

LEARNING FROM THE

Big Dig

What lessons can be drawn from an engineering triumph now marked by tragedy? We asked eight expert observers for answers.

MORE THAN THREE MONTHS AFTER a ceiling panel collapse took a life and further besmirched the new roadways' already tarnished image, traffic should be returning to normal through the Central Artery/Tunnel project, better known as the Big Dig. Far less likely to return to normal any time soon, if ever, are public attitudes about this nearly \$15 billion mix of highways, tunnels, and soaring spans that have reshaped not only regional transportation, but the very surface of a city. People had grown accustomed to the Big Dig's delays and even its spectacular sticker shock. They had been muted in expressing their disappointment about the slow emergence of the Rose Fitzgerald Kennedy Greenway, which was to be the biggest public-amenity payoff for more than a decade of disruption. But after the July 10 death of Milena Del Valle, what had been a long simmer became a rolling boil of shock and outrage.

State and federal probes into the tunnel failure may yield answers about who or what was responsible for the accident. And in this political season, fingers will be pointed, even as the pointers decry those who play the blame game. But for all the swirl, a couple of realities remain. The first is that the Big Dig, despite its problems and costs, represents an unprecedented physical improvement for the city and region, and an extraordinary feat of engineering and construction. The second is that Massachusetts needs a lot more work on its aging roads, bridges,



public buildings, and other infrastructure, some of which is already endangered. While no single capital project is likely to achieve the “mega” status of the Big Dig, the total inventory of public works in the pipeline or needing to get there fast represents an enormous fiscal and management challenge for the Commonwealth and its communities. As Massachusetts ponders major public works for the future, what lessons—positive and negative—can be gained from the Big Dig experience?

That’s the question *CommonWealth* put to a range of experienced public managers, Big Dig veterans, and other knowledgeable observers, none of them involved with the project today. (See also *CW*’s interview with Fred Salvucci, the Dukakis-era secretary of transportation who planned the Big Dig but has long been critical of the project’s management, page 66.) In their responses, certain common themes emerge, some of them predictable: The state needs to keep a tighter check on the private firms it uses to manage such projects; costs must be more carefully calculated and monitored; public works priorities should be set more systemically. But each of our eight experts has something unique to say about public owners, private contractors, and the community they ultimately serve—or disappoint.

—PHIL PRIMACK

DOUGLAS MACDONALD

‘Earn, maintain, and now restore public confidence’

After nine years as executive director of the Massachusetts Water Resources Authority (MWRA), Douglas MacDonald became secretary of transportation for the state of Washington in April 2001. Among other prior experience, he served as chief legal counsel to the Massachusetts Port Authority from 1976 to 1981.



THE FALLING TUNNEL roof seems to have precipitated a total collapse of whatever was left of public confidence in the ability of public investment in infrastructure in Massachusetts to produce anything people can rely on. And some of that is misplaced. Even beyond the very real engineering and construction achievements of the Big Dig, the last 15 years have seen an enormous amount of infrastructure renewal, from Boston’s

water and sewer system and airport to a new downtown [emergency-response] communication infrastructure installed as part of the Big Dig. But the sense that Massachusetts has actually been a leader in modernizing infrastructure has been lost on people because of the Big Dig’s problems.

The root of this erosion of public confidence isn’t actually the water leaks or even the recent tragic death. It’s the obvious overlay of political inattention and distraction that invaded the project, essentially beginning with the Weld administration. The Big Dig is a case study of non-transparency and lack of accountability, in any meaning-

‘You need transparency... whether it involves a \$150,000 asphalt repaving or a \$150 million highway expansion.’

ful way, to citizens. The unfortunate death, like leaks and other problems, pulled aside the curtains to [reveal] the poverty of leadership in fairly and honestly presenting the project to citizens. Getting good engineers and doing a good job at managing contractors is a necessary but not sufficient strategy to earn, maintain, and now restore public confidence that tax dollars can be spent well.

When people compare the MWRA and the Dig, they often talk about the fact that the MWRA benefited from having a federal judge [who oversaw the harbor cleanup]. That was important, but what people have not talked about enough is the role of the MWRA board of directors, which is the unsung hero of the harbor cleanup. The board insisted on accountability, meaning a constant flow of timely and honest information from managers and engineers. If you are going to produce accountability, there has to be a forum, an audience. Every month for nine years, I had to go in and answer the board’s tough questions, as did Paul Levy at the outset and [current MWRA head] Fred Laskey [does] today. Then I had to go to the MWRA advisory board, which put me directly in touch with the 61 communities that represent the customers. We had hard questions being asked and answered in real time. You need boards and elected leaders who will make that commitment to leadership.

