



**Sustainability and  
the Art of Concrete Bridge Design**

John S. Dick, *Executive Editor*

*Photo: Ted Lacey Photography.*

**W**ith this issue, *ASPIRE*™ begins its third year of exploring sustainable solutions. We find the subject more pervasive—in a most positive way—with each passing year. Both Myint Lwin and Scott Snelling address the topic in their articles. Myint, who is director, Office of Bridge Technology at the Federal Highway Administration, provides transcribed comments made during a presentation last November at the American Segmental Bridge Institute’s annual convention in Minneapolis. Scott is a senior engineer with Hardesty & Hanover in New York City and serves on the American Society of Civil Engineers’ Task Committee for Sustainable Design. From his background, he suggests what a new national standard for sustainable bridge design could look like, based on existing sustainability standards for buildings.

*ASPIRE* has highlighted many arch bridge projects over the years including three in this issue, and there is yet another waiting in the wings for the Spring issue. The three projects in this issue are:

- Spencer Creek Bridge, Newport, Ore.,
- Humpback Bridge over the Boundary Channel on the George Washington Parkway near Washington, D.C. in Virginia.
- Galena Creek Bridge on the I-580 Freeway Extension, near Reno, Nev., and

The arch is structurally and aesthetically well-suited for creating highway bridges. Fred Gottemoeller, in his popular book titled, *Bridgescape: the Art of Designing Bridges*, says about evaluating bridge types, “...if it is desirable for the structure to frame an important view, than a structural type with a curved, arched soffit will be an effective choice...Arches continue to have strong visual appeal because of their shape... Arch bridges look best where the surroundings ‘contain’ the visual thrust of the arch.”

Each highlighted project uses the arch in a unique way. Each draws on context sensitivity and uses concrete

for interesting solutions. These projects also illustrate different techniques for building concrete arches. We believe you, too, will find these projects innovative and useful in the future consideration of such designs.

Janssen & Spaans Engineering (JSE) has played an important role in concrete bridge design for nearly 30 years. They have been involved in two record bridge spans in recent years. Since 1960, the two parallel Oneida Lake Bridges in Brewerton, N.Y., were the world’s longest precast, prestressed concrete bridge spans at 320 ft. But, in 2000, a JSE design for the Moore Haven Bridge over the Okeechobee Waterway in Florida resulted in a three-span unit with a 320-ft-long main span, tying the record. The Kentucky Route 22 project, shown on the cover and mentioned in the FOCUS on JSE, when completed, will be the new world record holder, with a main span of 325 ft. Along the way, techniques pioneered by JSE and used in the design and construction of spliced girder bridges have become commonplace. We are proud to feature them in this issue.

The Jakway Park Bridge in Iowa not only uses ultra-high-performance concrete at a design compressive strength of 21,500 psi but employs a special new shape called the Pi girder (owing to its cross-section’s resemblance to the Greek letter). Created by the Massachusetts Institute of Technology and the Federal Highway Administration, the shape takes advantage of the material’s unique properties.

The Pennsylvania Department of Transportation is this issue’s featured state. The concrete industry acknowledges Pennsylvania as home to the nation’s first modern precast, prestressed concrete bridge; a cutting edge solution for the time. Today, PennDOT continues its state-of-the-art applications of concrete technology.

Each article serves as a testament to wise decisions by designers and good investments by owners on behalf of the traveling public. As always, we hope you enjoy and benefit from their presentation.

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