**CONTEXT-SENSITIVE DESIGN CASE STUDY NO. 13**
**State Route 68 - Arizona**

**LOCATION:**

State Route 68 between Bullhead City and Golden Valley in western Arizona

**PROJECT DESCRIPTION:**

The project involved reconstruction and widening of a 13.5-mile of an existing two-lane road into a four-lane roadway. The construction phasing and sequencing has been planned with primary consideration of the traveling public and businesses. The west end of the project near Bullhead City was completed first to increase travel capacity and improve business access in the area. An element of the plan was to maintain and utilize passing lanes in other segments so that one lane in each direction would be available at all times. Existing pullouts and passing lanes were maintained during the construction. Upon completion of the project, two lanes of travel were provided in each direction, with the lanes of travel separated throughout the length of the project. In the developed area within the Bullhead City limits, the lanes were separated by either a raised median or a two-way left-turn lane. Other areas were designed with an open depressed median. Where access was to be maintained in the raised median area, left-turn pockets were constructed. There were five construction sections included in the project as shown below:

| SEGMENT/MILEPOSTS | | DURATION | TIMEFRAME |
|---|---|---|---|
| A | 1.23 - 3.5 | 7 months | Sept. 2000 - Spring 2001 |
| C | 6.8 - 8.3 (new alignment) | 13 months | Fall 2000 - Fall 2001 |
| D | 8.3 - 12.2 | 16 months | Fall 2000 - Spring 2002 |
| B | 3.5 - 6.8 | 7 months | Spring 2001 - Fall 2001 |
| E | 12.2 - 14.9 | 7 months | Spring 2001 - Fall 2001 |

**CONTEXT-SENSITIVE FACTORS**

Several unique features were built into the SR 68 design-build project. Included were the following:

- Traffic was maintained on all passing and travel lanes during construction of the new roadway
- Lane rental was used to minimize the duration of lane closures by rewarding the contractor for keeping travel lanes open and charging them a fee for lane closures longer than five minutes
- Incentive/disincentive program was used to encourage the contractor to keep the travel time between Bullhead City and Golden Valley similar to the time prior to construction
- An extensive community outreach program was implemented to keep motorists informed about the SR 68 project
- A non-traditional retaining wall was installed near an historical property in order to maintain the historical aspects of the property

## HISTORY OF PROJECT

SR 68 is a critical highway for the northwestern Arizona region. It provides a vital link for employment, tourism and commercial trucking. The Arizona DOT included several innovative features into the design-build contract to benefit the traveling public during construction. The project was the first design-build job in a rural area in Arizona. Design-build allows a design team and a contractor to work together, at the same time, to complete a project in a much shorter period of time than when working under a traditional design-bid-build schedule.

## SIGNIFICANT ENVIRONMENTAL ISSUES

Several agencies worked closely together to mitigate disturbances during the project. Among the agencies involved were the Arizona DOT, the Federal Highway Administration, the Bureau of Land Management, Arizona Game and Fish, the State Land Department, and the Lake Mead National Recreation Area. Mitigation measures included salvaging and replanting native vegetation, preservation of visual quality, and preservation of wildlife and cultural resources. New construction was blended with the form, line, color and texture of the surrounding landscape. Disturbed surfaces were seeded or planted with shrubs, trees, and cacti native to the area. Other features aimed to preserve or enhance the environment and overall setting of the roadway area included construction of two wildlife crossings in the area of Union Pass, installation of wildlife fencing, and staining or painting to help new materials blend into the surrounding. Specific environmental and landscape measures were taken to accomplish the following:

Protect and enhance wildlife
Preserve visual quality
Accelerate vegetative rehabilitation

## PROJECT PARTNERSHIPS AND PARTICIPANTS

Kiewit Construction Company
Parson Transportation Group
Arizona Department of Transportation
Federal Highway Administration
Bureau of Land Management
Kaneen Advertising and Public Relations
Michael Baker Jr., Inc.
Golder
CH2M HILL

For a project of the magnitude of State Route 68, a large number of cooperating people, private companies, and governmental agencies were required to cooperate in order for the project to be successful. The Arizona Department of Transportation was responsible for planning, design, construction, environmental oversight, and final quality. Financial management and standards quality were the responsibility of the Federal Highway Administration and the Arizona DOT. The Bureau of Land Management and the Arizona Land Department played a

vital role because of their ownership of the land adjacent to the project. The Arizona DOT was also supported by their general consultant CH2M HILL and their subconsultants. The design-build team of Kiewit Western Company and Parsons Transportation Group, along with several subconsultants, were responsible for the design and construction of the improved State Route 68.