When I came here [to the Washington State Department of Transportation] in 2001, we had to turn around the impression that the department was part of the problem, because people had become convinced that it didn’t get any work done. We needed to position the agency on a very simple message: The DOT will deliver the projects

and we will be accountable and transparent to the public. And you need transparency about both successes and failures, whether it involves a \$150,000 asphalt repaving or a \$150 million highway expansion. One way we do that is through our Web page [www.wsdot.wa.gov, which provides status reports on all transportation projects, as well as voluminous performance and “accountability” information]. It’s probably way too detailed. But an initiative campaign in Washington to repeal the badly needed 2005 gas tax was defeated in a way that indicated that the politics had changed in favor of getting some of this infrastructure work done. Even anti-tax people said you could go to the Web page and see what was actually being done.

JOSEPH NIGRO

‘Safety is better under a project labor agreement’

Joseph Nigro was secretary-treasurer and general agent for the Metropolitan Boston Building Trades Council from 1986 to 2006.



WITH ALL THE headlines about bad news, people forget something very important and positive from the Big Dig: It had maybe the best safety record ever recorded for a project of its scale. Estimates going in were that you would have one death per million dollars of construction, but in 14 years and \$14 billion, we

had three accidental deaths and one of the lowest rates of injury for any job of this size. That all helped the Big Dig have very few lost-time hours, and that in turn saved the project money.

This was because we worked under a project labor agreement [under which unions agree not to strike in exchange for guarantees of union wages and other benefits for all workers on the job]. Safety is much better under a PLA. People say a PLA is just unions protecting each other, but there is a difference between what the organized building trades bring to a project compared to the unorganized sector. The trades provide complete and continuing training for both journeymen and apprentices, and that helps both safety and quality on the job.

We had joint safety committees that met weekly at the Big Dig. Every person had the right to speak up and say what

he thought was an unsafe condition, like snow on staircases into the Big Dig or not enough ways to get people out in an emergency. And it wasn’t just about safety at the site, but future aspects of the project. If something about those bolts [holding ceiling panels by epoxy] had been said at one of those meetings, for instance, it would have been in the notes, which were usually taken by the shop steward, who handed them over to the contractor. The problem was that [this process] wasn’t as systematic as it should have been. In future projects, I’d make sure all safety reports were recorded and kept forever.

With all the budget pressures now, I worry whether the state is going to be willing to spend what it’s going to require to maintain the Big Dig. I worked on the first Deer Island sewage plant that we finished in the mid 1960s. Twenty years later, it was falling apart because no one took care of it.

Labor always gets blamed for shoddy workmanship, but you only do what you’re told by the people in the field. You don’t argue with the specs on a job. You rely on the engineering team that prepared them. But the state had lost an awful lot of engineering expertise.

KENNETH MEAD

‘The FHA’s job must be more than writing checks’

Kenneth Mead became inspector general of the US Department of Transportation in 1997 after serving for 22 years with the US Government Accountability Office, Congress’s investigative arm, formerly known as the General Accounting Office. As inspector general, Mead was responsible for investigating, auditing, and reporting to the Secretary of Transportation and Congress on DOT-funded operations and programs, including the Big Dig. In February 2006, Mead joined the Washington, DC, law firm of Baker Botts.



ALL ALONG, a problem for the project has been a degree of closeness, where the people who were supposed to be doing the watching and blowing the whistle were holding hands with the people making these decisions at the project management level and at the [Bechtel/Parsons Brinckerhoff] level. Though an engineering marvel and a great contribution to the transportation system, the fact is that the project was like

pigs feeding at the trough, without anyone really checking. And the one they hired to do the checking—Bechtel/PB—was part of the problem. There has just not been appropriate accountability of the officials that were associated with this.

And where was the Federal Highway Administration? It's true that oversight was [the inspector general's job], but what about all those FHA people assigned to the project? Every time there was a major breakdown, they were Johnny-come-lately. They were certainly part of the problem in 2000 [when cost overruns were revealed]. The FHA's job must be more than just writing checks. In the last few years, I have seen folks at the top of the agency say we have to beef up our oversight of these larger projects, but I haven't seen that seep down into the culture of the organization.

