CBEI Full-Scale Bridge Completed for Deck Construction Training

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The mission of the Concrete Bridge Engineering Institute (CBEI) at the University of Texas is to serve the concrete bridge community and profession with regard to the most pressing issues encountered in concrete bridges across the United States. One of the focal points of CBEI is the design and construction of concrete bridge decks.

Bridge Deck Construction Inspection Training Course

Between March and June 2025, CBEI staff, working with the Texas Department of Transportation (TxDOT) and SEMA Construction, successfully constructed a full-scale, three-span bridge in Austin, Tex. The bridge is 34 ft wide and 134 ft long, with each span representing a different stage of construction. Span 1 demonstrates forming and bracing only; span 2 has formwork and reinforcing steel; and span 3 has a completed cast-in-place concrete deck. This structure, which is designed for hands-on instruction, will serve as the centerpiece of the new Bridge Deck Construction Inspection Training Facility. A "dry run" training session was held in May 2025, while construction was still underway, and the inaugural training session was held July 15–17, 2025.

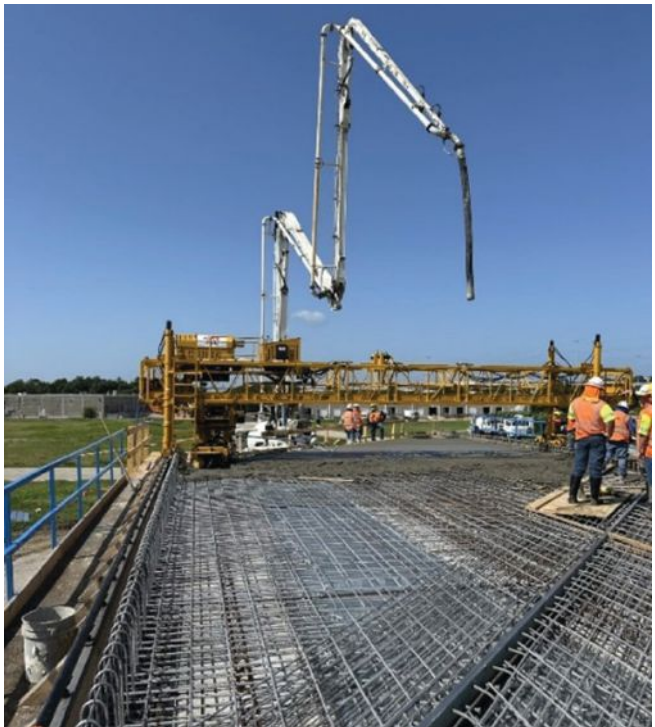
This purpose-built training environment represents a significant leap forward in bridge construction education. Unlike conventional classroom-based instruction, this facility offers engineers and inspectors the rare opportunity to engage with a full-scale bridge deck, physically staged at multiple points in its construction life cycle. Throughout the three-day course, participants work through eight training modules, each focused on a critical stage of concrete bridge deck construction:

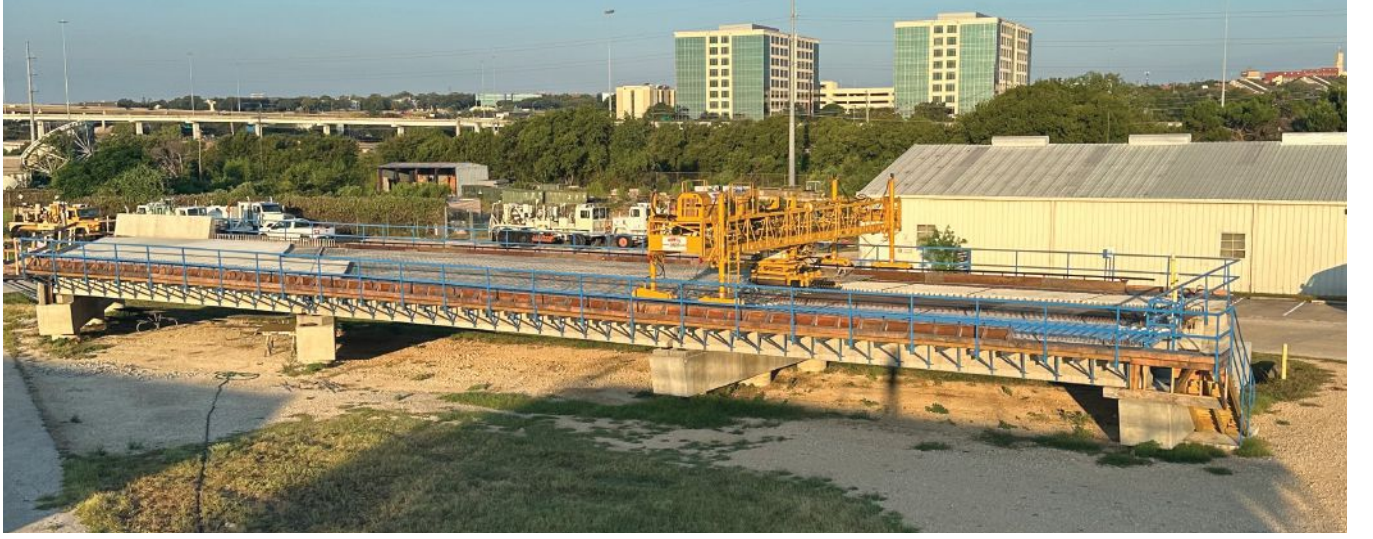
- Minimum bracing and forming
- Setting forms, screeds, and grading
- Reinforcement
- Prepour
- Concrete placement and screed
- Finish and cure
- Final inspection
- Special cases and troubleshooting

