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California Department of Transportation
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WILSON ADMINISTRATION RECOMMENDS REPLACING BAY BRIDGE

OAKLAND—The Wilson Administration has accepted the recommendation of the California Department of Transportation (Caltrans) to rebuild, instead of retrofit, the eastern section of the San Francisco-Oakland Bay Bridge to withstand a major earthquake. The recommendation is contingent upon an agreement between the Governor and the Legislature on complete financing of the project.

Following years of detailed engineering study and analysis, Caltrans Director James W. van Loben Sels today announced that building a new bridge to link Yerba Buena island and the Oakland shore was the best option from safety, engineering and economic standpoints.

"The safest and most prudent alternative from the engineering and financial standpoint is replacement," said van Loben Sels. "The key to success is a swift decision on the type and alignment of the new bridge, the ability to secure the required permits, and to complete the necessary environmental reports so construction could begin. We must move ahead quickly on a solution that ensures the motoring public's safety.

"There is no question that the replacement option will give the people of California the best bridge at the best price," said van Loben Sels.

Caltrans engineers have estimated that total retrofit of the Bay Bridge including replacement of the east span with a new steel-reinforced concrete skyway bridge, constructed north of the existing structure, would cost approximately $1.52 billion and could be open to traffic within seven years, including three years to complete the environmental review. The cost of only retrofitting the bridge has been estimated at $1.3 billion and would take approximately five years to complete. The new cost estimate includes an interim retrofit on the existing east span to reduce the risk to the public during the construction of a new bridge and dismantling of the old eastern span.

James E. Roberts, Caltrans chief bridge engineer, called the option to retrofit the eastern spans of the Bay Bridge "a monumental engineering challenge. The complexity of the structure coupled with the large number of bridge members provides too many opportunities for something to fail in a major quake," said Roberts. "With a new bridge, we will have a structure built to current design
standards that incorporates the latest technological advances in the science of seismic, structural and materials engineering.”

Van Loben Sels added that the department’s recommendation has been endorsed by a host of independent seismic and structural experts that have been working as technical advisers to Caltrans.

Caltrans will proceed with public meetings on the recommended replacement. “We will be working with interested parties on the local, regional, state, and federal levels including environmental groups and persons interested in the historic value of this existing structure over the coming months so we can get a decision in a timely manner,” van Loben Sels said.

For the past year Caltrans engineers along with a cadre of independent seismic and structural experts have explored whether reconstruction or retrofitting was the best solution to provide the Bay Bridge with additional strength to withstand a major earthquake.

A 50-foot section of the Bay Bridge collapsed in the 1989 Loma Prieta earthquake. Since that time, Caltrans has been conducting research and developing an engineering strategy to strengthen the bridge.

Caltrans’ preferred replacement alternative calls for construction of twin 10,100-foot long steel-reinforced concrete structures. The skyway would have five traffic lanes in each direction.

Under Caltrans’ recommendation, traffic would continue using the existing structure until the new bridge was open for business.

The final decision on bridge type and alignment for a replacement structure would be made as the environmental clearance process proceeds.

“Normally, if the cost of retrofitting exceeds more than half the cost of replacement, then it often makes economic sense to spend a little more for a new structure that incorporates the latest technology and offers the prospect of a much longer life span,” van Loben Sels said.

“As the years of seismic research and engineering analysis progressed, it became increasingly evident that the financial investment that will be required to retrofit the eastern section of the Bay Bridge for the maximum credible earthquake was not the most cost effective option,” said van Loben Sels. Caltrans has spent more than $1 million in research on the Bay Bridge.

Dr. Joseph Penzien, professor emeritus of Structural Engineering at the University of California, Berkeley, and vice chairman of the Governor’s Board of Inquiry on the 1989 Loma Prieta Earthquake, called the Bay Bridge “the mother of all earthquake engineering exercises.” Dr. Penzien is currently the chairman of the Caltrans Seismic Advisory Board.

“Thanks to the considerable research that has been done so far the knowledge of the seismic forces that could affect the bridge and how the structure would respond have expanded exponentially. The members of the Seismic Advisory Board agree with Caltrans’ decision to pursue a new bridge,” he said.

If the replacement proposal is accepted, Caltrans would aim to begin construction in early 2000 and expect to complete the work by the end of 2003. With the opening of a new bridge, the existing structure would be dismantled.

The San Francisco-Oakland Bay Bridge, which opened in 1936, carries an average of 280,000 vehicles a day.

Pictures and detailed descriptions of the replacement and retrofit options can be viewed on the world wide web at:

http://www.dot.ca.gov/dist4/sfobbrto.htm
Box 4, Folder 2

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