The problem in the Commonwealth was both structural and one of expertise. I was appalled by the lack of governance lines [of responsibility] among competing transportation agencies. You had a state highway department with responsibilities in western Massachusetts, but with no responsibilities over anything on the Turnpike, and a separate authority for the Turnpike. What kind of governance structure is that? It took me several years to even believe that things were as bifurcated in fact as they were on paper. I could not

believe [that anyone] would have cobbled together a system like that, of agencies so independent of each other.

Over time, bureaucracies tend to protect their own and think they're doing a good job. The Commonwealth needs to protect against that. With big projects, you need to have

'The project was like pigs feeding at the trough, without anyone actually checking.'

a mechanism where you have people who are not paid to be part of the "yes" team, but whose only job is to go around double-checking everything and identifying when the project is going off course, schedule, cost, or quality. By law, they would be protected from removal and would report to the top level of authorities.

In designing and overseeing projects, engineers are not always of one mind. As problems emerge with the Artery, there could be varying opinions about how to test, how to interpret results, how to fix a problem. I'm sure that the problem of dueling diagnoses will come into play, if



America's Longest Continuously Operating Hotel: 1855-2006

Located across from the Boston Common and on the Freedom Trail in Boston's downtown financial district this luxurious hotel, is the perfect blend of historic charm and modern day conveniences, including 24 hour complimentary health club, 24 hour guest room dining, complimentary wireless internet access in all common areas, and a professional Concierge staff.

Enjoy the intimate atmosphere and contemporary American cuisine of Parker's Restaurant. Unwind by the fireplace at Parker's Bar or try a signature drink at the Last Hurrah. Relax among soothing hues, richly colored fabrics, custom cherry furnishing and well-polished heirlooms in one of our 530 restored guestrooms or 21 deluxe suites.

The Boston Omni Parker House has the perfect setting to host a business meeting or social event with 18 function rooms, and over 23,000 square feet of versatile function space, including the Rooftop Ballroom, the only one in the city, exclusively situated on the fifteenth floor.

OMNI  PARKER HOUSE

60 School Street, Boston, MA 02108
1-800-THE-OMNI
www.omniparkerhouse.com

indeed it has already not done so. If there is disagreement about how to deal with a problem, about whether a test is too costly, about the kinds of tradeoffs being made—those must be delegated to someone very high up in the organization. Calling attention to such disagreements must not be optional. It should be a firing offense not to bring these issues up.

The Big Dig experienced very material difficulties. You start with huge cost and schedule slippage and now you have safety and quality control issues that really, really matter, and probably more issues to come. As the number of mega-projects in this country has increased three- or fourfold in just the last eight years, there are big public policy lessons to learn from the Artery project, from almost every sector one can imagine. I was involved in a project [to rebuild a major bridge in Washington, DC], and we deliberately wrote lessons learned from the Artery project to be sure we didn't repeat them.

JAMES ROONEY

'You need to be a strong owner'

As executive director of the Massachusetts Convention Center Authority, James Rooney oversaw construction of the new Boston Convention and Exhibition Center. Previously, Rooney served for two years as chief of staff to Boston Mayor Thomas Menino. From 1996 to 1999, he was chief financial officer of the Massachusetts Turnpike Authority. He served as assistant project director at the Central Artery/Tunnel project from 1994 to 1996 and has also been deputy general manager of the MBTA.



AS THE PUBLIC agency, you need to be a strong owner and understand that while you share certain goals and objectives with the project manager, it is not complete alignment. You need to balance the concept of teamwork with an appropriate professional relationship and distance. The private sector is better than the public sector at maintaining this balance, at having an arm's-length relationship. A culture of teamwork can be commendable, but it can also blur the lines of who is doing what and who is responsible for what. Part of what we're seeing today [at the Big Dig] is due to a fundamental structural problem in which the owner delegated too much authority to the project manager.

Like the MWRA [with the Boston Harbor cleanup], we hired an owner's representative [for the convention center construction] to provide capacity that we did not have. Clearly, the presence of an entity overseeing the performance of the senior, day-to-day management team had value in both cases that was not present in the Artery project. Having strong boards also made a major difference. If a line agency doesn't have a board structure, maybe it needs a project-specific board made up of people with real expertise. Such a project board would have to have teeth. Massachusetts managers are very good at understanding when something is advisory and when it is real, and they manage accordingly.

