

# The Highways for LIFE Pilot Program

Projects that demonstrate innovation

**T**he purpose of the Highways for LIFE Pilot Program is to advance Longer-lasting highway infrastructure using Innovations to accomplish the Fast construction of Efficient and safe highways and bridges. Innovation is key to finding our way out of the highway challenge. Innovation is an inclusive term used to convey all of the following: technologies, materials, tools, equipment, procedures, specifications, methodologies, and processes or practices used in the financing, design, or construction of highways.

The first part of this article was published in the Fall 2010 issue of *ASPIRE*.™ It provided the background, objectives, project eligibility requirements, and availability of funding for the Highways for LIFE Pilot Program. In this article, the focus is on projects using accelerated bridge construction (ABC) technology and prefabricated bridge elements and systems. The Federal Highway Administration (FHWA) has sponsored workshops on these technologies in 11 states and more are being planned.

## Demonstration Projects

The Highways for LIFE Pilot Program offers incentive funding for states to try innovative approaches. Between 2005 and October 2009, the program awarded approximately \$25 million to 25 projects in 21 states, highlighting more than two dozen innovations, such as wider use of ABC techniques and innovative, performance-based contracting.

FHWA encourages the states to work in partnership with the private sector to test and

evaluate emerging highway technologies to move them closer to commercialization. The program capitalizes on private sector creativity by funding the best ideas already being developed by industry. The objective is for the states to gain valuable experience in using the innovations and be able to champion deployment of the innovations.

Documentation is a valuable resource for decision makers and practitioners as they adopt innovation. For each demonstration project, FHWA is producing a summary report on success in meeting performance goals. The reports, which also compare the costs and benefits of using the innovation compared to traditional construction, will guide decision makers as they choose the best solutions for their projects.

## Information Dissemination

Information dissemination is an essential component of technology deployment, both to help transportation stakeholders use innovations effectively and to expand awareness of the Highways for LIFE mission to improve the American driving experience. The initiative uses a full range of communications tools to tell the innovation story, including workshops, showcases, presentations, brochures, handouts, trade shows, DVDs, videos, reports, and articles in industry publications. The following are examples of completed projects.

### Iowa DOT Project

The Iowa Department of Transportation (IowaDOT), the Nebraska Department of Roads,



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and FHWA, in coordination with the city of Council Bluffs and the Metropolitan Area Planning Agency, proposed improvements to the interstate system around Council Bluffs, Iowa, with improvements extending across the Missouri River on I-80 into Omaha, Neb. The primary component of this project was to replace the existing four-span 24th Street Bridge over I-29/I-80 with a wider and longer two-span bridge.

This project was completed in only one season under an accelerated construction schedule using contract and construction innovations. IowaDOT's approach realized a cost savings of about \$1 million or 8% of the total project over conventional construction practices. A significant amount of the cost savings was from reduced construction time. A key feature was the use of full-depth, precast concrete deck panels. Detailed information about this project is provided at <http://www.fhwa.dot.gov/hfl/summary/ia/>.

### Utah DOT Project

The 4500 South Bridge on State Route 266 in Salt Lake City, Utah, was built in 1971. The four-span bridge crossed I-215 and served as an important access point for local businesses and residents. The bridge was in very poor condition. The Utah Department of Transportation (UDOT) needed to expedite the removal and replacement of the bridge. After exploring alternatives and evaluating project and user costs, UDOT selected innovative ABC and project delivery strategies.

The biggest innovation was the removal and replacement of the bridge using self-propelled

*Seventy full-depth precast, high-performance concrete deck panels, 8 in. thick, 10 ft long, and 52 ft 4 in. wide, were used on the 24th Street Bridge over I-29/I-80 in Council Bluffs, Iowa. Photos: Iowa Department of Transportation.*





*The 4500 South Bridge on State Route 266 in Salt Lake City, Utah, was removed and replaced in just 53 hours using self-propelled modular transporters. Photos: Utah Department of Transportation.*



*One of five crossings on an 11-mile-long stretch of OR 38 included in the Highways for LIFE Pilot Program. Precast concrete columns and piers were used to construct one-half of the bridge at a time. Photo: Oregon Department of Transportation.*

modular transporters. The entire operation took a mere 53 hours and has significantly raised customers' future expectations of UDOT on highway project delivery methods and time frames.

The economic analysis revealed a cost savings of about \$3.24 million or 36% over conventional construction practices. A significant amount of the cost savings was from reduced delay costs.

Because of the success of this project, UDOT has taken several significant steps toward making ABC an integral part of its bridge construction projects and has set a goal of making ABC standard practice for all bridges by the end of 2010. Detailed information about this project is provided at <http://www.fhwa.dot.gov/hfl/summary/ut0409>.

*For Crossing 4 on OR 38, the new precast concrete girder bridge was built next to its final location and slid into place during a weekend closure as the old bridge was slid out of the way. Photo: Slayden Construction Group Inc.*

## Oregon DOT Project

This Oregon Department of Transportation (ODOT) project consisted of removing and replacing five bridges on an 11-mile stretch of OR 38 between the towns of Drain and Elkton. These bridges, built in the late 1920s and early 1930s, were near the end of their useful lives and required immediate attention. After exploring many alternatives and evaluating the project and user costs, ODOT selected the use of the design-build method of project delivery in concert with incentive and disincentive clauses that included innovative staged construction and accelerated bridge removal and replacement techniques. Removal and replacement of the bridges on OR 38 was a great success, and ODOT was able to complete the project more than a year ahead of schedule.

ODOT realized a total cost savings of about \$2.4 million over conventional construction practices. These savings stemmed from reduced construction duration, reduced mobilization costs, reduced delay costs, and

the use of innovative bridge removal and replacement techniques. Overall, the savings to ODOT represent about 5% of the total project cost. Detailed information about this project is provided at <http://www.fhwa.dot.gov/hfl/summary/or/>.

## Closing Remarks

The Highways for LIFE Pilot Program provides opportunities for stakeholder input and involvement in the development, implementation, and evaluation of the program. The program encourages working together in learning and sharing information on technology developed, deployed, and successfully used under the program. The information is available to the transportation community and the public at <http://www.fhwa.dot.gov/hfl/>.

