



*Village Life photo by Mike Roberts* **GIANT ROBOT HEAD?** — No, it's the eastern portion of Folsom Lake Crossing, the new bridge that will connect Folsom's East Natoma Street with Folsom-Auburn Road, 200 feet above the American River. The blue steel is part of the "form traveler" that contains each segment of reinforced concrete until it dries. Kiewit Construction worker then "launch the "traveler" out to the edge and prepare for the next segment. The dual cavities beneath the bridge deck will remain empty for maintenance and utilities.

## **Bridge goes horizontal, on track for spring 2009 opening**

*By Mike Roberts, Life Newspapers staff writer*

### **Folsom Lake Crossing spreads its wings**

Tucked out of sight in a steep canyon between an off-limits dam and an infamous prison, the soon-to-be bridge recently named "Folsom Lake Crossing" just went horizontal. Two massive concrete piers anchored into American River bedrock each host a hive of activity as the evolving roadway begins to spread its wings 200 feet over the river.

Folsom Public Works Director Rich Lorenz showed off the recent progress to Life Newspapers staff last week, and said that he expects the two-mile connector which links East Natoma Street with Folsom-Auburn Road to open by late spring 2009. The crossing will relieve Folsom's historic district of thousands of commuter vehicles each day.

At the heart of the connector is a 970-foot long, four-lane wide bridge that will include a bicycle/pedestrian/equestrian lane with a view of the canyon and the dam.

The two-mile route follows Folsom Dam Road northwest from a new intersection on East Natoma Street, then cuts across a sliver of state prison property before crossing the river a quarter mile south of the dam to connect with Folsom-Auburn Road. The new bridge is designed to handle up to 40,000 vehicles per day.

### **A little history**

U.S. Army Corps of Engineers program manager Creg Hucks summarized the project's history by phone for Life Newspapers. The genesis of the bridge dates back to the floods of 1986. "Sacramentans realized how vulnerable they were," said Hucks.

A series of flood control programs followed, including proposals first to enlarge Folsom dam's gates, and later to raise the dam by seven feet.

A \$36 million temporary bridge was included in the federal proposals, since either of the projects would have closed off the dam road, which had, by then, become a critical north-south commuter artery.

Sensing an opportunity to improve traffic in and around Folsom long term, Folsom officials, including then-mayor Steve Miklos lobbied Congress to make the temporary bridge permanent.

"The Bureau [of Reclamation] wanted traffic off the bridge," recalled Miklos in a recent interview. "We just asked that a permanent replacement bridge be in place before they closed the dam."

It took several years, but by the late 1990s, federal officials agreed to make the bridge permanent, with the timing of the project linked to flood control work on the dam, which was progressing slowly as the costs of dam modifications proved much higher than expected.

With the two lane dam road still open, and a federal promise of a permanent bridge, city officials sat tight and waited for the Corps to decide on the dam improvements.

The events of Sept. 11, 2001, and the subsequent closure of the dam as a security measure in February 2003, changed all that.

Roughly 18,000 vehicles a day suddenly had to find other routes across the American River. Many of them choked through Folsom's Historic District, backing up traffic each morning and afternoon on East Bidwell Street and Folsom Boulevard.

The congestion discouraged locals and tourists from shopping in Folsom, and made getting around town difficult for everyone. Bridge commuters added up to 20 minutes to their drive time each way. Folsom residents cited traffic congestion caused by the dam road closure as the worst problem in town.

The gridlock spread across the river to Folsom Auburn road, where retailers reported downturns in business as high as 40-percent.

### **Money talks**

In an effort to stop the bleeding and get a new bridge sooner rather than later, Folsom City leaders decided they were willing to put some skin in the game. Following a series of meetings with federal officials, the City of Folsom agreed to become a financial partner in the new bridge, assisting in the environmental work, acquiring property, relocating utilities and moving the American River Water Education Center. The advance work alone cost the city \$15 million, said Lorenz.

Then there was the bridge itself. The pre-911 plan called for a permanent, but definitely “no frills,” two-lane bridge. City leaders, including Miklos, wanted four traffic lanes, with room for bicycles and pedestrians. “The two lane dam road was a chokepoint,” he said.

“They came back and told us we could enhance it but we had to pay for it,” said Miklos. “So we talked to our partners at the state, flood control, the county and other agencies, and decided we could fund the enhancements, including the bike lane.”

They agreed to use Folsom's share of Sacramento County Measure “A” sales tax measure passed in 2004 toward the overall \$35 million upcharge, according to Miklos.

“Placer and El Dorado Counties were growing,” said Miklos. “We knew we needed a regional roadway.”

How did Folsom get so much cooperation from federal and state agencies? “We reminded them that the City of Folsom paid for the last bridge over the American River,” he said.

Lake Natoma Crossing, completed in 1999, cost the city of Folsom \$76 million, with no help from any other agency. “That argument was well received in Washington,” said Miklos.

