

Big Sur Span Is Down, But Not for Long

Using an Accelerated Construction Strategy, New Bridge Is Expected to Open in Fall

The loss of the Pfeiffer Canyon Bridge this winter left the Big Sur community facing tremendous hardships and denied sightseers easy access to one of the world's most striking sea coasts and majestic forests.

So it's up to Caltrans, with the involvement of other agencies, to replace the Highway 1 lifeline to the Big Sur area as safely and quickly as possible. Because of the cooperation of those involved in the project — and Caltrans' use of an innovative construction method to replace the bridge — one of California's premier tourist destinations and major travel corridors should be mostly accessible by early fall.

A massive landslide during an especially rainy February buckled the 50-year-old bridge, rendering it impassable. About a month later, demolition crews finished what nature started and brought down the crippled span. Highway 1 continues to be closed from Pfeiffer Canyon south to Limekiln State Park, and from Gorda to Ragged Point due to continued slides — including the devastating Mud Creek avalanche of rocks and dirt that buried the highway.

After consultations with various parties, Caltrans decided to employ a method known as Accelerated Bridge Construction to haul in and assemble a replacement bridge that is expected to be open to traffic by late September.

The 315-foot bridge will be constructed using 15 steel girders and once completed, will extend 100 feet above the canyon floor. Importantly, the new bridge will not include any support columns, which were part of the original structure built in 1967. The elimination of columns will prevent this bridge from being damaged by future landslides.

Given the length of the bridge and other physical limitations of the steep canyon, a different type of span likely would have added another year to the construction schedule and created more traffic disruptions. The accelerated design process also shaved years off the



Illustration by Division of Engineering Services, Bridge Architecture and Aesthetics

The new Pfeiffer Canyon Bridge in Big Sur, as shown in this depiction, is being rebuilt with steel girders that will span 310 feet across the canyon without need for support towers, eliminating the fear of damage from a landslide such as the one that crippled the bridge in February.

normal delivery time for a bridge replacement project.

The steel girders for the new \$24 million bridge — each 63 feet long and weighing 56 tons — are being fabricated in Vallejo, then moved to another plant near Stockton for painting in batches of three. Once painted, they will be shipped to the Pfeiffer Canyon site just north of Big Sur, with the last three expected to arrive in late July or early August.

The new bridge will be moved across the canyon using a time-saving 'incremental launching' method that doesn't require construction of multiple temporary towers in the unstable canyon. The entire steel girder portion of the bridge superstructure will be assembled on a roller bed located on the approach roadway on the north side of the canyon. Five 63-foot-long girder sections will be bolted together to create a single 315-foot girder. Three lines of girders will be set across from each other, connected by steel cross frames.

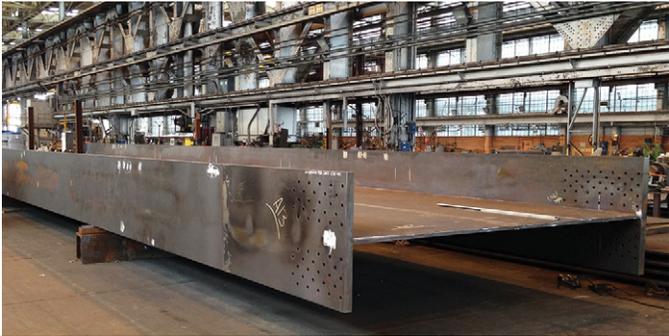
A single temporary tower with a roller assembly will be constructed near the center of the canyon. The steel girders will then be pulled across the can-

yon (from north to south) using a cable winch on the south side of the canyon. Workers will construct a large trestle extending part-way across the canyon to allow a large crane to pick and place the last girder segments on the far side of the canyon.

The accelerated bridge construction strategy improves travel mobility by reducing congestion, lengthy detours and traffic delays typically associated with bridge construction. Fewer project days also means less inconvenience for travelers. There's also cost savings realized from less traffic and construction management, project administration, environmental mitigation and possible right-of-way requirements.

The 2016-17 winter was by far the wettest in Big Sur in decades with highway damage the worst since 1998. But Caltrans engineers, geologists, project managers, contractors and fabricators are working smart and hard to rebuild this vital structure over scenic but rugged Pfeiffer Canyon. **MM**

Source: Susana Cruz, Public Information Officer, District 5; Transportation Engineer Brian Fuller, District 5 Design; Senior Bridge Engineer Kevin Harper; Caltrans Project Delivery Quarterly, spring 2017



Crews demolished the Pfeiffer Canyon Bridge in March following torrential rains in February that damaged the span. Its replacement is expected to open in mid to late September, using 15 steel girders being constructed in Vallejo, bottom right. Each girder is 63 feet long and weighs 56 tons. They will be connected on site, then rolled into place across the canyon using strategically placed winches and cables.