When I was at the [Big Dig], Bechtel pushed hard that cost follows schedule, that if you stick to the schedule, the rest will sort itself out. The state bought into that mantra. But when you do business that way, you're inviting trouble. It's like giving out a book of change-order coupons with the bid documents. Cost recovery is always difficult, but it's harder when you complicate it with a system driven by schedule, as this project was. How do you assign blame when something goes wrong? Is it the state's fault for advertising bids before designs were complete? Is it the contractor's fault because they thought the section was opened too soon?

With the convention center, we built in contingencies not just for budget, but for time. The public may not like to hear about delays, but if you're honest and open and tell them why you made the decision, people are smart and they get it.

We were able to recover \$24 million to correct con-

'A culture of teamwork can be commendable, but it can also blur the lines of...who is responsible for what.'

struction flaws due to work by a design entity to which we paid \$42 million. We alleged their errors were responsible for that added cost. We settled as the case went to the jury. The lesson is that you need good documentation and careful preservation of records, especially as you see problems arising.

Maybe the Central Artery/Tunnel project was just too big. One lesson may be that we need to break up major infrastructure jobs into smaller pieces, each treated as a project unto itself, with different contractors and managers. The argument for having one manager for all of the Big Dig was efficiency. But at the end of the day, it was too big for any one manager to handle. You can argue for efficiency, but in this case, that's clearly not what you got.

JAMES STERGIOS

‘Incentives for performance, as well as penalties’

James Stergios is executive director of the Pioneer Institute for Public Policy Research, a think tank committed to “individual freedom and responsibility, limited and accountable government, and the application of free market principles to state and local policy.” As Pioneer’s research director from 2000 to 2002, Stergios authored studies and articles on public construction, among other topics. Before rejoining Pioneer in 2005, Stergios was chief of staff and undersecretary for policy in the Commonwealth’s Executive Office of Environmental Affairs.



I’VE HEARD MANY people talk about the fact that [the problem with the Big Dig] is a matter of privatization, or a public-private partnership. That insinuates that a project of this magnitude, or even the magnitude of a courthouse building construction project, could be done by the public sector [directly]. That’s just not going to happen. That’s not the way we’ve been doing construction for a while. The whole privatization issue is a bit of a detour away from the real issues.

The big picture point is how the thing was structured: Here’s the project, here’s the black box, please take it on. Instead, there should be minimum standards for performance, and there should be financial incentives for performance, as well as financial penalties for not performing. We’re now trying to bargain our way to tens of millions of dollars back from Bechtel [in cost recovery efforts] for project failures. That should have been defined up front. Secondly, Bechtel builds this, with a variety of contractors and subcontractors, but after it’s done, what is their interest in it? If they were on the hook to maintain it, over a longer period of time, wouldn’t they have made sure that the quality of the concrete met standards? Wouldn’t they have made sure the design worked better?

The private sector would have structured this very differently, and a lot of states are now structuring projects differently, through concessionary contracts. Take the Indiana Toll Road. Indiana put it out to a private designer, builder, and manager for a 99-year contract. The Cintra-Macquarie Consortium made a bid that was a multibillion-dollar pay-

ment to Indiana, saying if you allow us to toll the road, we will do all the things you want us to do. So now they’ve begun construction, and Indiana has something like \$3.8 billion they’re putting into other construction projects in their state. If [the private operators] don’t meet certain standards, they lose the upfront money they paid. That’s a huge incentive to do it right. That’s a multibillion-dollar incentive, one that’s not in place here.

I think there’s a limited relation between [problems at the Big Dig] and public construction reforms that were done two years ago. I would say, to the non-expert—and it does matter what non-experts think, because they vote—the idea of working with a private contractor in some of the alternatives [to traditional contracting], like design-build or construction-manager-at-risk, could become soured in the public domain. But I think that’s a very limited risk. If you talk to anybody at the municipal level who’s been working on school building, where the reforms have more traction, they know how bad [things were], and they’re quite willing to work with these new tools. There will be limited impact on the public construction reforms.

ANDREW NATSIOS

‘You need a balance between efficiency and oversight’

Andrew Natsios served as chairman and chief executive officer of the Massachusetts Turnpike Authority from April 2000 to March 2001, taking over management of the Central Artery/Tunnel project after massive cost overruns were disclosed. Natsios had been secretary for administration and finance for the Commonwealth since 1999. From 2001 until early this year, Natsios was administrator of the US Agency for International Development (USAID). He is now on the faculty of Georgetown University’s Edmund A. Walsh School of Foreign Service.