### **Spillway changes the plan**

As the design of the four lane bridge and its approach roadways progressed, the U.S. Army Corp of Engineers and Bureau of Reclamation concluded that modifying the 1940s-era dam wasn't practical, and that the flood control requirement would best be met with a new spillway southeast of the dam.

The spillway interfered with the bridge's approach road, which clung to the old dam roadway as long as possible before angling south to approach the new bridge.

The revised route pushed the eastern approach into a massive earth and stone mound, which was lowered by 126 feet, forcing removal of over 1.1 million cubic yards of earth and rock. At the time, city officials estimated the cost of moving that much material offsite as high as \$10 million.

But the construction site turned out to need plenty of fill material. The quarter mile of road between the hill and the bridge had to be raised as much as 60 feet in some areas.

In the spirit of cooperation with the prison, the balance of the material was dropped in an otherwise unusable low spot on prison property as compacted, engineered fill, ready for development.

A high voltage transmission tower also had to be moved.

Kiewit Construction won both the bridge and the spillway projects, as well as improvements to Mormon Island Dam. Construction began on the bridge project in March, 2007.

The two massive piers that will bear the weight of the bridge took 14 months to complete. Each contains 3,400 cubic yards of high-strength concrete, with footings 30 to 40 feet into the river bank. Cable tendons reach another 50 to 60 feet into the American River bedrock, said Lorenz.

The foundation is critical. One pier didn't hit bedrock soon enough. The other hit rock too soon and required extra blasting, which put the project over budget early.

The concrete mix is so important that both Kiewit and the Corps have people at the concrete plant watching the mix, said Lorenz. Each batch is also tested before and after it's being poured. Despite those precautions, Lorenz said that one portion of the eastern pier had to be chipped out. "But by and large it's gone well."

### **Approaching the bridge**

Folsom Lake Crossing's eastern approach consists of a concrete pad and abutment platform which forms a dramatic "step off" at the edge of the canyon, a quarter mile south of the dam.

Standing on the abutment, the eastern section of hollow roadbed seems to float over the canyon at eye-level, 175 feet away, like a midsection slice of a tiny aircraft carrier.

The cavity beneath the bridge deck will be used to maintain the roadbed, and will contain pipes and cables.

The roadbed is constructed in cantilever fashion, one side at a time, with a total of 54 reinforced concrete segments all cast in place.

Each week workers add a matching pair of roadbed segments, starting with 12-foot segments close to the pier and progressing to increasingly thinner 20-foot segments in the middle of the 500-foot center span. The result will be a gently arching concrete structure extending laterally into thin air.

During construction, each pier tower is surrounded by six temporary steel strut tubes which help bear the sometimes lopsided weight as the roadbed grows.

Each tower has a dedicated crane to pull up materials, including all the concrete, one 5-yard bucket at a time.

Making sure all the pieces match up in the end requires geometry and engineering.

That's where surveyor Reg Dillon comes in. Dillon was taking measurements from eastern abutment during Life Newspapers' tour, and offered a simplified explanation of how it works.

He uses surveying tools to align control points on the roadbed with reference points on the canyon walls. "I triangulate off them," he said. "We know offsets of the bulkhead from the main alignment, and basically just line it up and launch the traveler."

Temporary forms called “travelers” contain the reinforced steel and concrete that go into each segment. The form “travels” outward after each concrete pour, to progressively thinner segments. “We fill it with steel, pour high strength concrete, and launch it again when it sets up,” said Dillon.

“The beauty of the segmental bridge is that there's no falsework,” he said. “We'll have eight or nine segments coming out from [each side of] each pier.”

### **Who pays**

The total cost of the project is currently at \$132 million. The federal government will pick up about a third of that. The City of Folsom is paying the balance from its general fund and Sacramento County transportation sales tax Measure A funds, with help from the California Department of Water Resources and the Sacramento Area Flood Control Agency funding.

The current \$132 million cost estimate is \$5 million over plan, but Miklos isn't concerned. “We got an additional million from the federal government, and we feel pretty comfortable that they'll pick up the balance.”

Should that fall though, “The city and the locals are prepared to find a way to make this work,” he said.

Program manager Hucks has worked on the bridge and spillway projects since their inceptions. He called the two projects “a great balance of flood protection and meeting transportation needs.”

He said he's amazed at how fast it's all coming together, given the environmental work and funding challenges that the project has encountered. “Big projects like this require a lot of lead time,” he said

For perspective, Hucks points to Folsom's previous bridge project, Lake Natoma Crossing, which took 10 years from inception to completion. “That was pretty good,” he said, “but this one's on track to be complete in half that time. This project raises the bar on transportation projects.”

The best place to get a peak at the Folsom Lake Crossing construction site is from the bike trail off Folsom-Auburn Road.

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