

# The American Segmental Bridge Institute: 35 Years of Continuous Improvement

by Gregg Freeby, American Segmental Bridge Institute

The first post-tensioned concrete segmental box-girder bridge built in the United States was the JFK Causeway on Park Road 22 in Corpus Christi, Tex. It was opened to traffic in 1973. (For details of the bridge's original construction and its condition, see the Project article in the Summer 2021 issue of *ASPIRE*®.) This first project began a slow but steady growth in the use of the concrete segmental construction method in the United States. After a few years, there was an increasing need for a professional organization that could facilitate the further advancement of this innovation.

After a meeting of key individuals, including Eugene Figg of Figg & Muller Engineers, John Kulicki of Modjeski and Masters, and J. D. Pitcock Jr. of Williams Brothers Construction, a new institute was formed and incorporated in 1988, the American Segmental Bridge Institute (ASBI).

A presentation at the 2023 American Segmental Bridge Institute (ASBI) annual convention. Part of ASBI's scope is to work collaboratively to advance, promote, and innovate concrete segmental bridges and complex concrete structure technologies. This includes sharing knowledge, educating stakeholders, and providing sustainable and resilient solutions. Photo: American Segmental Bridge Institute.

Cliff Freyermuth served as ASBI's executive director from its inception until his retirement in 2008. He and the ASBI board of directors were instrumental in establishing the group as a key organization in the development of the segmental method through seminars, training, and an annual convention. ASBI's first annual convention was held in 1989 in San Diego, Calif., and drew just under 170 attendees. Since that time, the ASBI annual convention has seen steady growth in attendance. ASBI hosted their 35th annual convention in Tucson, Ariz., in October 2023, with more than 300 attendees. In 2009, ASBI gained a new executive director, William "Randy" Cox, the former Texas state bridge engineer. Cox led ASBI through continued growth and challenges until his retirement in 2018. Beginning in 2019, the author has had the honor of leading ASBI after a 30-year career at the Texas Department of Transportation.

According to the incorporation filing, ASBI was founded for the following reasons: "To advance the use of segmental and cable-stayed bridges. To provide a forum where designers, contractors and owners can meet to develop the techniques and procedures that will continually advance the art, engineering, and quality of concrete segmental and cable-stayed bridge construction." ASBI's early focus was on reducing contractor claims associated with unclear or ambiguous contract requirements and uncertainty as to how bridges were built using this method. This emphasis on "designers, contractors and owners" was unique at the time. In fact, even today, few organizations focus on these three stakeholders in the execution of bridge projects. It is this three-pronged approach that has proven to be ASBI's biggest strength over the years. This approach enables ASBI to assemble the right individuals to problem-solve and collaborate.

It is significant to note that ASBI was formed as an institute and not as an association. Typically, an association is created to represent the interests and promote the common goals of its member companies. In contrast, an institute is usually focused on education, research, training, and professional development within a specific industry or field. While it may also represent the interests of its members, the primary emphasis of an institute is on advancing knowledge, skills, and expertise in the industry.

To that end, ASBI's original incorporation filing also states the following as one of the purposes for the organization: "The dissemination of information and knowledge about all aspects of segmental





The navigation unit of the Marc Basnight Bridge, Outer Banks, N.C., is a 3550-ft-long, 11-span, continuous post-tensioned concrete segmental structure. It received the 2019 American Segmental Bridge Institute Award of Excellence. Photo: HDR.

and cable-stayed bridges through seminars, workshops, conventions, printed public, electronic, photographic and other educational media.”

Over the years, ASBI has seen many challenges and opportunities. In 2000, issues related to the grouting of post-tensioned structures began to become an area of concern to bridge owners. ASBI quickly mobilized a group of experts to develop training and specifications for the grouting of post-tensioned structures. The first ASBI Grouting Certification Training class was held August 6 to 8, 2001, at the J. J. Pickle Research Center at the University of Texas–Austin. One hundred forty engineers and construction personnel participated in the class. Since then, ASBI has trained over 2800 installers, supervisors, and inspectors in the proper specifications and procedures for grouting post-tensioned structures.

