

## CASE STUDY



### PROJECT DETAILS

**Project Name:**

I-44 Meramec Box Culvert

**Location:**

St. Louis, MO

**Project Owner:**

Missouri Department of Transportation (MoDOT)

**General Contractor:**

KCI Construction

**Product Manufacturer:**

County Materials Corporation

**Date:**

2019

**Key Products:**

Precast Box Culverts,  
Precast End Section

## Construction Speed and Weather Are Factors for Specifying Precast Concrete Boxes Over Cast-In-Place

**Solutions:** Precast concrete box culverts reduce construction schedule and provide cost savings

As traffic in the St. Louis, MO area continued to increase and sections of both the nearby Meramec River Bridge and its adjacent corridor began to deteriorate, the Missouri Department of Transportation (MoDOT) set its sights on an expansive three-year reconstruction project that would improve the area's traffic flow and reduce the risk of accidents. Before sections of the project could begin, a solution to mitigate flood risk during rain events needed to be implemented.

Initially, MoDOT specified a cast-in-place concrete culvert system to direct stormwater away from the nearby transportation system; however, project contractor KCI Construction sought a more advanced solution that could reduce the project's timeline and risks associated with installing on an active river site. A solution was found in the use of a specially designed and engineered precast box culvert manufactured by County Materials. KCI Construction proposed the alternate system to MoDOT, who upon considering the advantages of using a precast system, modified the specification.

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Precast components offer significant time and cost advantages over alternative systems because they are manufactured ahead of time and undergo quality assurance testing each step of the process. Whereas cast-in-place systems require a contractor to construct forms on site, pour wet-cast concrete, allow the concrete to cure, and remove the forms. Using a cast-in-place system prolongs the construction schedule and further complicates the project. In the event of heavy rainfall during the curing process, the system's frames and rebar could be damaged and rendered unusable, causing construction delays and additional costs for replacement.



County Materials' Bonne Terre, MO plant manufactured and supplied the specially designed precast box culverts and end section to meet the project's construction schedule and specifications. By using ready-to-install precast components, the contractor only needed to prep the site prior to delivery. Because box culverts could be installed as they arrived, the project contractor estimates they saved three to four weeks of construction time.



By the time the project was finished, 140 feet of 5' x 5' precast box culverts were installed underneath 44 feet of cover. As the contractor predicted, the precast components contributed to significant time and costs savings and successfully met project demands during installation.

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