

2-mile Bay Span Rivals 10-mile Øresund Cost



by Robert Freehling

During the news shadow of the September 11 attack, a group of construction industry lobbyists sneaked a bill through the California Legislature to double the appropriation for a new eastern span of the San Francisco-Oakland Bay Bridge to \$2.6 billion. Even this vast sum is not likely to be enough.

On December 19 the first of four contracts received a winning bid of \$1.04 billion from Kiewitt FCI Manson, a Concord joint venture, far outstripping budget projections. This contract was expected to be between a quarter and a third of the total project cost.

Ever since State Sen. Quentin Kopp used SB60 to hijack bridge toll surcharges for this project, transit has lost billions. The highway builders controlling this project want a road-only solution that shuts out rail and public transit and adds no transbay travel capacity. Caltrans' replacement design was a lackluster standard heavy concrete highway viaduct. An extra cable-supported span was added as decoration, which raised the cost dramatically, and threatened to stall the project unless more funding was found.

\$2.6 billion was originally supposed to pay for retrofits to all California toll bridges. Now, with all parts of the Bay Bridge over budget, \$3 bridge tolls are back on the table, and legislators openly worry whether the

The 2-mile Bay Bridge east span is rapidly approaching the \$3.2 billion price of the 10-mile Øresund link, the road/rail bridge and tunnel linking Denmark and Sweden. Maps: Øresundsbro Konsortiet & Richard Tolmach

bridge funding gap can be closed this year. Southern California lawmakers are reportedly sharpening their knives for the out-of-control Bay Area project, because cutting it could go a long way toward solving the \$4.5 billion state budget crisis.

How did a 2-mile steel bridge retrofit morph into a new concrete highway bridge that rivals the cost of the 10-mile Øresund Link connecting the rails and roads of Scandinavia with Europe? And given the tiny size of the East Span, why is rail unaffordable? Why are Californians gullible?

Immediately after the 1989 Loma Prieta earthquake, Governor George Deukmejian called together an inquiry board which recommended that the bridge be retrofitted to a high performance level, guaranteeing the bridge would be serviceable immediately after a major earthquake.

Caltrans, rather than rising to this task, downgraded the performance standards and pursued some flawed retrofit concepts for the vulnerable eastern span. They proposed entombing the foundations and towers in massive concrete. Yet, to an earthquake, even the largest amount of concrete is triv-

ial; the extra weight would rattle the bridge with extra force if it were set in motion. Caltrans engineers thought they could isolate the main superstructure, a rigid lattice of steel beams, from earthquake vibrations.

This can be done for suspension bridges, where flexible cables allow for a kind of shock absorber effect which partly isolates the deck from the vibrating towers. But to try to do this in the east span structure is impractical. The Army Corps of Engineers coolly called the approach "unreasonable." U.C. Berkeley's Dr. A. Astaneh, a world expert on structural failure and seismic retrofits, urged that a steel retrofit would have better performance than Caltrans' design.

As the scope of the project collided with poor planning, estimates of costs for the retrofit fluctuated wildly, from a few hundred million to over a billion dollars. At the end, Caltrans and its advisors chose the highest price figure in order to reject the retrofit.

A Shaky Panel of Seismic Experts

On December 10, 1996, seven footdragging years after the earthquake, a pair of Caltrans advisory panels wrote a letter to Caltrans Director James van Loben Sels to say that the bridge ought to be replaced rather than retrofitted. Two principal justifications were given. First, they said a new bridge could be built to a higher standard of

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