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Smart Design &  
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We are seeing some of the largest graduating classes of STEM students entering the job market with skills and goals positioned to help reshape the industry.

"These tech natives," says Blanco, "will be looking for purpose-driven careers where they can make an impact." Articulating how a career in infrastructure offers exciting opportunities to learn and use new technologies while also contributing to a larger cause in local communities will be extremely beneficial to organizations in attracting new talent.

Reviving U.S. infrastructure has been dubbed a "generational investment" and is a hallmark of the current administration's legacy toward building a strong future. With the right technologies, resources, and skills available, together we can deliver with confidence. The first step is taking action and the time is now.

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*Cyndee Hoagland is a senior vice president at Trimble Inc.*

## HOW CONCRETE EMBEDS SAVE TIME & MONEY ON SUSPENDED ACCESS SOLUTIONS

### TENTH AVENUE BRIDGE IN MINNEAPOLIS

By Doug Knapp  
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Concrete embeds date back to the 1920s. But installing them to assist in bridge construction, inspection, maintenance, and repair is a more recent innovation.

Embedded anchors are low cost, compact weldments with a ferrule tapped to accept a threaded fastener. The "insert" is installed within the road deck rebar, flush with the bottom of the deck. It acts as the "nut" portion of the assembly and an anchor bolt gets connected to it.

The ongoing rehabilitation of the Tenth Avenue Bridge in Minneapolis demonstrates the utility and savings of using concrete embeds. Built in the late 1920s and listed on the National Register of Historic Places, the bridge features seven reinforced concrete arches, spanning the Mississippi River. About 10,000 vehicles and hundreds of pedestrians and cyclists cross daily between downtown Minneapolis and the University of Minnesota.

The bridge was last restored in 1976. Due to significant freeze-thaw damage, leaking deck expansion joints, and drainage problems, the structure is once again in need of extensive repairs. The restoration that began in spring 2020 includes replacing the road deck and concrete railing; patching piers and arches; replacing and patching deteriorated beams and spandrel columns; corrosion prevention treatment of the arch ribs; and a new surface finish of the entire bridge.



Contractor PCiRoads, St. Michaels, Minnesota, asked our company, BrandSafway, to engineer the access on spans four and five over the river. Our QuikDeck® Suspended Access System was selected to provide access on the project.

Work began on span five with drilling holes to suspend chains for the access platforms. Once the chains were dropped through, a crane was used to lift and lower the platform over the edge, where workers in mobile snooper trucks would pivot the platform, so each section was positioned under the arch and could be connected to the suspension chains.

See **Embeds**, 24

### **Embeds, from 23**

After securing the starter platform, and completing the center section, we installed 18 tiers of QuikDeck, creating “steps” under the entire arch, which allowed crews to work on every surface inch of the bridge on span five.

However, when the scope of work expanded to include spans three, six and seven, the time required to drill holes to suspend the needed work platforms would have significantly delayed the project. So instead of drilling holes, 320 embedded anchors were installed to provide connection points. A rotating or pivoting suspension point assembly (RSP) is then bolted into the embed. After the project is completed, the RSP is removed, but the embedded portion remains in the underside of the road deck for future use when access is needed on the bridge.

The advantage of concrete embeds add up quickly. Drilling a hole to insert an anchor into concrete takes approximately one hour per hole. Inserting an anchor into a concrete embed takes about five minutes, which means over 300 hours were saved on the 320 embeds. On a job like this, where access could cost as much as \$3.5 million, using concrete embeds saved approximately \$250,000. The embeds also will save time and money when suspended access is needed for future inspections or repairs.

The Tenth Avenue Bridge rehabilitation is expected to be completed later this year. Due to the advantages of the concrete embeds on this project, a similar solution is being implemented on another nearby bridge restoration on Third Avenue in Minneapolis.

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*Doug Knapp is a product manager (Midwest) at BrandSafway.*



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### **LET'S WORK TOGETHER**



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