



1992 – Oak Creek Bridge

Description

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Abc Construction Equipment : Lateral Slide {w / roller or pad}

Prefabricated Bridge Systems : FDcBc (full-width concrete-Decked concrete Beam Unit)

Contracting : Full lane closure

Project Delivery : Design-bid-build

Longitude : -111.753333

Latitude : 34.945000

Nbi # : BRS-366(11)P

State Id # : 2264

Construction Equipment : Lateral Slide

Total Bridge Length Ft : 190

Max Span Length Ft : 190

Beam Material : Concrete

Spans : One-span

Location : Rural

Owner : State

State : AZ

Year Abc Built : 1992

Other Related Url : 1

Contract Plans : 1

Funding Source : Federal and State

Costs : The cost per square foot of bridge was \$148 compared to \$42 for conventional construction in this region in 1992.

Contacts : Owner: Jean A. Nehme, Ph.D., P.E. State Bridge Engineer Arizona Department of Transportation jnehme@azdot.gov 602-712-7481

Construction Method : The project was done in three phases. Stage one called for keeping traffic on the old bridge, excavation, removing the existing southwest wing wall and replacing with temporary shoring. Also, new abutments were built about three feet west of the existing bridge and the new box girder superstructure was built along with a new northwest retaining wall. In stage two, traffic was detoured onto the new bridge while the existing southeast retaining wall and wingwall and the old

bridge were demolished. All debris was contained and none was allowed to fall into the creek. Sections of the approach slab were also built in stage two. Stage three involved moving the new bridge laterally 26.33 ft into position using bearings coated with Teflon, finishing the approaches, and demolishing the temporary abutments.

Replacement Or New Bridge : The two-lane replacement bridge has two 4-ft-wide shoulders and a 5-ft-wide sidewalk. The cross-section consists of two 11-ft-wide post-tensioned concrete box girder cells that vary in depth from 8.5 ft to 16.0 ft, with a 9-inch-thick deck that cantilevers approximately 9.5 ft on each side. It was designed to resemble the old Luten Arch bridge with the use of architectural effects and rock wall facing on the new abutments. In order to avoid closing the highway and forcing motorists on an excessively long detour, ADOT drew on a design from the past and coupled it with an innovative technology from today. The result was a permanent concrete bridge that was built at one location and moved laterally into place.

Existing Bridge Description : The existing 23.33-ft-wide steel deck truss bridge had two 10-ft-wide lanes. It connected the north and south side of Oak Creek Canyon. Built in 1933, the 20-ft-wide bridge was too narrow to safely accommodate current traffic needs and had to be replaced.

Traffic Management : Traffic management alternative, if constructed conventionally: 80-mile detour

Average Daily Traffic At Time Of Construction : 50000

Dimensions : 190-ft long and 41.17-ft wide single-span post-tensioned concrete box girder bridge slide-in

Primary Drivers : Reduced traffic impacts; minimized environmental impacts

Impact Category : Tier 2 (within 3 days)

Mobility Impact Time : ABC: Weekend closure Conventional: Four months of traffic impacts

Project Location : On US 89A at milepost 381.32 south of the city of Flagstaff

Project Summary : The third stage of this project was a lateral slide over a weekend to connect the north and south sides of Oak Creek Canyon, visited by an estimated two million tourists each year.