

The U.S. infrastructure deficit: requirements reach \$3.5 trillion

by Richard Freeman

In July and August 1983, two water-main breaks occurred in New York City, one causing a fire that shut down power supply in the garment center area for five days. Sixty percent of New York City's water mains are over 80 years old. At the same time, a major water main broke in Boston; a PATH train terminal station roof collapsed in New Jersey, killing two and injuring more than 10; the Mianis bridge and part of the interstate highway system collapsed in Connecticut, killing three—if the collapse had not occurred at 3:00 a.m., hundreds would have been killed.

Over the past three years, the following national catastrophes have occurred:

- The storm drains in New York City became unable to handle the volume of a summer rainstorm; run-off caused untreated sewage to flow into nearby rivers.
- A dam, rated hazardous three years ago, burst in Colorado. Four people were killed, and survivors were left with millions of dollars in damages.
- Courts across the country released criminals early from prisons because of overcrowded and antiquated facilities.
- A bridge near Toledo was weight-restricted and heavy commercial traffic faced a 23-mile detour into the city. Consumers paid the increased costs for goods and services.
- An 80-year-old water tunnel broke in 1982 and more than 300,000 New Jersey residents lined up for nearly a week to get fresh water from National Guard supply trucks.
- County officials in Arizona, facing massive highway repair bills, ripped up 250 miles of potholed highways and replace them with graveled roads.

Productivity determinants

This perilous condition of the roads, bridges, waterways, irrigation systems, transport, energy systems, and related infrastructure required for industry and agriculture is no-

where reflected in the Federal Reserve's industrial statistics. Yet these determine the economy's potential. If infrastructure is collapsing, as it is today, even the most advanced industrial processes must eventually collapse with it.

The first Treasury Secretary of the United States, Alexander Hamilton, emphasized in his 1789 "Report on Manufactures" to the U.S. Congress, that the state of a nation's infrastructure determines the level of its tax revenues, and its productivity in industry and agriculture. Over the past two decades, by any standard, America's internal sinew, its infrastructure, has disintegrated at galloping rates with little replacement.

During the 1950s and 1960s, state and local government spending for capital projects had grown, reaching a high point of \$22 billion (in constant 1972 dollars) in the late 1960s. But in the mid-1960s, the Johnson administration's "Great Society" program began to shift the economy from industrial to "post-industrial," i.e., away from capital projects and scientific advances.

By 1981, state and local government capital spending had fallen to less than \$3 billion in constant 1972 dollars. At the federal level, construction grants as a share of total grants to states and localities fell to 25 percent by the late 1970s, from 44 percent in the early 1960s. Nixon's impounding of federal funds for localities in the 1970s in order to balance the budget was followed by high interest rates since Volcker took over at the Fed in late 1979. State and local governments have now plunged into budget crises, cutting capital budgets and eventually operating budgets as well. The result is an infrastructure disaster of national-security proportions.

Infrastructure needs

This partial list reflects a deficit in the national infrastructure bill of materials—cheating that can't go on forever.

Totaling infrastructure needs in each section of the economy, *EIR* estimates the deficit at \$3.5 trillion: the magnitude of investment required over the next decade to repair and rebuild the nation's infrastructure. Many of these sectoral estimates have been reported by U.S. government agencies, private trade associations, and economists.

The infrastructure bill of materials includes:

Highways and bridges outside urban areas: \$1 trillion

City streets: \$600 billion

Municipal water systems: \$125 billion

Ports and inland waterway systems: \$40 billion

Constructing and renovating up to 3,000 prisons and jails: \$15 billion

Completing current nuclear power plants and building new ones: \$300 billion

North American Water and Power Alliance plan for irrigation, hydroelectric power, and transportation from Alaska to northern part of Mexico: \$250 billion

Railroad repairs and construction: \$94 billion

In addition, an estimated \$1 trillion, \$100 million a year over 10 years, is required above current levels of spending to **modernize U.S. plant and equipment**—which can properly be viewed as categories of basic infrastructure.

