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Classes were not yet in session when the cafeteria roof collapsed at Houston Gardens Elementary School in 1996, just two months after a bond issue to pay for its repair was defeated by voters.

The High Cost of Low Maintenance

BY RIVES TAYLOR

What is the cost of our public infrastructure? Is it measured solely in capital—in design, construction, and furnishing costs? Or does it also include the cost of interest and real estate? Does it include the cost of operations and energy over the lifetimes of the buildings? Does it include the costs of neglect?

Only after the most visible disasters befall our public edifices is the tax-paying public reminded that our range of public works is aging rapidly. Observers of Houston's underground water network, the locks and dams of the Mississippi, and the roads and bridges of the federal highway system regularly report severe damage to these structures. In our own community less than ten years ago, the Houston Independent School District's building inventory was collapsing around students and faculty (see image). These dramatic failures led to a volunteer effort on the part of local architecture and engineering professional associations, followed by an emergency bond issue and a rapid renovation-and-rebuilding campaign. Harris County Judge Robert Eckels recently was reported to be investigating the condition of county facilities (which in some cases is far better than those of the state, city, or federal edifices). The problem all around is inadequate funding to maintain buildings, compounded by a lack of planning to handle the inevitable results of such deferred maintenance.

What is this deferred maintenance problem? For any road or building, public or private, as soon as capital dollars are fully expended on construction, other operational dollars (often more difficult to obtain) need to be spent to energize, cool, housekeep, secure, and (too often minimally) maintain it. But whether the money is there or not, nothing halts the march of time—or the weather, or the results of normal wear and tear.

Most older institutional buildings were solidly constructed for at least 50 years of life, some even more. Still, some components of those buildings, particularly roofs, wall systems, and mechanical systems, cannot last that long. So, as the countrywide 1960s and 1970s building stock ages, either the lives of individual buildings come to an end while they are still in heavy use, or increasing attention (and money) must be paid where public agencies did not plan for expenditures before. The public realm also includes a host of more recent low-bid constructed projects whose life span is much less robust—say, ten years or less before major failures occur. There have been some reports in the national press that at the state level across the country, we have in excess of $100 billion of critically problematic buildings.

In the meantime, facility operation teams make do. This maintenance style becomes complicated when the failure of one system (e.g., a water leak in a pipe, roof, or window) damages another part of the facility (e.g., mold and mildew in the wall below the leak). Public facilities also face the evolution and changing uses that all organizations must confront—once again this need to adapt is often put off or partially, and often hastily, completed. (True-life example: Office space is converted to laboratory space, and files, desks, and office workers are relocated to a closet.) Finally, public buildings can be grandfathered for only so long—life-safety systems, such as fire suppression and exits, eventually must come up to code. This interrelated mix of facility shortcomings increases with a building's age, and is made more problematic when facilities are poorly designed in the first place.

The deplorable condition of our community's buildings is daunting, if not terrifying. One snapshot shows the depth of the problem: A 2002 report gathered by the Texas Higher Education Coordinating Board noted that 4 percent of the total value of all university and college buildings has major deferred maintenance issues (http://www.thecb.state.tx.us/CampusPlanning, see reports). In other words, the state of Texas in 2002 contained $14.4 billion of higher education facility assets, and $542 million in repairs were needed to maintain their functionality and safety. That figure is roughly equivalent to the cost of rebuilding the University of Houston Central Campus every year. The true rude awakening, however, is the fact that in 2002 the state of Texas found only $105 million, or 20 percent of the funds, to fix these issues.

Where can that remediation money come from? In most public institutions, unless disaster strikes (attracting legislative attention and funding), the money comes from internal facility funding sources, usually only 8 to 10 percent of an institution's budget. In Texas, as in so many states hit by recent financial setbacks, the directed state money just to maintain and operate facilities—much less to repair aging and unsafe situations—has seen major budget reductions. Furthermore, these same dollars have to meet staff and energy costs, which have also risen. This comes at a time in Texas when the huge quantity of mid-20th-century public buildings needs even closer attention.

The real calamity is that deferred maintenance costs increase exponentially over time, yet tend to be ignored in favor of visible cosmetic repairs. National facility associations target a conservative annual expenditure of 8 percent of appraised value as the minimum necessary to maintain a real estate asset. When a house owner looks to maintain a $100,000 home, will he spend $8,000 per year, every year, to maintain the value of the building? If the owner will spend that figure, will he choose a new kitchen or a new roof for the expenditure? We often choose to maintain what we see and touch every day over the unseen infrastructure, whose failure could bring the whole house down. With the constant ravages of time and weather, and a continually deferred response to repair, failure multiplies with failure. The first year $8,000 should be spent; if it is not, the second year and each year thereafter will be even more expensive. The owner who waits three years before investing in maintenance might require $10,000 a year, every year. Both the behavior and the unintended consequences scale easily to the public realm, often with numerous owners or stakeholders involved.

The snowballing price of all that deferred maintenance for the entire retinue of local, state, and federal structures is compounded by new building practices as much as by operational practices. Public buildings often do not receive thorough, high-quality design attention. The mantra of fast and cheap construction, and the attendant low fees for design, spell doom for longevity. Our growing problem first needs to be recognized for what it is: a progressive decay that requires funding to be reversed. Finally, the public realm needs to place value on life-cycle cost thinking—that is, what is spent on the building, its staff and its operations over 50 years—as opposed to fixating on low first or construction costs delivered at breakneck speed. ■