## PROJECT OUTCOME AND LESSONS LEARNED

- Utilization of "Partnering" assisted in making design build work in an environmentally sensitive area.
- A commitment to the Community Outreach needs to be made by all teams member
- Community outreach should use a variety of methods to reach the customers. Two-way communication such as Internet and phone help the customer reach the owner with both positive and negative comments.
- Educating crews of the importance of, mitigation efforts and desired outcomes helps ensure a quality end product.

The State Route 68 project was built utilizing a design-build contracting method. Design-build is a relatively new approach to highway construction that helps ensure an improved quality and a more efficient construction process. The approach allowed construction of portions of the new roadway while design of the other portions was still underway. This resulted in completion of the highway project in a shorter period of time than with traditional construction projects.

It was concluded that projects of this type could be accomplished without significant disruption of the surrounding natural environment. A teamwork approach ensured that disturbances could be mitigated during construction through special efforts including environmental awareness training and special efforts to accommodate wildlife through use of wildlife crossings, special fencing, and enhancement of bat habitat. Other efforts were made to preserve the visual quality with special attention to the landscape during and after construction.

# Construction Phases and Sequencing

| SEGMENT | MILEPOSTS | DURATION | TIMEFRAME |
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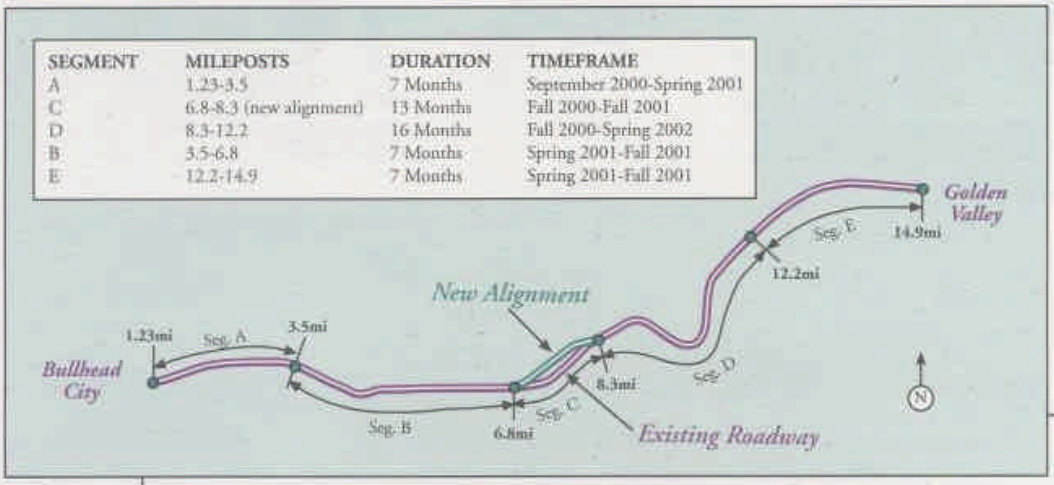
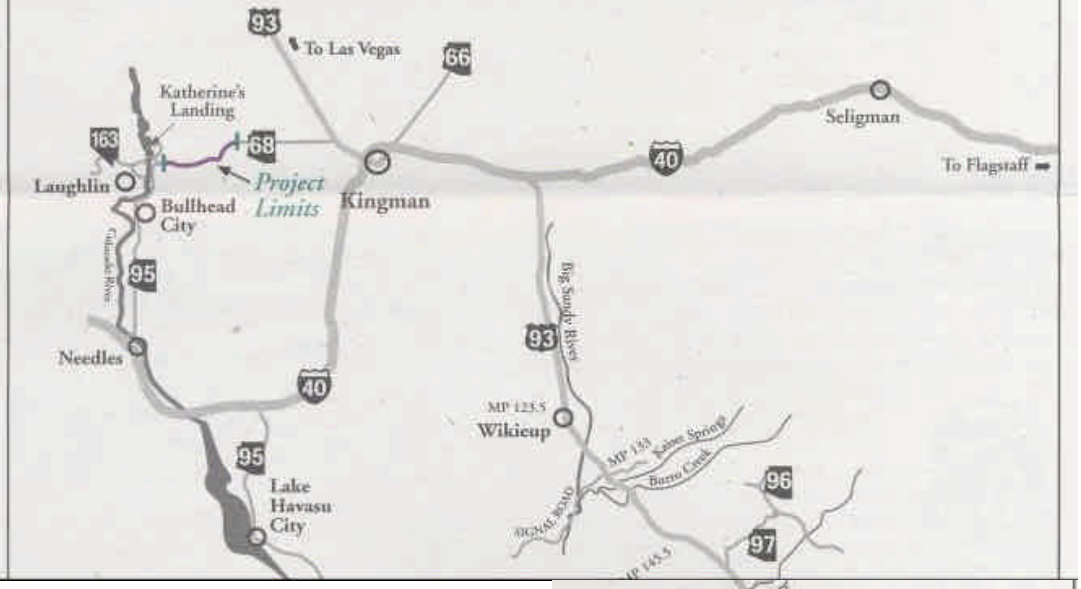
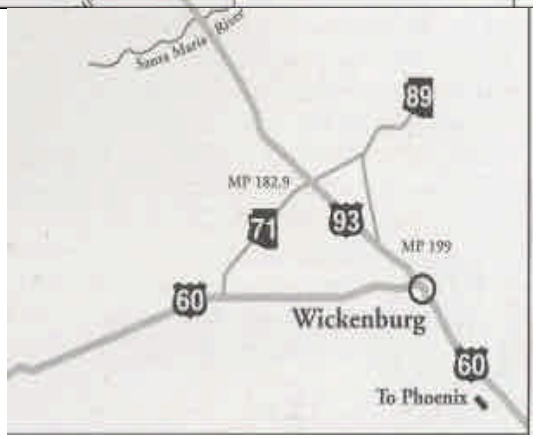
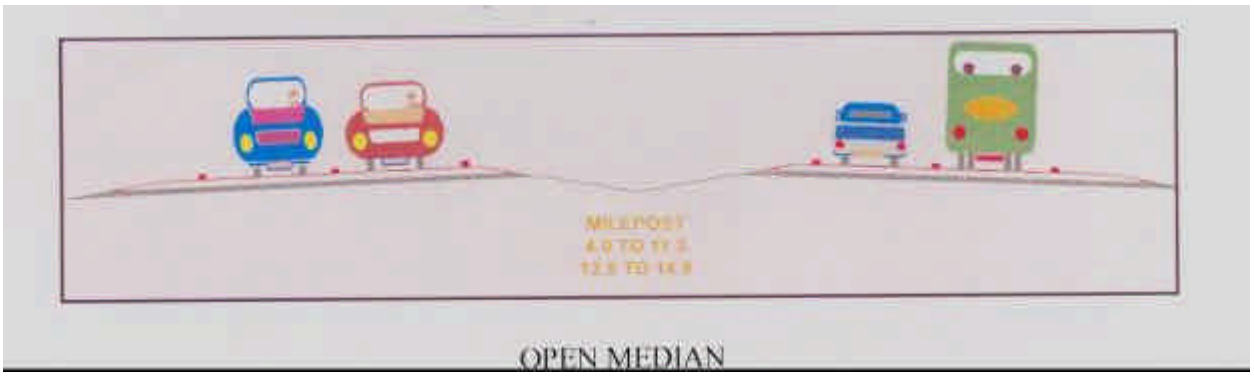


RAISED MEDIAN SECTION

TWO-WAY LEFT TURN LANE



OPEN MEDIAN

MEDIAN CONCRETE BARRIER

Construction of SR 68

Filming Public Service Announcement

Hilfiker Wall Constructed on SR 68

Relocating Cactus Along SR 68

Wildlife Along SR 68