The specific tasks subsumed by this list include:

National highways: The Department of Transportation has documented that the nation's 42,944-mile interstate-highway system, begun in the 1950s, is crumbling. Pavements erode in 15 years or less, and maintenance expenditures since 1980 have been minimal. Although the interstate system constitutes less than one percent of the nation's highways, it handles over 20 percent of all highway traffic. *At the current rate of erosion, 2,000 miles of highway erode every year.* Assuming 1973-80 average levels of construction costs, it will require approximately \$75 billion to build the 1,500 miles of road planned to complete the nation's interstate highway system, and an additional \$625 billion to rebuild worn-out road or road that will become obsolete during the next 10 years.

In even more serious decay are the 3.9 million miles of roads totally funded by states, counties, and cities. A recent survey by the Road Information Program, a Washington research group, showed that almost two-thirds of major roads need resurfacing or rebuilding. Further, pre-stress concrete begins to give way after 20 years, if steel bars are exposed to water because of lack of road repair. One engineer states, "My biggest fear is that some bridges and sections of highway built with pre-stress concrete could snap like guitar strings."

Bridges: Nearly 45 percent of the nation's 557,516 bridges is classified in a recent official report as "either structurally deficient or obsolete." These include 26 percent of the bridges on the federally aided road system that carries most of the nation's traffic. Of the total of officially "deficient bridges," 126,655 are so unsafe as to be restricted by federal law to light vehicles or closed altogether pending rehabilitation.

U.S. Steel reports, for example, that it spends an extra \$1 million a year detouring its trucks around a closed bridge in Pittsburgh. At least 3,416 of the "deficient" bridges have been closed for good. The Department of Transportation places the cost for rehabilitating, or, where necessary, rebuilding, the nation's bridges at \$47.6 billion. Yet the fiscal 1981 Federal Highway Administration budget allocated only \$1.3 billion to bridge repair.

A 1982 survey by the Federal Highway Administration study found that spending an extra \$4.3 billion to fix dilapidated bridges and roads *could save 480,000 injuries and 17,200 lives over 15 years.*

City streets: It takes 100 pounds of asphalt to fill the average pothole; the record cold winter of 1982 left between 250,000 and 1 million potholes in Chicago alone.

Locks: Bottlenecks at the nation's locks are seriously affecting shipping, particularly shipping of farm products and coal. According to a recent Army Corps of Engineers study, the average age of 184 principal locks on the inland waterway system is 40 years old; 56 are over 50 years old and obsolete. Many locks are expected to be congested in the next few years or to actually restrict waterway traffic. A minimum of \$9.7 billion is needed over the next 20 years to repair and modernize the locks.

Waterways: The waterway system was extended and developed in the period following World War II, without much attention to maintenance. It is estimated that \$32 billion for dredging and maintaining facilities and canals over the next 20 years is needed.

Ports: The General Accounting Office has cited the need to deepen ports as the most urgent navigation issue facing Congress. Over the next 20 years, the United States will have to spend \$3.5 billion to accomplish this.

Dams: Thirteen percent of the dams surveyed by the Army Corps of Engineers has been classified as "high hazard" because of their potential to endanger human life and damage property. No cost assessment has been made for all dams, but those under the jurisdiction of the Bureau of Reclamation require an average investment of \$13.5 million; for the 8,794 high-hazard dams identified by the Corps of Engineers, the total cost of repair would accordingly reach \$119.4 billion.

Factory plant and equipment. *EIR* estimates the minimal requirement for new factory plant and equipment at \$1 trillion. This need is in part disguised by the fact that the current plant and equipment spending of \$330 billion reported by the Commerce Department includes payments for leasing fees, interest charges on bond amortization, purchase of car fleets, and so forth. The proportion of machine tools in American factories 20 years or older has grown dramatically over the past 10 years, according to the National Machine Tool Builders Association. The steel industry, by its own admission, is making less than half the capital spending per year that is required just to hold the line against further collapse in plant and equipment.