THE FIRST LESSON of the Big Dig is that you need a balance between efficiency and oversight. I would abolish the Turnpike Authority and all the authorities and move them back to state government. The authorities have had a very bad history. Many of the major scandals in state government—the underground garage [a structure at UMass–Boston recently

BigDig REVISITED

closed because of safety concerns], the Turnpike in the early 1960s, and more—occurred under the authorities, which don't have the oversight and controls that exist in state government. I know why Jim Kerasiotes moved the Big Dig to the Turnpike Authority. For the sake of efficiency and speed, he wanted to short-circuit the regulatory systems of state government.

Oddly enough, it was because of what I experienced in Boston that I refused to ignore federal procurement and regulatory systems when it came to rebuilding Iraq and other work at USAID. And this was not a small debate [within the agency]. On the one side, you want to get the work done without mismanagement and scandal, which the laws were created to do. But the laws and rules can be onerous when you want to act quickly. With the Big Dig, because of state and federal pressures on costs, the other set of issues—disclosure and checks and balances and quality control—were

'[Agency boards] too often consist of former legislators or political appointees.'

subordinated over time. Increasing costs distorted the balance needed between transparency and accountability and quality control on the one side, and the cost issue, which had too much focus. Efficiency won over oversight and that had a consequence, some of which we are seeing now.

I'd have the oversight function and the financial management system report to agency boards separately from the people running the project. And you need to put restrictions on who can be on these boards, which too often consist of former legislators or political appointees. When we created a small committee to choose my successor [at the Turnpike], we had deans of the engineering schools. You have all this great talent at universities across Massachusetts. You need to have agency boards made up of deans of engineering, of public administration, of law.

Another issue is the salary for civil servants who work on these major projects. You can make a lot of money being a project manager in the private sector, so the widely experienced people you want don't take these public project jobs. I suggest a separate salary structure, not one to be abused, and an ordered, publicly disclosed system to hire highly qualified people for the life of the specific project.

One reason Big Dig costs went up so much and made people focus on cost to the exclusion of other things such as quality control is that our whole society is very litigious. Lots of political compromises are made to purchase—legally—the support of different interest groups to complete

Cut Energy Costs and Help Build a Cleaner Energy Future



MTC provided IBEW Local 103 with a \$270,000 grant for this 100 kW turbine.

Visit our website

www.masstech.org

MTC is accepting grant applications from homeowners, businesses, and public facilities.

MTC provides rebates for renewable energy installations.



MASSACHUSETTS
TECHNOLOGY
COLLABORATIVE

RENEWABLE ENERGY TRUST

tel 508.870.0312 fax 508.898.9226 www.masstech.org



Advancing business growth.

Nixon Peabody. *Move forward.*



NIXON PEABODY LLP
ATTORNEYS AT LAW

600 attorneys. 15 practice areas. 16 cities.
100 Summer Street • Boston • nixonpeabody.com



Managing Complexity

Government Relations, Public Relations,
Project Development, International,
Health Care, Environment

Boston/New York/Washington/Reston/New Haven

www.mintz.com

BigDig REVISITED

the project. With a very complex and expensive project, a whole series of decisions are made sequentially to get it moving. Unless you get “yes” at every stage, the project is either delayed or costs more. If you don’t pay all that special police-detail money, for instance, the cops will oppose your funding. In the real world, it’s difficult to fix this. Ultimately, you need statutory relief, some constraints on the ability to sue on certain kinds of projects.

DAVID LUBEROFF

‘Rigorously...review costs and benefits’

David Luberoff is executive director of Harvard’s Rappaport Institute for Greater Boston. He is the co-author (with Alan Altshuler) of *Mega-Projects: The Changing Politics of Urban Public Investment* and a former columnist on infrastructure issues for *Governing* magazine.



IN ADDITION TO its important lessons about how to manage major projects, the Big Dig experience raises important questions about how to best select and fund major public works projects. In thinking about selection—which projects we should build—July’s accident, along with other incidents in recent years, should remind us that problems with existing infrastructure can be fatal. So our first priority has to be making sure the existing system is safe and likely to stay that way. Only then can we ask which new projects merit consideration as well.

