

MTC Road-Only Design 5 Times the Cost of Rail

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safety than achievable by retrofitting the old one, providing a dependable lifeline crossing the Bay. They also claimed a new bridge could be built for the same amount of money as the highest estimated price for a complete retrofit—around \$1 billion.

Today, these justifications have crumbled. The cost of the new bridge is approaching \$3 billion, ten times the original retrofit cost. And last year, the Army Corps of Engineers determined that the new bridge design could not do even the basic thing it was supposed to do—provide a lifeline after an earthquake.

The Caltrans claim that it would be easier to construct a new bridge is also subject to reassessment. Among many other serious problems, the Army Corps pointed out a critical welding procedure that would require workers to stand in tightly confined spaces six inches from steel plates preheated to 300 degrees. When Caltrans defended this at a meeting with contractors, the contractor expected to do the work bluntly said, “No offense ... but that’s baloney,” and refused to do the work unless the preheat temperature is dropped to 150 degrees. This may force a decision between the safety of the workers and the safety of the bridge.

Public Indoctrination Proposed

The Caltrans seismic advisors’ letter also volunteered the interesting advice that: “An indoctrinational program may help the public understand the choices and convince the concerned environmentalists of the benefits of building the new bridge.” They also warned that “Bicycle and rapid-rail enthusiasts may advocate placing these facilities on the structure. ... Such issues and weighing of alternatives must be addressed by the Caltrans management.” Yet, Kopp’s SB60 helped Caltrans fend off transit with a clause banning “local and state permitting agencies from imposing any requirement that a bicycle, pedestrian, or mass transit facility be constructed on the bridge.”

Bay Area citizens clearly want rail on the bridge. Berkeley, San Francisco, Oakland and Emeryville each passed a voter referendum that urged restoration of rail on the bridge. The Metropolitan Transportation Commission (MTC), the Bay Area transportation planning agency, paid for a study that concluded rail was feasible. But Caltrans advisors fought rail because it would require scrapping their bridge design and replacing it with a sturdier one. Perversely, they pushed the specs for rail to require an east span capable of holding a train on every one of the 10 automobile lanes simultaneously. MTC hid initial figures as low as \$758 million for a full heavy rail facility on east and west spans. The final study pumped this up to over \$3 billion for a grossly overbuilt version. The bridge planners had learned how price tags can manipulate policy.

Problems by Design

Caltrans proposed a minimally functional

concrete viaduct. It lacked rail, bicycle or pedestrian access and did nothing to relieve traffic congestion. Also, its heavy concrete design was similar to ones that collapsed in the 1989 quake.

But it was the singularly unaesthetic quality of that proposed design which allowed MTC, ostensibly representing the Bay Area, to turn the selection of a replacement bridge into a charade. MTC’s process helped spread both blame and liability. The San Francisco *Chronicle* ran front-page stories calling for a more attractive bridge. MTC sponsored a design competition, allowed members of the jury to enter and win—and then wasted a year debating which of two cable-supported sections to use as an ornament on the west end of the massive concrete viaduct. The *Chronicle*, ignoring seismic safety, published color pictures of the designs and conducted a reader poll. The *Chronicle*’s pictures mostly showed the purely decorative cable structure. It would occupy only 14% of the length of the two-mile span, yet would (at that time) render the project \$400 million more costly. That surcharge, too, has now likely doubled.

When the decision was made, a whole new controversy arose. The winning design was a contraption in the style of Rube Goldberg, known as the “asymmetrical single-tower self-anchored suspension span.” Some experts consider it unsafe, and possibly unbuildable.

While T.Y. Lin International was awarded a major design contract for the “asymmetrical, single-tower self-anchored suspension span,” internationally renowned bridge designer T.Y. Lin himself has said that the design lacks the stability of a conventional suspension bridge, and he called it a “monument to ignorance.” Designing a viaduct-with-suspension-span to withstand a major earthquake proved so difficult, something had to be sacrificed. The victim, as it turns out, was seismic safety.

The advisory board and Caltrans insisted that the bridge should withstand the largest earthquake that they thought reasonably likely to happen over the next 150 years. This was to be a Richter 8 on the San Andreas fault, or a 7.25 on the Hayward, referred to as a “Maximum Credible Earthquake.” The term is optimistic; geologists say there is at least a 10% chance that the next big quake could exceed this design strength. But Caltrans planners abandoned the Maximum Credible Earthquake for a weaker one, called a Safety Evaluation Earthquake, a fact uncovered by the Army Corps of Engineers in Fall, 2000. Engineers in the Corps continue to say the new standard is inadequate, particularly for a large and distant earthquake.

Cooking Up a Half-Baked Bridge

Meanwhile, project engineers were trying to make the numbers on their bridge survive computerized earthquakes. The Army Corps’ report in 2000 documented numerous flaws in the design that remain unad-

dressed. Having run out of time, Caltrans’ chief project engineer said he would continue to “improve the project all the way through, even construction. And then I just delegate it to maintenance.”

And of course to the toll-paying public. The 78 percent cost overrun on the viaduct bid is a clear indication of the problems in the Caltrans bid package. The transcript of the pre-bid meeting documents that contractors voiced serious questions about the design.

Trying to allay concerns, new Caltrans director Jeff Morales, the third in three years, offered a view that Caltrans’ carefully crafted \$1.3 billion budget was “little more than glorified cocktail napkin figures,” a remark that caused an e-mail firestorm at Caltrans. If true, this would be disturbing for a number of reasons. The price figures were codified into California law, were used to raise tolls on the bridge, and were the basis for all the subsequent planning and design decisions.

Caltrans cites 18% inflation in bridge costs in 2000, delays and economic prosperity as reasons why the bridge cost has doubled. But these factors do not add up to a doubling. Inflation, the main cost of delay, would only add about 6% to the cost. In light of these facts, the problem appears to rest more with Caltrans and MTC, and the admitted design difficulties. Contractors are being cautious and building some protection into their bids.

With known problems remaining, further escalation of the price is certain. This unsafe bridge is a dubious luxury at a time when needed state programs are being slashed. This ten-lane automobile bridge is not being built to the highest standards, excludes transit priority provisions and rail, is far overpriced, and offers little inspiration or solution for the new century’s most difficult transportation problems.

Why Can’t We Hire the Pros?

Californians often ask why world-class firms like Ove Arup, designer of the \$3.2 billion bridge-tunnel Øresund link, don’t get a shot at designing for California. Perhaps the answer is that their talent intimidates established Bay Area power brokers.

MTC’s Steve Heminger rather publicly dangled the prospect of a future Bay rail crossing study before Ove Arup last year, seemingly as a hint for the firm to not break ranks on bridge rail. Ove Arup is thought to be interested in proposing a rail alternative without the MTC-designed flaws.

After all, Ove Arup’s work on Øresund shows the firm can design a cost-effective, popular cross-bay rail solution. MTC seems terrified of an alternative emerging which could break its autocratic control of Bay transportation funding and challenge its road-biased view of the future.

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