
SR 51 DESIGN-BUILD PROJECT

Phoenix, Arizona



The \$94.9 million design-build project entailed the design and construction of inside and outside widening of a narrow corridor of State Route 51 which carried 150,000 cars per day through the heart of Phoenix, Arizona. The project also included a unique direct HOV connection through the existing interchange at Interstate 10. The purpose of the project was to add High Occupancy Vehicle (HOV) lanes in the median for 11 miles, significantly increasing the overall vehicle capacity of the corridor.

A major challenge for the construction team was to fit the new HOV lanes through a major stack interchange with I-10. During the proposal preparation, the Ames-Kraemer team developed a unique solution to this problem. The team eliminated a 290-foot HOV tunnel structure that had to pass under two existing bridge substructure units and which would have required an 80-foot deep pump station. Furthermore, the team developed the conceptual ideas and led to the development of an innovative proposal to allow for simpler, faster, and

less risky construction. The innovative braided ramp concept relieved an over-capacity weaving movement on the northbound I-10 approach to SR 51.

The project called for construction of ten bridges, including a 9-span precast girder flyover structure with 4 post-tensioned straddle bent pier caps and a three-span precast concrete segmental tub girder bridge widening with a 220-foot middle span.

During construction of the flyover, westbound traffic on I-10 was detoured around the work zone using completed interchange ramps. The tub girders spanned a major arterial within 1/4 mile of the I-10 system interchange. They were cast in the interchange and transported with a self-propelled trailer and lifted with two cranes, each with a rating of over 240 tons. The largest girder segment weighed 280,000 pounds.



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Client Arizona Department of Transportation (ADOT)

Joint Venture Team Ames Construction, Inc., Edward Kraemer & Sons
(Ames-Kraemer JV)

Design Engineers Parsons Brinckerhoff
Michael Baker Jr., Inc.

Contract Value \$94,910,000

Project Details

- All new lanes open to traffic in 11 months
- Maintained 150,000 vehicles per day through construction
- 1,100,000 cubic yards of earthwork
- 234,000 square yards of concrete pavement
- 822,000 square yards of rubberized asphalt
- 130,000 square feet of retaining walls
- 500,000 of sound and noise walls

Awards

- 2005 ACEC Grand Award for Engineering Excellence
- 2004 AGC Build Arizona Award for Public Highway Construction
- 2004 Southwest Contractor “Best of 2004” Award for transportation project greater than \$10 million