn and Everett Ehrlich discuss the proposals of the Commission on Public Infrastructure at the Center for Strategic and International Studies (CSIS). The main initiative put forward by the Commission is one Rohatyn discusses earlier in this chapter: the establishment of a National Infrastructure Bank, which would act as “a private investment bank . . . that evaluates project proposals and assembles a portfolio of investments to pay for them.”

The Real Infrastructure Crisis*

By Burt Solomon

National Journal, July 5, 2008

It's a frighteningly familiar catastrophe to imagine. An earthquake in Northern California ruptures 30 levees along the converging Sacramento and San Joaquin rivers, and 300 billion gallons of saltwater rush inland from San Francisco Bay, flooding 16 islands and ruining the supply of fresh water across two-thirds of the nation's most populous state. Or picture this: In southern Kentucky, the 55-year-old Wolf Creek Dam (where water has seeped through the foundations for years) gives way. The breach lets loose the largest man-made reservoir east of the Mississippi River, flooding the communities along the Cumberland River and shorting out the electric guitars in Nashville.

These were the top two horror stories—"5 Disasters Coming Soon If We Don't Rebuild U.S. Infrastructure"—that *Popular Mechanics* conjured up for its readers last fall, after the collapse of a bridge in Minnesota killed 13 innocents on their way home from work. The stunning sight of an interstate highway plunging into the Mississippi River, just two weeks after a steam pipe exploded beneath Lexington Avenue in Midtown Manhattan—and less than two years after Hurricane Katrina brought New Orleans to its knees—dramatically brought the nation's fallible infrastructure to the public's attention. So, too, did the overwhelmed levees along the Midwestern rivers during the recent rains. And so did the garden-variety failures, such as the water main break on June 16 in Montgomery County, Md., bordering Washington that forced some of the capital's bigwigs to boil water before brushing their teeth.

In the mammoth but aging networks of roads, bridges, railroads, air traffic, sewers, pipelines, supplies of fresh water, and electricity grids that helped turn the United States into the world's economic superpower, other dangers lurk. All over the country, clean-water and wastewater facilities are wearing out. The combined sewers that 40 million people in 772 cities use could discharge their raw contents

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into waterways when the next storm passes through. Every summer brings the possibility of blackouts.

Traffic gridlock has become a fact of life, jamming the highways and airways and creating bottlenecks of goods through the ports, especially around Los Angeles and New York City. The American Society of Civil Engineers has classified 3,500 of the nation's 79,000 dams as unsafe; in a 2005 report card on the nation's infrastructure, the society assigned grades that ranged from C+ (for the proper disposal of solid waste) down to D (for the supply of drinking water and the treatment of wastewater).

Talk of the "crisis" in the nation's physical infrastructure has leapt beyond think-tank forums and earnest editorials. It has quickened legislators' interest, generated heartfelt lobbying on Capitol Hill—expected to climax next year when Congress must reauthorize the pork-laden highway program—and nosed its way into the presidential campaign.

Experts, however, consider "crisis" an overblown description of the perils that America's infrastructure poses. Federal investigators have tentatively concluded that the ill-fated Interstate 35W in Minnesota collapsed not because it was structurally deficient—although it was—but because of a design defect: The gusset plates connecting the steel beams were half as thick as they should have been. Nationwide, bridges are in better structural condition than they were 20 years ago, and the most critical of the nation's 4 million miles of roadways are in pretty good shape. In the transportation system, "the physical condition has not noticeably deteriorated . . . in the past two decades," said Katherine A. Siggerud, the managing director of physical infrastructure issues at the determinedly nonpolitical Government Accountability Office. "The condition of the most-traveled roads and bridges in the United States, the interstates and the national highways, [has] improved in quality."

The more serious problem is the lack of roads and the traffic congestion that this shortage creates, especially around major cities. In the nation's airways, too, congestion has become chronic, especially at airports in the Northeast. But Gerald Dillingham, the GAO's director of civil aviation issues, doesn't see a crisis in the near or midterm, and he is hopeful that better technology and new ways of structuring the airways can stave off disaster for at least the next 15 years. The Transportation Department has calculated the overall economic cost of congestion at \$200 billion a year, surely a drag on the nation's commerce, not to mention a vexation to anyone stuck in traffic. Still, in a \$14 trillion economy, that amounts to 1.4 percent—a pittance.