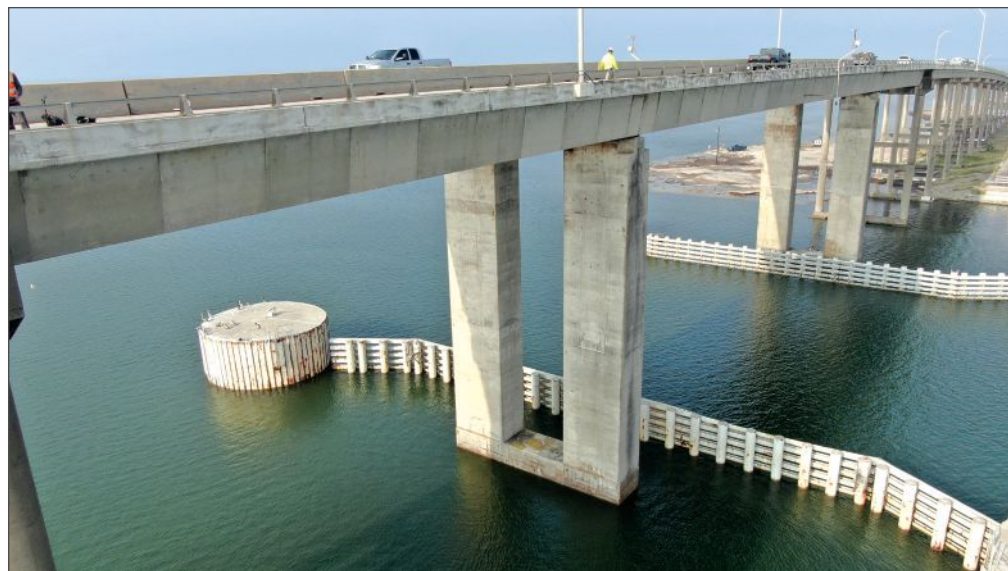
To provide additional guidance for the construction of concrete segmental bridges, ASBI publishes the *Construction Practices Handbook for Concrete Segmental and Cable-Supported Bridges*.<sup>1</sup> The current third edition was published in 2019. This handbook provides a basic understanding of concrete segmental construction technology. The overall goals are to facilitate the construction process, avoid common difficulties previously encountered, and reduce impacts to projects.

Concrete structures have grown in complexity in recent years, and so the ASBI board of directors voted at their 2023 annual meeting to expand the

institute’s scope to include complex concrete structures. The new mission statement reads: “To work collaboratively to advance, promote, and innovate concrete segmental bridges and complex concrete structure technologies; share the knowledge; educate stakeholders; build professional relationships; and increase the value of our infrastructure by providing sustainable and resilient solutions.” ASBI is still refining what will be included under the “complex structures” definition, but it is envisioned to include structures such as precast concrete arches, continuous spliced girders, precast, post-tensioned concrete substructures, and concrete structures that require a specialty engineer during construction.

To monitor the performance of concrete segmental bridges, ASBI regularly produces the *Durability Survey of Segmental Concrete Bridges*.<sup>2</sup> This report uses the bridge inspection data found in


JFK Causeway Bridge in Corpus Christi, Tex., which opened in 1973, was the first post-tensioned concrete segmental box-girder bridge built in the United States. Photo: Wiss, Janney, Elstner Associates.



the National Bridge Inventory database to evaluate the long-term performance of concrete segmental bridges. (See the Winter 2023 issue of *ASPIRE* for more information about this report.)

From the latest durability survey, it is clear that concrete segmental bridges continue to show excellent durability performance. Of the major bridge types in the inventory, concrete segmental bridges have the lowest percentage of poor-rated bridges, with only 0.7% rated in the poor category (details are provided in the survey). In the 50 years since the first concrete segmental bridge in Texas, the performance of the concrete segmental bridge inventory has been outstanding and further demonstrates the benefits of concrete segmental construction.

## References

1. American Segmental Bridge Institute (ASBI). 2019. *Construction Practices Handbook for Concrete Segmental and Cable-Supported Bridges*. 3rd ed. Austin, TX: ASBI. [https://i5mc1f.p3cdn1.secureserver.net/wp-content/uploads/2023/07/2019-3rd\\_Edition\\_CP\\_Handbook.pdf](https://i5mc1f.p3cdn1.secureserver.net/wp-content/uploads/2023/07/2019-3rd_Edition_CP_Handbook.pdf).
2. ASBI. 2022. *Durability Survey of Segmental Concrete Bridges*. 5th ed. Austin, TX.: ASBI. <https://i5mc1f.p3cdn1.secureserver.net/wp-content/uploads/2023/07/2022-ASBI-Durability-Survey.pdf>. 

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*Gregg A. Freeby is the executive director of the American Segmental Bridge Institute and chair of the National Concrete Bridge Council.*