

## **Boston I-90 Update**

### **August 29, 2006**

The tragic accident in Boston's "Big Dig" I-90 tunnel on July 10 cost the life of Milena Del Valle when concrete ceiling panels fell and struck her car. The cause appears to be the failure of adhesive anchor bolts that supported the panels. It is important to understand how this accident happened so that a similar tragedy cannot happen again.

Much of what has been printed and broadcast about the accident, our role and responsibilities, and the history of this part of the Big Dig project, is speculative, premature, or erroneous. Unfortunately, we expect more of this kind of coverage in the weeks and months to come, as various parties seek to serve their own interests.

We are making every effort to understand what happened. Given the complex situation, there's no short explanation. Here are some of the key facts:

#### **What we are doing**

Immediately after the accident, we offered our full support to Massachusetts Governor Romney, Massachusetts Turnpike Authority (MTA), the attorney general, and others who are working to investigate the accident, reopen the highway, and address public concerns. However, once the accident came under criminal investigation, state authorities limited our access to the site, project records, and information relating to the ongoing inspections and investigations. On the other hand, at our own initiative, we have continued to provide information and specific technical recommendations to the attorney general and MTA concerning investigative steps and testing procedures that could advance the forensic analysis. At this time, our joint venture with Parsons Brinckerhoff (B/PB) has no direct role in ongoing investigations.

To learn about the causes of the failure, we have set up a task force of our own in Boston led by John MacDonald, currently chairman of the B/PB board of control and formerly president of BINFRA, under the direction of counsel for the joint venture. We are drawing on some of the most knowledgeable and accomplished professionals in the two companies to assist in this effort. The industry knows a great deal more about adhesive anchor bolts than it did in the late 1990s when the I-90 ceilings were designed and installed, but a key part of our challenge is to understand how knowledge and industry practices at that time shaped project decisions.

As mentioned above, these efforts have been significantly constrained, as the client owns and controls all project records and we do not have independent access. The task force has received some documents from the MTA, but many key documents are still needed. We expect to receive most of this documentation by early September. To date, we also have not received any significant feedback on findings from the official accident investigations. While this is disappointing and frustrating, it is not surprising so long as criminal investigations remain open. We are nevertheless reaching out to the new MTA leadership, to do what we can to support investigations and repairs as well as the state's

"stem-to-stern" review aimed at restoring public confidence in the overall Central Artery/Tunnel system.

### **B/PB's Role**

As we try to assess what happened and why, it's important to keep in mind what our responsibilities were on the project. They have been consistently misunderstood and often misrepresented. The public and media continue to believe that B/PB served as a general or EPC contractor for the project. That is not the case. Unlike the typical EPC job where we make the vast majority of operational decisions, on the Big Dig B/PB was in the role of management consultant to the owner (MTA, and earlier, the Massachusetts Highway Department, or MHD). The owner retained principal responsibility for all significant decisions. B/PB assisted in the decision-making process by developing alternatives and presenting recommendations to the owner.

B/PB also prepared the concept studies and preliminary designs for the project, representing about 25 percent of the total design effort. The owner contracted with a number of section design consultants (SDCs) who prepared final detailed designs. With B/PB's assistance, MHD then hired contractors by competitive bid to build sections according to those final designs

Working from the SDC's detailed design for the I-90 finishes, the responsible contractor prepared the adhesive anchor bolt design, and the installation procedures for the anchor bolts and ceiling panel system, which were then reviewed by the SDC as engineer of record. Contractor questions or requests for information or clarification relating to the SDC's design were routinely referred back to the SDC for resolution. As you would expect, the SDC remained actively engaged throughout the construction phase.

At the Big Dig, contractors were contractually responsible for quality control (QC)—making sure the job got done right. B/PB provided quality assurance (QA) services along with the MTA. Project documents clearly defined the distinction between QC, the active inspection by the contractor to verify its delivery of a product that meets the contractual requirements, and QA, the overview of QC activities.

There is ample evidence in the daily reports that B/PB field engineers were actively monitoring the contractor's work and calling attention to deviations from the specified procedure. When problems were observed with the installation of a ceiling mock-up in the HOV section of the I-90 connector tunnels, we documented our concerns in a deficiency report. In the course of the review triggered by these problems, B/PB facilitated and participated in meetings among the contractor, the supplier, and the SDC to resolve these issues. But at best we have an incomplete picture of these efforts from the information currently available.

You can find a more detailed discussion of these roles and responsibilities at:  
[http://www.bechtel.com/PDF/BigDig\\_Roles&Responsibilities\\_Jul\\_25\\_06.pdf](http://www.bechtel.com/PDF/BigDig_Roles&Responsibilities_Jul_25_06.pdf)

## **Going forward**

There remain many more questions than answers. At this point, we do not have access to the site, inspection data and observations, or test results that might give us more insight into the failure. Until we have received additional project records and thoroughly analyzed much more complete information, we cannot draw firm conclusions as to the cause (or causes) of the I-90 accident. Regardless of the behavior of any other party, we believe it is inappropriate to speculate and will avoid doing so.

Although we can say very little about the criminal investigation, we have seen nothing to date that suggests that B/PB or any of its employees did anything wrong.

We will cooperate fully with all agencies investigating this tragedy. We believe it will be possible to determine the causes of the failure. We will continue our efforts to understand the circumstances surrounding the design and construction of the I-90 connector tunnel finishes, including our own performance as management consultant.

We will continue to stand behind our work, as we have for 108 years.