Fixing the nation's infrastructure is "a matter of fine-tuning the economic production system," said Kenneth A. Small, an economist who specializes in transportation at the University of California (Irvine), "not a matter of moral outrage." Rudolph G. Penner, a senior fellow at the Urban Institute, said, "I'd call it a problem, not a crisis." Even the lobbyists who urge more spending on the nation's infrastructure acknowledge that the assertions of impending doom are an exaggeration. Janet F. Kavinoky, the director of transportation infrastructure at the U.S. Chamber of

Commerce, is the executive director of Americans for Transportation Mobility, an alliance of construction companies and labor unions. “If you don’t say it’s a crisis,” she explained, “nobody shows up at your press conference.”

Nor is the country ignoring the issue. The nation’s spending on infrastructure continues to rise; New Orleans is rebuilding the levees that Katrina breached. “The things that need to get done are getting done, by and large,” said Timothy P. Lynch, the American Trucking Associations’ senior vice president for federal relations and strategic planning.

This isn’t to say, of course, that all is hunky-dory. The future of U.S. infrastructure could be grim indeed if too little is done. At the core, it’s a question of cost. Bridges and roads are expensive—to build or to fix—and so are mass transit, airport runways, and almost everything else. The civil engineers issued a widely invoked price tag of \$1.6 trillion over five years to do what needs to be done, but even champions of a strong infrastructure find such a number inflated—“a compilation of a wish list,” the ATA’s Lynch said.

Moreover, investment bankers say that plenty of capital is available for work that is critical to the nation’s well-being. What may be missing, however, is the political will to spend this capital. Increasingly, legislators and local governments are trying to arrange infrastructure financing in ways that conceal the true costs from taxpayers, who are reluctant to foot the bill, and that may transfer the financial burdens to future generations. If the measure of a society’s responsibility is its willingness to invest for the long run, then the crisis in infrastructure is this: Do Americans possess the national will to pay for what their children and their children’s children are going to need?

ANCIENT ROME MEETS REAGAN

Only occasionally has a civilization made its infrastructure an emblem of its ambition or greatness. Consider, notably, the marvels of ancient Rome—its roads, its aqueducts, its public baths and lavatories, its Colosseum and other sites of public entertainment. Conceived as a military necessity to assure the movement of troops through a far-flung empire, Rome’s extravagant and enduring infrastructure took on other functions, too. As a public benefaction, it gave the state a way to justify its own existence, according to Garrett G. Fagan, a historian at Pennsylvania State University, and the many amenities that wealthy families financed served as “a kind of social compact between the upper classes and the poorer classes.” The boldness and breadth of Roman infrastructure, Fagan said, “go a long way to explain why the empire lasted so long.”

The United States has often shown a similar ambition. In 1808, after Thomas Jefferson’s Louisiana Purchase added a vast wilderness that stretched as far as the future Montana, Treasury Secretary Albert Gallatin proposed a national transportation network of roads, rivers, and ports.

In the following decades, Henry Clay of Kentucky lent his legislative weight in the House, and then in the Senate, to the “internal improvements” of canals and railroads. Abraham Lincoln, even as he struggled to win the Civil War, pursued plans for a transcontinental railroad. Theodore Roosevelt, so fond of proclaiming the needs of “future generations,” convened a conference of governors that resulted in water projects that irrigated the West and generated electricity cheaply; his list of ventures-still-undone gave TR’s fifth cousin, Franklin D. Roosevelt, a starting point when he tried to spend the nation out of the Great Depression. Then, in the postwar boom of the 1950s, President Eisenhower pressed for a system of interstate highways that knitted the nation together and bolstered its economy. As late as the 1970s, after the Cuyahoga River in Cleveland caught fire in 1969, the federal government invested tens of billions of dollars in sewer systems and wastewater treatment plants.

Taxpayers’ generosity toward the nation’s infrastructure, however, took a dive during the 1980s. President Reagan’s aversion to using taxes for domestic spending, exacerbated by Wall Street’s obsession with quarterly earnings, encouraged a shortsightedness in assessing the public good. According to Sherle R. Schweninger, the director of the New America Foundation’s economic growth program, the money that government at all levels has devoted to infrastructure, as a proportion of the nation’s total economic output, slipped from 3 percent during the 1950s and 1960s to only 2 percent in recent years.

