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Geyserville: 1000 Feet in 110 Days

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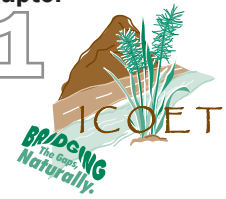
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Authors

Morton, Chuck
Cashin, Charlotte

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Coordination, Stewardship and Regulatory Compliance

GEYSERVILLE: 1,000 FEET IN 110 DAYS

Chuck Morton (510-286-5016, chuck.morton@dot.ca.gov), District Branch Chief, and
Charlotte Cashin (501-286-4879, charlotte.cashin@dot.ca.gov), Senior Transportation Engineer,
 California Department of Transportation, 111 Grand Avenue, Oakland, CA 94623, Fax: 510-286-4482 USA

Abstract

Bridge replacement project minimized sensitive resource impacts and constructed a bridge designed to last 75 years.

As a result of the New Years Eve/Day storm of 2005/2006, the California Department of Transportation (Caltrans) had to close to all traffic the Russian River Bridge, a two-lane conventional highway east of Geyserville due to significant structural damage. This Bridge, constructed in 1932, is a 973.5-foot-long steel pony truss bridge located on State Highway 128 and connects the Counties of Sonoma and Napa. Pier 2 of the Bridge was damaged during Russian River storm flows approaching 60,000 cubic feet per second (CFS). This damage consisted of the through and through cracking of the pier cap and web wall of Pier 2, the rotation of the pier in the downstream direction, and the dropping of the pony trusses approximately 9 inches.

The Federal Highway Administration (FHWA), at the request of Caltrans, through its Damage Assessment procedures, determined that this Bridge could be rebuilt under the Emergency Opening provisions of 23CFR771.117 (c)(9). This designation allows for a greatly reduced emphasis on NEPA, ESA, and other federal environmental rules and regulations that would be normally applied to a bridge replacement project.

In order to demolish the existing bridge a construction trestle, capable of supporting a 250-ton crane, had to be constructed across the Russian River. This crane would be utilized to construct the trestle from land, demolish the damaged pony truss bridge, and construct the new bridge. The 50'-wide trestle was supported on 24" steel pipe piles averaging 80' in length. The construction trestle, being constructed from both the east and west sides of the river, totaled 465 feet in length, and was completed in 70 days. Piles were primarily driven with a vibratory hammer or within an isolation casing, to reduce the impact on salmonids [Central California Coastal Steelhead (CCCS) (*Oncorhynchus mykiss*) and California Coastal Chinook salmon (CCCO) (*O. tshawytscha*)] which are known to inhabit this reach of the Russian River.

During the time that the trestle was being constructed, Caltrans bridge engineers, designers, and environmental personnel completed the Plans Specifications & Estimate (PS&E) for the new bridge in approximately 4 weeks.

Once construction of the trestle was completed, demolition of the existing bridge began. Demolition commenced with the removal of the concrete deck, lifting of the pony trusses, and the toppling of the old piers. These piers were founded on 12" diameter 25' long Douglas fir piles and there were 18 piles per pier. Once the piers were toppled, the Douglas fir piles were either extracted from the river bed or cut off approximately 3' below the grade of the gravel bar. To the greatest extent possible, all demolition debris was prevented from falling into the river or onto the dry river bed.

Hydroacoustic monitoring was conducted during pile driving activities within the wetted channel or within 30' of the wetted channel. Recordings of the 24" trestle piles driven with the vibratory hammer could not be distinguished from the ambient river noise which ranged up to 170 dB (re 1 µPa) RMS. Diesel hammer driving of the 24" piles resulted in readings ranging up to 190 dB peak. Driving of the 48" steel shell production pipe piles to depths of up to 140' resulted, in some cases, of readings up to 210 dB peak, even though the piles were being driven in a dewatered isolation casing.

Construction of the new bridge, on the same alignment of the damaged and demolished bridge, began on May 1, 2006. The bridge was opened to all traffic on August 18th, 2006, a total of 110 days.

Extensive coordination with the resource agencies (Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Game, and the National Marine Fisheries Service) was continuous throughout the entire construction period. A full time biological monitor was on site beginning in the middle of May. Caltrans personnel relocated to the main river channel trapped fish from the pools that remained after the demolition of the piers.

Deconstruction of the trestle, including the extraction of the 24" piles, was completed in 15 days.

Total construction costs were \$26 million broken down as follows: \$10.5 M for the trestle, old bridge demolition, and pipe piles; \$14 M for the new bridge; and \$1.5 M for contract change orders and landscaping.

Caltrans, as compensation for impacts to Russian River fisheries due to this project, established a \$2,500,000 fund to enhance and restore appropriate salmonid fisheries habitat within the Russian River watershed.