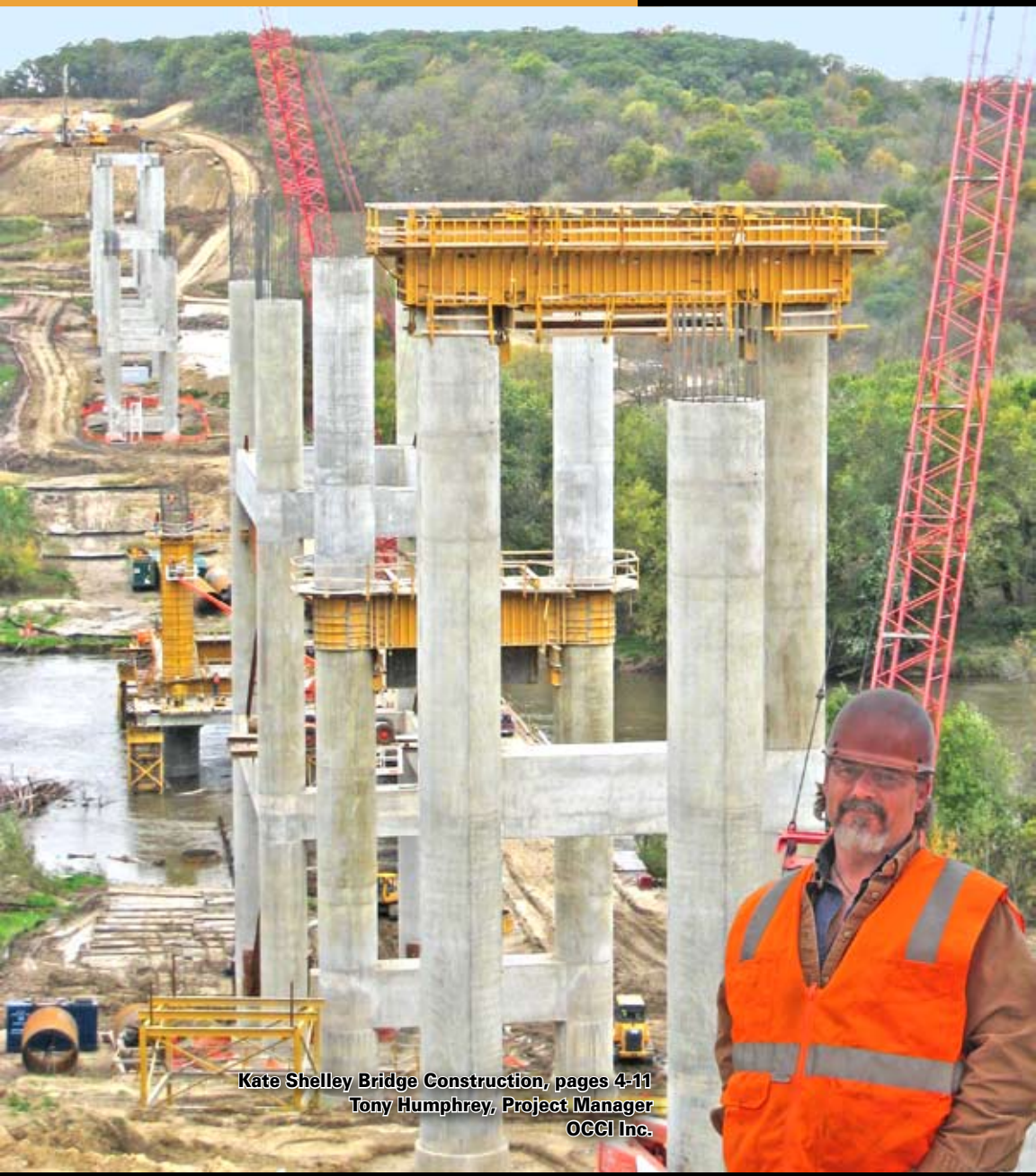
FORM MARKS®

FALL 2007



Kate Shelley Bridge Construction, pages 4-11
Tony Humphrey, Project Manager
OCCI Inc.

