

# What's Happening at CBEI: Education and Collaboration on Concrete Bridges

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Articles in past issues of *ASPIRE*® have highlighted the launch and progress of the Concrete Bridge Engineering Institute (CBEI) and its efforts to provide an immersive educational experience for workforce development. This article addresses recent and upcoming CBEI events and activities.

## Continuing Growth of CBEI Courses and Collections

Since the kickoff of the Transportation Pooled Fund TPF-5(508) in June 2023, CBEI has continued to develop industry resources, including several courses. The Concrete Materials for Bridges and Bridge Deck Construction Inspection courses are being delivered, and the Post-tensioning Academy courses are scheduled for rollout later this year.

We are seeing a strong and growing demand to participate in the Bridge Deck Construction Inspection Course, which has received outstanding feedback about

its format, delivery, and content since it was launched in 2025. CBEI recently delivered this course for the seventh time, and it is being offered nearly every month (see the Spring 2026 issue of *ASPIRE*).

A multidisciplinary approach is central to the Concrete Materials for Bridges Course, which continues to attract participation from concrete bridge industry professionals of all different experience levels who are seeking a deeper understanding of how material behavior influences bridge construction and long-term bridge performance. The course focuses on cement hydration and concrete mixture design, as well as the practical consequences of decisions related to curing, permeability, shrinkage, supplementary cementitious materials, environmental exposure, and construction practices. As transportation agencies increasingly emphasize service life and life-cycle performance

in addition to the initial construction cost, understanding concrete materials has become more important than ever. Bridges are expected to perform reliably for 75 to 100 years or longer, often in aggressive environments with increasing traffic demands. Achieving these goals requires a strong understanding of durability and materials behavior throughout design and construction. What makes this CBEI course especially valuable is its practical and applied focus. Participants do not simply review specifications and theory; they evaluate real materials, discuss field performance, examine project case studies, and work collaboratively through durability-focused mixture design exercises. The course creates direct connections between materials decisions made during design and construction and the long-term maintenance and performance outcomes that transportation agencies experience decades later. For bridge professionals considering future offerings

**Participants convene for structural behavior prediction testing on day 1 of the CBEI Conference and Workshop. All Photos: Concrete Bridge Engineering Institute.**





**Structural behavior predictions for an inverted tee specimen are tested at the CBEI Conference and Workshop.**

of the course, the value extends across disciplines. Whether you are a bridge owner, engineer, inspector, contractor, manager, or materials professional, or serve in another role, you have likely run into questions related to the state of practice as it relates to concrete. Given the constantly changing market, questions such as those related to blended cements (especially ASTM C595 Type IL cement<sup>1</sup>) and the use of alternative binders are among the variables that concrete bridge professionals must understand and address.

Past attendees representing a diverse cross section of the industry have expressed appreciation for the value, learning, and context that they have gained from the Concrete Materials for Bridges Course. Some participants have noted that they now have a stronger understanding of constructability and durability issues and how construction practices influence long-term performance; others have emphasized that they gained greater insight into deterioration mechanisms and preventive strategies. The course is offered approximately quarterly, most recently in April.

Other CBEI initiatives such as the Bridge Component Collection have also continued to evolve. The collection now provides tangible concrete bridge elements for visitors and course participants to see and to use in demonstrations.

## 2026 CBEI Conference and Workshop

In late April, CBEI hosted participants from across the United States at the inaugural CBEI Conference and Workshop held at the CBEI facility in Austin, Tex. This event brought together many stakeholders who are working together to continually improve the performance and durability of concrete bridges. As the meeting illustrated, conversation at CBEI is currently focused on developing education modules to support the needs of the concrete bridge community.

A departure from many traditional conferences built around lecture

sessions alone, the CBEI Conference emphasized direct engagement with interactive and hands-on demonstrations, tours, full-scale bridge components, and collaborative technical discussions. The first day was a workshop dedicated to identifying present-day industry needs and considering what can be done to address these needs going forward.