“We’ve just not reinvested,” former Council of Economic Advisers Chairman Martin N. Baily complained at a Brookings Institution forum last fall, “because nobody wanted to raise the taxes to do that.” Even in Katrina-devastated Louisiana, when the Army Corps of Engineers announced in 2006 that its estimate for fixing the levees had ballooned from \$3.5 billion to \$9.5 billion, the state’s politicians and editorial writers wailed.

NOT TO WORRY

It wouldn’t take many years, or so it is said, before the weeds poked up through a neglected interstate highway. Not to worry. Even as the nation’s enthusiasm for long-term investments has flagged, the total amount of money spent on its infrastructure has continued to grow. As the federal share has shrunk (from 32 percent in 1982 to less than 24 percent in 2004, according to the Congressional Budget Office), state and local governments have picked up the slack. Counting all levels of government, public entities spent \$312 billion on the nation’s transportation and water infrastructure in 2004, three times as much—after taking inflation into account—as in 1956, when Eisenhower’s heyday began.

Has the U.S. underfunded its infrastructure, on which its economy rests? “Compared to what we really need, I think so,” said Penner, a former CBO director, “but relatively slightly.”

Consider, for example, the state of the nation's bridges. Last summer's tragedy in Minnesota cast a spotlight on the Federal Highway Administration's alarming conclusion that, as of last December, 12 percent of the nation's bridges were structurally deficient. But less attention was paid to the fact that this proportion had shrunk from 13 percent in 2004 and nearly 19 percent in 1994. Nor was it widely noticed that the label of "structurally deficient" covered a range of poor conditions, from serious to far less so. Fewer than a tenth of the tens of thousands of bridges deemed deficient are anywhere close to falling down. (A Federal Highway Administration spokeswoman said the agency does not have summary information about the location and size of the worst bridges.)

The surge of bridge inspections that followed the disaster in Minnesota turned up a second bridge with bowed gusset plates across the Mississippi in Minneapolis-St. Paul—it was immediately closed and slated for repairs—and another one in Duluth. The Minnesota Legislature found numerous shortcomings in the state inspectors' work on the I35 bridge that had been tagged as structurally deficient for some cracking and fatigue. According to the National Transportation Safety Board's investigators, however, the inspectors were not the problem. Indeed, the investigators cited the effort to repair the bridge, which entailed piling construction supplies and equipment on its overburdened deck, and the thin gusset plates as the likely leading causes of the I35 collapse. The more that they have learned about the disaster, the less it has served as a morality tale.

As for a fear of falling bridges, "I don't really think we're in a crisis," said economist Small. He also mentioned the "pretty strong" system of bridge inspections and placed the 13 deaths in Minnesota into the context of all U.S. traffic fatalities, which average 120 a day. "If you plot the statistics," he noted, "you might not notice the bump."

On the roads, too, drunk drivers or malfunctioning vehicles cause many more deaths than potholes or crumbling concrete. The roads are OK, but there aren't enough of them to hold the traffic, and building more will only increase demand. The gridlock is worst of all around Los Angeles, the San Francisco Bay area, Chicago, New York City, Atlanta, and Washington, but it has also spread into unlikelier venues. A third lane is being built along certain truck-clogged stretches of Interstate 80 in Iowa and Nebraska. The GAO's Siggerud pointed to "bottlenecks in every mode of transportation," which stand to get worse. The Federal Aviation Administration has predicted that air traffic may triple during the next two decades, and the American Road & Transportation Builders Association has forecast that the volume of cargo on U.S. roads will double. In Los Angeles, the freight volume is expected to triple as the population grows by 60 percent, producing strains that the U.S. chamber's Kavinoky warned "will paralyze the city."

Ian Grossman, the FHWA's associate administrator for public affairs, lamented the Little League games unattended and the volunteerism in decline because of congestion. "It shouldn't be a fact of life," he said.

The economic impact of the bottlenecks has been "woefully understudied," according to Robert Puentes, an expert in infrastructure at the Brookings Institution,