IN THIS ISSUE, EFCO focuses on

BRIDGE FORMING

The Legend of Kate Shelley Bridge

126 Years of History

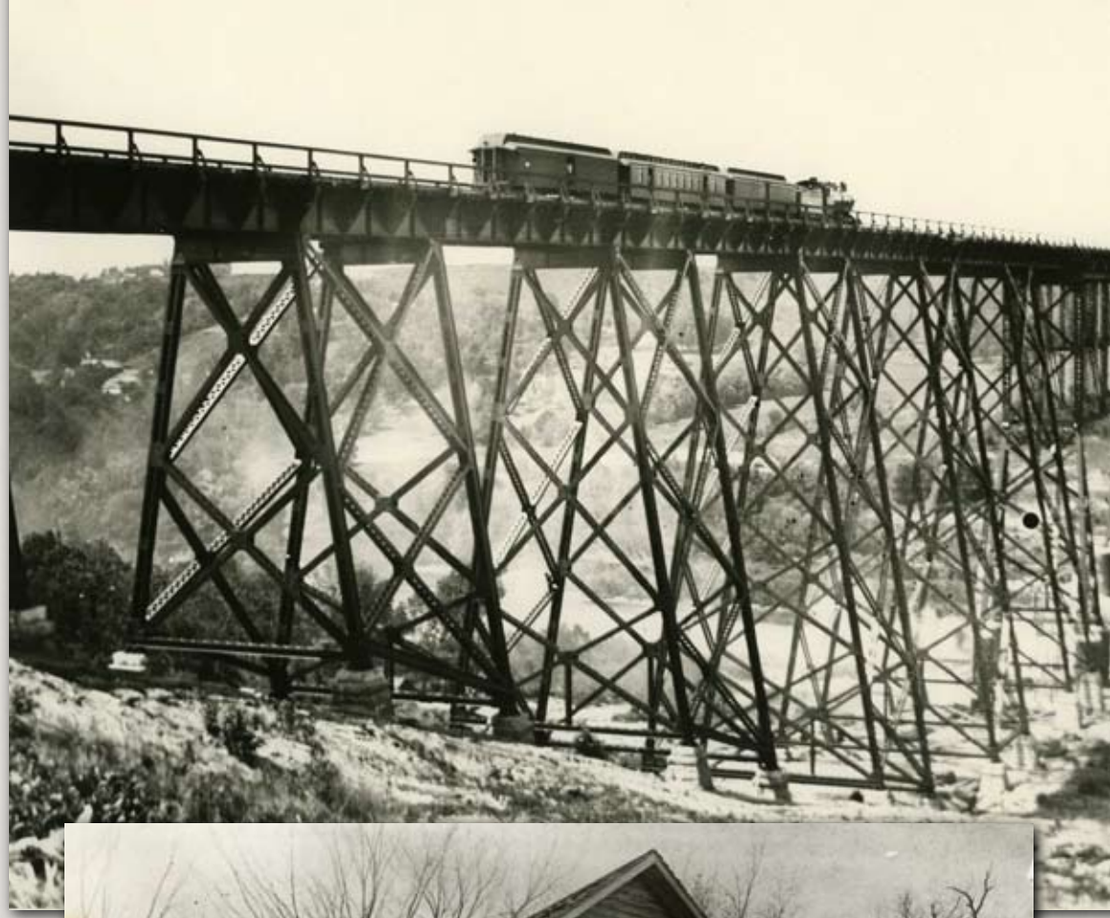
by Cathy Howell
FORM MARKS Editor

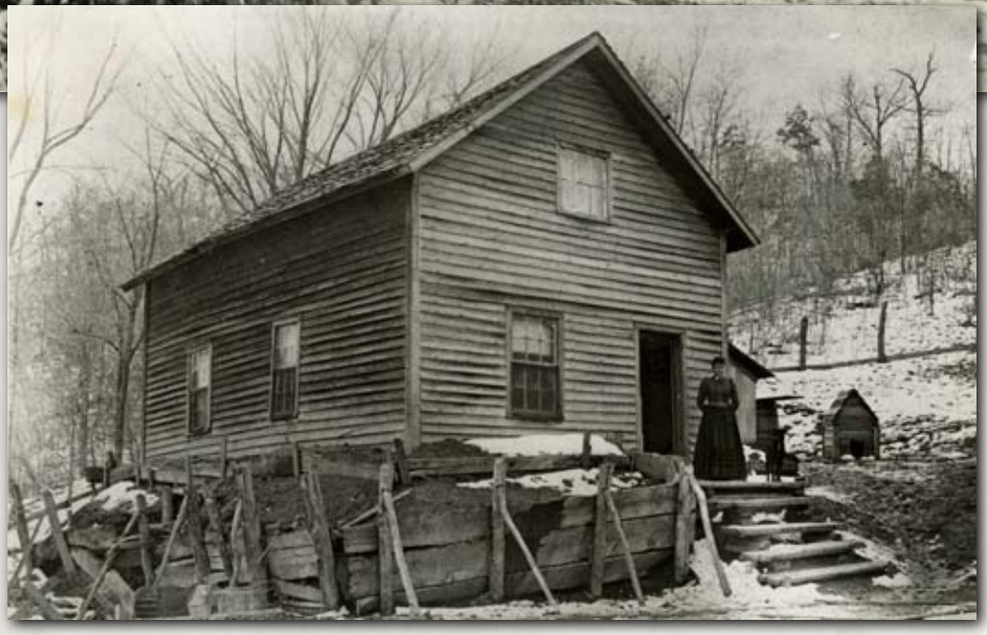
Central Iowa, U.S.A had seen its share of rainfall during the spring and early summer of 1881 and black clouds over the western sky promised another soggy night on the evening of July 6th. Mindful of the approaching storm, a busy Shelley family tends to the livestock on their small farm. As the summer storm pounded the Iowa landscape and furious lightning illuminated the sky, a worrisome Kate Shelley, 15 years old at the time, kept a constant vigil at the window watching Honey Creek just below their home rise out of the banks.