The curriculum blends classroom instruction with extensive field-based

Span 1 of the full-scale bridge deck showcases three different forming methods: stay-in-place corrugated metal deck (left); wood forms (center); and partial-depth precast concrete deck panels (right). Photo: Concrete Bridge Engineering Institute.

The deck of span 3 was placed using a telescopic concrete pump. Concrete Bridge Engineering Institute staff collaborated with the Texas Department of Transportation and SEMA Construction to construct the full-scale training structure. Photo: Concrete Bridge Engineering Institute.





Specimen for the Bridge Deck Construction Inspection Training Facility. Photo: Concrete Bridge Engineering Institute.

learning, with primary emphasis on the latter. By removing variables such as live traffic, active contractor crews, and strict production schedules, the training provides a safe, controlled environment to explore inspection scenarios in detail without the constraints of an active jobsite.

Testimonies

To prepare for the official launch, CBEI hosted a successful "dry run" session in May 2025 with members of the Transportation Pooled Fund Program. While the bridge was still under construction at that time, event participants provided valuable feedback and collaborated to refine the course structure and logistics. The input received has been instrumental in finalizing the training modules and ensuring that the facility will meet the expectations of both experienced and early-career professionals.

The following quotes are testimonies from participants who built the demonstration structure that will be used for hands-on training for the CBEI Bridge Deck Construction Inspection Programs.

> *My role here at TxDOT has given me the opportunity to go out to a lot of projects to see bridges in different construction stages. Being able to go out into the field helps tremendously in understanding how a specific stage is performed and what it takes to successfully complete it. The CBEI project has allowed me and my group to get our hands dirty and perform some of this work ourselves. This allows us to understand the specific process and all the minute details and techniques that go into its completion. I've realized how many tasks must be completed during construction that involve items that won't be a part of the structure after completion—for example, all of the formwork, brackets, cables, etc., that are used to keep the screed secure on the structure and the beams from rotating when placing the deck. This is something that isn't always obvious to an observer because there may be something more interesting catching the eye, like a pump truck distributing concrete onto a bridge deck. I've had minimal experience working with concrete in this way, so being able to be involved in the placement gave me a lot of insight into how fast it happens and what needs to be done in the short amount of time you have to pour, vibrate, and trowel before possible complications can happen. I got to do this specifically for the concrete pedestals which the beams would sit on, and all the labor we did before we could place the concrete was surprising. This work included cutting the protruding reinforcing bar extending from the top of the cap and shaping it in such a way that we could get a wood form built around it with our 2 in. clearance in mind. Then chamfering on the insides of the forms was necessary so that the top surface of the pedestal would be level, and reinforcing bar needed to be tied to keep the reinforcement from moving. It's been a while since I've been able to weld, so any chance I got I jumped at the opportunity, and that was my favorite part.*
>
> —Michael Ballinger, TxDOT Bridge Division

> *The time we have spent constructing this bridge has proven invaluable. For an engineer, the ability to create something from plans and drawings with your own hands is perspective altering. In my experience, there has always been a great divide of knowledge separating the engineer from the contractor. This is our attempt to bridge that divide. We are fortunate to provide a living classroom for future engineers and inspectors to use, and we hope that anyone coming to see it at CBEI will gain a lot from the experience. Thank you for the opportunity.*
>
> —Jeffrey Douglass, TxDOT Bridge Division

The value of this initiative has already been recognized by TxDOT leadership. With Austin as the host location, the facility is easily accessible to TxDOT districts, construction engineering and inspection (CEI) partners, contractors, members of the pooled fund transportation agencies, and the broader concrete bridge engineering and construction community.

