

CASE STUDY



PROJECT DETAILS

Project Name:

Mile-Long Bridge

Location:

Tri-State Corridor (I-294)
Mile-Long Bridge
Southwest of Chicago

Project Owner:

Illinois State Toll Highway
Authority (ISTHA)

Project Engineer:

LHQ Tri-State Partners

Project Erector:

Metropolitan Steel

General Contractor:

F.H. Paschen

Product Manufacturer:

County Materials
Corporation

Date:

2019-2023

Key Products:

273 Prestressed Concrete
Bridge Girders

County Materials Ups the Ante for Chicago Mile-Long Bridge Project

Solutions: Oversized prestressed bridge girders support heavy loads over long spans

Southwest of Chicago, IL spans the massive Mile-Long Bridge. This 4,800-foot-long structure serves as an essential corridor, directing traffic over several of the area's railroads and waterways. When the structure was originally built in 1958, it was designed to direct increasing traffic through the area in a more efficient way. However, at the time, developers could not predict Chicago's flourishing growth that was to come over the next 30 years.

By the 1990s, Chicago was an established business hub, drawing in traffic from across the Midwest. Project developers saw the need to increase the northbound and southbound bridges' capacities. However, by the end of the project, the new and original sections of the bridge lacked cohesion and noticeable aging began to take hold of the original structure, prompting an endless cycle of repairs. Eventually, in 2017, project leaders determined reconstruction of the Mile-Long Bridge to be the most cost-effective solution.

Project engineers quickly realized planning and designing a project of this size would be a tremendous undertaking. Not only did the existing bridge hover above several businesses, transportation centers, and waterways, but it also could not accommodate current traffic needs. The new structure with increased capacity would need to be built alongside the existing bridge without further disrupting business operations below. The revealed plans outlined the construction of the new northbound and southbound bridges, each widened to accommodate five lanes of traffic and an additional flex lane for drivers to safely pull over when necessary. To minimize disruption and environmental impact on the surrounding properties and waterways, the plan reduced the number of piers for each bridge from 53 to 26.

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To successfully meet this goal, project leaders relied on County Materials' oversized prestressed concrete bridge girders to support heavy loads over long spans. In addition to pier reduction, project plans specified prestressed concrete for its extended service life that can be achieved through minimal maintenance. County Materials' Janesville Plant Operations Manager Gary Courneya spoke to the engineers' choice of concrete and said, "A concrete bridge beam not only requires less maintenance but is also a bit more user-friendly from a lead time and cost perspective."

County Materials began prestressed concrete girder production in July of 2019. Over the course of 10 months, the company's Janesville facility manufactured 273 concrete girders: sixty 72" tall by 110' to 138' long girders, thirty-eight 84" tall by 159' long girders, and one-hundred-seventy-five 90" tall by 144' to 187' long girders. The largest of the girders measured 90 inches tall by 187 feet long and weighed an astounding 240,000 pounds; they are considered to be the largest prestressed concrete bridge girders manufactured in the Midwest. To prepare for this milestone project, the prestress plant enhanced the lifting capabilities of its travel lift crane to move the colossal girders around the plant with ease. Because of their substantial size production teams acclimated to fulfilling their duties on elevated work surfaces. With the use of specialized scaffoldings and lifts, the plant team was able to work safely and diligently to manufacture all 273 girders on schedule.

The substantial planning and coordination continued as County Materials' heavy haul transportation team prepared to transport the record-breaking concrete girders 104 miles southeast to the project site. Led by Dispatch Supervisor Jared Benson, the team prepared several alternative routes for each delivery and coordinated with project leaders and County Materials' heavy haul drivers to work around travel restrictions in the area. During this process, the dispatch team worked closely with project erector Metropolitan Steel and project contractor F.H. Paschen to ensure girders would be delivered on time and to the correct location on site. Coordinated delivery plans were shared with four agencies to permit the oversized loads. Each girder required both private and state patrol escorts to maintain safe travel for the heavy haul drivers and those around them.

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County Materials' Janesville mechanics were also vital to the successful delivery of each girder. The team worked hard to ensure all equipment was in top operating condition before each move. This sometimes meant they worked early mornings and late evenings when deliveries required it. Benson is proud of his team for stepping up to the challenge and working hard together to achieve a significant goal. He reflected on what made this milestone project successful and said, "This is the result of outstanding communication efforts between the dispatch team, the Janesville mechanics, and the skilled heavy haul drivers. I am proud of what we were able to accomplish and thank everyone for a job well done!"

The reconstructed Mile-Long Bridge is expected to open in early 2023. Upon completion, the existing structures will be torn down and the new bridge will begin to serve the Chicago area for many decades to come. This noteworthy project has gained attention across the Midwest for its sheer size and record-breaking concrete girders. During the spring of 2020, Gary Courneya interviewed with National Precast Concrete Association (NPCA) and spoke to the preparation efforts and success of this pivotal project. Courneya's interview can be found on NPCA's website in a publication titled "Reconstructing Illinois' Mile-Long Bridge."

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