A unique portion of the first-day event was the Structural Behavior Prediction Competition. Participants evaluated a large-scale structural component and predicted how it would behave under specified loading conditions before

**Attendees at the CBEI Conference and Workshop discuss a poster presentation about ongoing concrete bridge-related research.**



testing. This experience sparked thoughtful discussion and reinforced the value of hands-on education and physical experimentation in a profession that increasingly relies on analytical modeling and digital tools. The exercise highlighted various approaches for modeling an element's behavior and explored estimates of capacity, deflection, and cracking. An important topic of discussion was levels of approximation and how they fit into the various approaches. In this context, the term "levels of approximation" is adopted from the *fib* (International Federation for Structural Concrete) *Model Code 2020*.<sup>2</sup> This code acknowledges that all calculations are approximations of the true response of a structural member. First-cut analyses (Level I approximation) may be appropriate in some cases to obtain quick estimates of capacities. Between that level of approximation and the most sophisticated/rigorous approaches (Level IV approximation), there are several levels of approximation that we can adopt in our calculations. This type of framework becomes especially important in evaluating the existing inventory of bridges and/or load-rating efforts. The ongoing "A Crack Is Not a Crack" series of *ASPIRE* articles was also highlighted as part of the discussion.

On the second day of the conference, a larger group—including Transportation Pooled Fund members from departments of transportation around the United States, engineers, inspectors, researchers, contractors, students, consultants, exhibitors, and representatives of industry organizations—gathered for an interactive experience focused on practical bridge engineering challenges and emerging technologies. Participants explored stations showcasing industry-led training and certification programs,

**On the second day of the CBEI Conference and Workshop, participants gather for the Concrete Materials for Bridges demonstrations and tour led by Dr. Kevin Folliard and Dr. Thano Drimalas.**



bridge inspection technologies, nondestructive evaluation methods, durable post-tensioning systems, concrete materials research, rehabilitation strategies, structural testing, precast concrete technologies such as precast concrete forms, and durability-focused construction practices. By combining theoretical understanding with real-world observation, CBEI strives to create learning and collaboration opportunities that are difficult to replicate in a classroom, online platform, or conference room setting.

## CTR Symposium

On April 8, a few weeks before the CBEI Conference, representatives of CBEI participated in the Center for Transportation Research (CTR) Symposium at the University of Texas at Austin. The long-standing annual symposium is a chance to explore the latest initiatives in advancing transportation infrastructure through research, innovation, and implementation. The broader goal of the CTR Symposium is to connect transportation research with practical applications across multiple disciplines that affect mobility and infrastructure systems. Topics discussed during the symposium include bridge engineering, transportation planning, pavement systems, freight mobility, intelligent transportation systems, traffic safety, autonomous technologies, construction innovation, durability, resilience, and infrastructure management.

Within that larger transportation conversation at this year's symposium, CBEI represented one of several major research initiatives demonstrating how implementation-focused collaboration can accelerate innovation and improve infrastructure performance. During the symposium, CBEI presented updates on

its activities and hosted a tour of CBEI's facilities and components.

The symposium reinforced an increasingly important reality for the transportation industry: infrastructure challenges need interdisciplinary strategies. Bridge performance today involves more than structural design alone. Materials science, construction quality, inspection technologies, durability modeling, maintenance strategies, data collection, sustainability, and workforce development all intersect.

## Upcoming Opportunities

Please visit [www.cbei.engr.utexas.edu](http://www.cbei.engr.utexas.edu) for more information about CBEI. Registration for upcoming courses is available through the CBEI website at <https://cbei.engr.utexas.edu/training-certification>.

Concrete Materials for Bridges Course:

- August 18–19, 2026

Bridge Deck Construction Inspection Course:

- July 7–9, 2026
- August 25–27, 2026

## References

1. ASTM International. 2025. *Standard Specification for Blended Hydraulic Cements*. ASTM C595/C595M-25. West Conshohocken, PA: ASTM International.
2. *fib* (International Federation for Structural Concrete). 2020. *fib Model Code 2020*. Lausanne, Switzerland: *fib*. 

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