

## Expressway bridge segment erected

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The last segment of South Bay Expressway's Otay River Bridge has been erected -- a milestone in the construction of the 10-mile express toll road opening this summer.

The Expressway is a 10-mile express toll road that will run from Spring Valley to near the Mexican Border. The bridge is what engineers call a "pre-cast segmental bridge."

The only other like it in California is the San Francisco-Oakland East Bay Skyway Bridge, currently under construction. The four-lane Otay River Bridge is three-quarters of a mile long and at its peak, nearly 19 stories tall.

"The Otay River Bridge is more than just an engineering feat -- it's an international gateway," said developer South Bay Expressway CEO Greg Hulsizer.

The bridge plays a crucial role at the southern end of the Expressway as it spans the Otay River.

The bridge is wide enough to carry four lanes of traffic. Typical spans between columns are 300 feet long.

It is made of post-tensioned concrete, in which high-strength steel strands squeeze the concrete to prevent cracks. The construction technique is called "pre-cast segmental", where the pre-cast segments are cast off site and delivered to the bridge to be assembled. The pre-cast segmental technique allows the deck to be built "top-down", and minimizes the environmental impact of the project.

It will be the first pre-cast segmental bridge to open to traffic in California.

There are a total of 640 segments that make up the bridge, and each segment weighs between 60 and 70 tons. The segments are cast in a facility in Perris and lifted into place by a steel erection gantry, which was manufactured in Italy and shipped to the site. The segments are erected using a "balanced cantilever method," which minimizes the construction loads applied to the columns.

There is a total of 470 miles of post-tensioning strand, enough to reach from San Diego to San Francisco, and each strand is strong enough to support 30 tons, the weight of a fully

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The tallest column is 190 feet from foundation to deck and each pair of columns rests on a rectangular pile cap, which is 75 feet wide, 50 feet long and 10 feet thick, and needed more than 100 concrete trucks.