> *Having a real, full-size bridge deck to train inspection staff will be a massive benefit to our training curriculum. For something like construction inspection, classroom training alone is just the tip of the iceberg. The only way to truly understand the issues you might encounter in the field is to see them—in the field. To have this in our own backyard in Austin means it is readily accessible to all TxDOT employees and our CEI and contractor partners. I think this is truly a game changer for the professional development of inspection staff!*
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> —Seth Cole, construction and maintenance branch manager, TxDOT Bridge Division

Future Offerings

Following the July kickoff course, the dates for additional training courses have been confirmed:

- October 14–16, 2025
- November 11–13, 2025
- January 13–15, 2026
- February 17–19, 2026
- March 10–12, 2026

More dates will be announced soon.

Participation is open to all inspectors and engineers from Transportation Pooled Fund Group agencies, consultants, and contractors. Given the anticipated demand for spaces, we strongly encourage early registration.

As the CBEI Bridge Deck Construction Inspection Program launches, it joins our growing suite of technical training offerings, including the well-received Concrete Materials for Bridges course. Together, these programs reflect TxDOT and the Transportation Pooled Fund members' commitment to workforce development and investment in the next generation of highly competent, field-ready engineers and inspectors.

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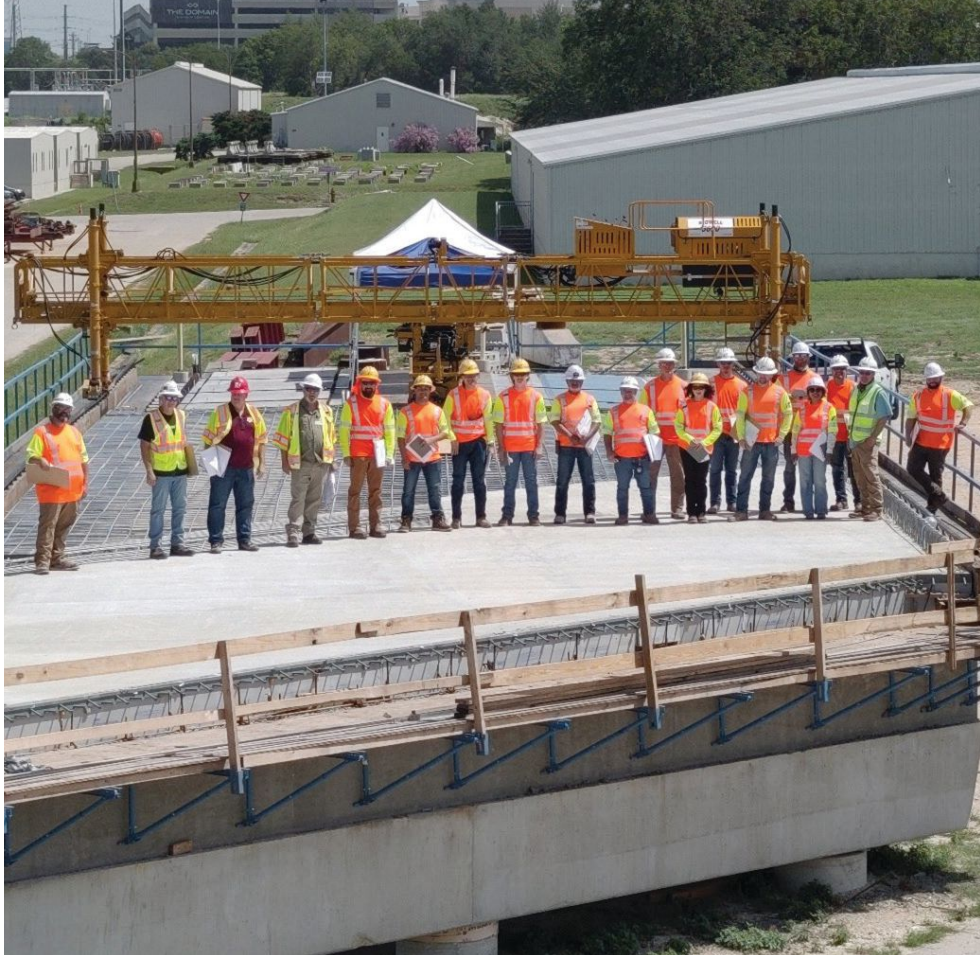

Inaugural Bridge Deck Construction Inspection class, July 2025. Photo: Texas Department of Transportation.