A governor or state transportation secretary, or both, might consider putting a halt to new projects while they launch a truly credible process—overseen by first-rate, tough, skeptical people—to assess the condition of the state’s whole transportation network and perhaps other critical forms of infrastructure as well. What’s out there that’s dangerous [that] we should be worrying about? We know, for example, that we have to fix the [Storrow Drive Tunnel]. We know the Longfellow Bridge is in really tough shape. We know that some dams aren’t in the best condition.

What we don’t know is what is needed to get the system up to a state of reasonably good repair and keep it there. We can be almost sure, however, that the cost of this work, combined with the cost of the state’s long list of planned, promised, or proposed transportation projects, far exceeds the funds currently available for that work. As a result, the state and

its localities either have to find more money for infrastructure projects or scale back their lists of projects they hope to carry out in the coming years.

One alternative, of course, is to find new revenues, perhaps by increasing the state's gas tax, which hasn't changed in over a decade. Before we do so, we might also want to remember that the Big Dig cost far more than projected, as have many other recent transportation projects. So before we spend another public dollar on new, capital-intensive projects, we might want to rigorously and systematically review those projects' estimated costs and benefits, as the state of Washington is now doing with many of its major transportation projects.

While this effort should produce more plausible estimates, it won't solve the problem that the cost of desired projects far exceeds available revenues. Here the Big Dig's history of cost overruns underscores what I think of as the first rule of public finance for public investments: Those who benefit most from a project should pay a large portion of the project's costs—at least a quarter, probably more. The reason is that when people have to put their own money on the table, they are much more likely to choose projects whose benefits really outweigh their costs. Making that assessment, moreover, makes it more likely to generate accurate estimates of both costs and benefits.

M. DAVID LEE

'Educate and engage the public from the first moment'

M. David Lee is a partner at Stull and Lee, a Boston-based architectural and urban planning firm. An adjunct professor at the Harvard Graduate School of Design, Lee is a past president of the Boston Society of Architects. Lee was the principal-in-charge for his firm's role in the award-winning design of Central Artery Vent Building Number 7, at the Ted Williams Tunnel.



THE PEOPLE IN charge of the Big Dig could have done a much better job at explaining the importance of this project and making the public feel part of the process. This was not just some tunneling job. The public never fully understood the incredible levels of complexity—running 21st-century fiber-optic

cabling and utilities around working offices, even as you're discovering clay pipes from the 17th century, all while keeping a city running.

You needed to educate and engage the public from the first moment. You needed to make the public feel a stake of ownership in the project. Occasional Sunday newspaper supplements weren't enough. You needed a very aggressive public relations campaign that brought the project to schools, to Lions Clubs, to areas outside of Boston, so the benefits of the Big Dig would be clear to the people who use and benefit from it. In their zeal to get it done, ABC [the Artery Business Committee] and the [Greater Boston] Chamber of Commerce made the Big Dig almost a downtown project, rather than a citywide or regional one.

When we worked on the Southwest Corridor project [building the MBTA's new Orange Line], there was an award-winning educational training program that took school kids right into the areas being impacted. It put kids in the various offices of the professionals working on the Corridor to learn and understand what was going on. That kind of creative outreach was missing with the Big Dig. Had it been in place, the project might have had more support, even as it ran over time and budget.

I now worry about the implications for needed, large-scale infrastructure projects throughout Massachusetts and the country. No one, public or private, has covered themselves in glory with the Big Dig. In the eyes of the public, the whole project is broken and inefficient. People tend to forget what the public sector does, and government does a poor job promoting itself. Kids don't grow up with a good feeling about what is possible in the public sector.

The Greenway is an opportunity to demonstrate to the public that public works can be done and done right. It's an opportunity to re-engage the public and help people see that they are getting something real and important for all these billions of dollars, that this project is a city and regional asset, not just something that's for the benefit of downtown business abutters. Great public spaces evolve over generations. It's more important to get the Greenway right than to get it done quickly. But at the same time, if something substantial—something with which the public can identify—does not happen on the Greenway soon, it will exacerbate the bad taste everyone has now about the Big Dig.

From a design standpoint, I'm also concerned about a tendency, especially seen in the Big Dig, that when it comes time to cut costs, what is often cut are aesthetic things that the public could see and embrace. These items were not necessarily big dollars, but they were symbolic dollars. People end up thinking, you spend all this money and the project looks like crap. If people love a project, they will somewhat overlook the fact that it took longer or cost more. **CW**