

Foresthill Bridge to undergo major upgrades

Tony Bizjak, Sacramento Bee, 8-7-10

The same subterranean fissures that triggered the Auburn dam controversy a generation ago are about to cost taxpayers an estimated \$44 million – the price of protecting the famous Foresthill Bridge from tumbling into the canyon during an earthquake.

Major reconstruction on the stiletto-thin span, California's tallest bridge, begins this winter. Work will last three years. An additional \$27 million will pay for a new green paint job.

Crews will add 2 million pounds of reinforcing steel with 190,000 bolts and attach vibration dampeners at each end of the span.

It's all for a bridge whose main reason for existing never came to pass. And to prepare for a seismic event that may never happen.

Opened in 1973, the bridge is a legacy of the aborted Auburn dam project. The span was to replace Highway 49 and old Foresthill Road, both of which would have been inundated by the dam's reservoir. Its construction would save the Foresthill community from being cut off from Auburn and the rest of civilization.

But a 1975 earthquake near Lake Oroville caused geologists to reassess the danger from other faults in the foothills fault system near Auburn.

A 1996 study by the U.S. Geological Survey further buried the dam idea when it determined those faults might move more strongly in an earthquake than once thought.

The result: A bridge intended to be a squat causeway over a reservoir instead towers a majestic 730 feet over the north fork of the American River, its deck higher than that of the Golden Gate Bridge. The bridge's dizzying perch has attracted Hollywood film crews, bungee jumpers, parachutists, bridge enthusiasts and more than a few people bent on suicide.

When it opened, the Foresthill Bridge met the state's standards for seismic safety. But that was before catastrophic bridge and overpass collapses during the Bay Area's 1989 Loma Prieta earthquake and Southern California's 1994 Northridge earthquake caused a revamp of seismic standards.

Foresthill Bridge is now on the list of some 1,200 locally controlled spans statewide that state officials want to see upgraded. The state also has committed \$11 billion to strengthen 2,200 state-controlled structures. The costliest redo is the current construction of a new east span for the San Francisco-Oakland Bay Bridge.

John Quincy, project manager for the seismic work on the Foresthill Bridge, said it is "a phenomenal structure ... but the forces we design for these days are seven times higher."

Yet there's a very good chance the Foresthill Bridge will never have to withstand a significant earthquake.

Even though one fault running right below the proposed dam site was considered a serious threat for the dam, the foothills fault system is generally considered tame as California earthquake zones go.

"The reality is it has a low rate of activity and probably a very small chance of producing a strong earthquake during the life of that bridge," said David Schwartz, an earthquake geologist for the U.S. Geological Service in Menlo Park.

The ground along the fault lines may be slipping .05 millimeters per year, USGS officials estimate. That's far less than the larger and more dangerous San Andreas Fault, which moves 15 to 35 millimeters a year, said Mark Peterson, chief of the geological service's national seismic hazard mapping program.

The foothills fault system is estimated to be capable of a moderate earthquake – 6.5 magnitude – but that's strong enough to do damage, Peterson said.

Placer County and state officials say they are taking no chances.

"Nobody wants to be in the position after an earthquake of saying we were notified of a deficiency" and didn't address it, said Placer County Executive Officer Tom Miller.

Federal funds will cover about \$62 million of the estimated \$71 million Foresthill price tag. An additional \$5 million comes from state bond funds, and about \$4 million will come from Placer County road work funds.

Work will have to be deft, given the bridge's height and its location over a well-used recreation area. It will require temporary construction flooring and tenting.

"We can't be dropping bolts into the canyon," Quincy said.

Wind alarms will be set up. If gusts hit 60 mph when key braces are removed, workers must have a brace and bucket of bolts close by for quick reattachment.

In addition to making the bridge safer in an earthquake, the upgrade will resolve a longstanding problem for state bridge inspectors.

Foresthill is categorized by federal safety officials as a "fracture critical" bridge, requiring certain sections to be inspected at arm's-length distance every two years. But state officials failed to do complete arm's-length inspections from 1995 to 2007 because they didn't have the equipment and time to get to some hard-to-reach sections, a Bee records review found.

Placer officials plan to build a second catwalk to make future inspections easier.

The multimillion-dollar project price tag could have been bigger, county Public Works Director Ken Grehm said.

"We are not making it earthquake proof," he said. A large earthquake might damage the bridge. "We are hoping to control the damage so it is repairable."