

Accelerated Bridge Construction

By Brian J. Leshko, P.E.

The Federal Highway Administration (FHWA) funds programs for State Departments of Transportation (DOTs) to advance new technology and techniques in the design and construction of transportation infrastructure projects, including bridges. Maximizing the efficient movement of the public via state transportation infrastructure during the execution of bridge repair or replacement projects creates cost savings to the states, the public and commerce.

The FHWA is promoting a new way of doing business, in an attempt to address two problems associated with current methods of performing bridge construction. First, the bridge infrastructure is aging. Much of the highway system was built in the 1950s and 1960s, and is subsequently in need of rehabilitation and replacement. Second, traffic demand has grown tremendously without a corresponding increase in highway capacity. The result is an increasingly high level of congestion. Large construction projects simply compound traffic problems during lengthy construction periods. The traveling public demands high quality, longer-lasting highways and bridges, but they want any construction-related activity completed quickly. In order to address this problem, the FHWA has adopted the philosophy of "Get in, Get out, and Stay out."

Accelerated construction is a means to achieve the reconstruction of major highways while minimizing delay and community disruption. However, accelerated construction is not simply "building things faster." Rather, it includes a range of techniques, processes, and technologies to achieve the desired result of reducing congestion due to construction while improving quality. Accelerated bridge construction methods include the following:

- Innovative Construction Methods
 - Incremental Launching
 - Superstructure Roll-In
 - Superstructure Lift-In
- Prefabricated Bridges and Components
 - Precast Bent Caps
 - Precast Columns
 - Precast Deck Panels
 - Precast Barriers
 - Prefabricated Trusses

The Highways for LIFE Program was established by the FHWA in 2003 as a

way to improve safety, reduce congestion due to construction, and improve quality. LIFE is an acronym for the:

- Long-lasting,
- Innovative, and
- Fast construction of
- Efficient and safe highway infrastructure

The Highways for LIFE vision is to implement the use of more innovation and technology to improve the Nation's roadways. The program recognizes that many of the technologies and techniques to accelerate construction already exist, but are not being widely implemented. Accelerated construction techniques have been used predominantly during times of crisis, such as an emergency bridge replacement (i.e. due to a hurricane). It is the goal of the Highways for LIFE Program to encourage the broader application of these technologies and techniques so that they become standard practice within the highway construction community. The intent of the program is to showcase projects that employ techniques consistent with the program's goals of improving safety, reducing congestion due to construction, and improving quality.

The purpose of Highways for LIFE is to advance longer-lasting highways using innovative technologies and practices to accomplish fast construction of efficient and safe highways and bridges. The Highways for LIFE Program will provide the financial incentives to demonstrate and promote state-of-the-art technologies, elevated performance standards, and new business practices in the highway construction process that result in improved safety, faster construction, reduced congestion from construction, and improved quality and user satisfaction. Projects eligible for funding under the program will:

- Construct, reconstruct, or rehabilitate a route or connection on an eligible Federal-aid highway; and
- Use innovative technologies, manufacturing processes, financing, or contracting methods that improve safety, reduce congestion due to construction, and improve quality.

Authorized SAFETEA-LU funding for the Highways for LIFE Program, appropriated out of the Highway Trust



Launching of the Clifford Hollow Bridge, Hardy, West Virginia. Courtesy of HDR Engineering, Inc.

Fund, is \$75 million during FY 2006-2009, with \$15 million for FY 2006 and \$20 million per year for FY 2007-2009.

The FHWA will issue a memorandum requesting the submission of candidate projects for a given fiscal year. The State Departments of Transportation will identify and prioritize projects to be performed under the program, and provide justification that each of the candidate projects meets the program's eligibility criteria. High priority innovative technologies to be promoted through the Highways for LIFE Program include road safety audits (Safety), prefabricated bridge elements and systems (Infrastructure), and tools and techniques for "Making Work Zones Work Better" (Operations).

The Federal Highway Administration (FHWA) will hold its **2008 FHWA Accelerated Bridge Construction – Highway for Life** conference in Baltimore, Maryland on March 20th and 21st, 2008. The day before the conference (March 19th), a day-long class will be devoted to teach design of steel and concrete bridges using the AASHTO LRFD Bridge Design Specifications. The conference and the class will be held at the Hyatt Regency Baltimore on the Inner Harbor, and is being co-sponsored by the FHWA and 13 State DOTs from across the United States. For more up-to-date information, please visit the following websites: www.highwayforlife.com or www.fhwa.dot.gov/bridge/accelerated/.

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