The evening stretched into what seemed like days. Both Kate and her mother heard the engine of a train in the distance, and were puzzled as to why a train was dispatched on a night like this. The sound of the train was getting closer. Contemplating sleep, Kate was startled by the sound of an enormous crash and the hissing of hot metal immersed in water. She knew instantly that No. 11 and its crew had toppled into Honey Creek as trees and other debris washed out the Honey Creek Bridge. Despite her mother's plea not to go out into the storm, Kate donned a coat and grabbed her father's lantern to see if she could help. Lightning helped Kate find her way to the bridge and she could see the trestle that gave way that sent the train into the raging water. She heard men hollering and could faintly make out their silhouettes as they hung in the trees below. She yelled down to them assuring the two that she would return with help. Kate also knew that No. 4, the Atlantic Express was due to the station in Moingona but would have to cross the washed out bridge to get there. Kate's rescue mission meant that she would have to cross the long bridge over the Des Moines River.

Circling back around the Shelley property, dodging the brambles and bushes, Kate finally reached the bridge. Crossing on her hands and knees on ties measuring a full pace in distance, Kate's journey was a dangerous one. One would think twice about crossing the bridge by foot in the daylight let alone at night and during a storm. When Kate finally crossed, she faced a half mile run to the station to warn them of the washed out Honey Creek Bridge. Once Kate reached the station and told the attendants of her story, they were able to send word to the Atlantic Express to stop dead in their tracks. Rescue efforts soon were coordinated with Kate at the lead to save the men of No. 11 and search for others that were on the train.

Kate Shelley's heroism that night saved the lives of dozens of people. After much publicity and congratulatory letters and medals offered to Kate by the State of Iowa and the Chicago Northwestern, life for Kate Shelley returned to normal. In October of 1903, the Chicago Northwestern offered Kate a job as an agent at the Moingona Station. Later the Boone Viaduct Bridge, constructed in 1901, was named the Kate Shelley Bridge.





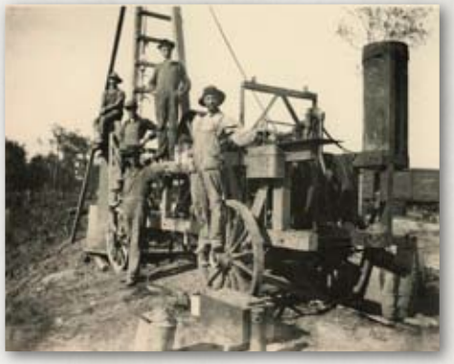
Photos courtesy of Boone County, Iowa Historical Society

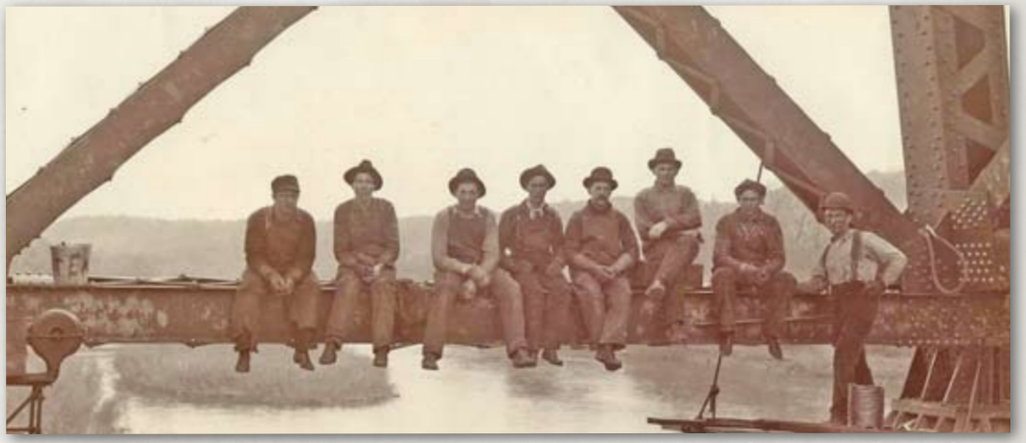
continued...

Kate Shelley Bridge...

The Need for a New Bridge

When the Kate Shelley Bridge in Boone, Iowa was completed in 1901, it was considered the longest and tallest double track bridge in the world. As one of the most critical structures to the Union Pacific system, the bridge measures 2,700' long with a 300' steel truss span; its tallest point is 190'. During the 1950's the double track bridge was limited to one train at a time. Concerns about the structural capacity of the bridge was later confirmed when a wind storm blew a dozen containers off the bridge causing impact damage to several towers. Currently the bridge carries around 60 trains per day. Most of the cargo is coalp; however, it is not uncommon to see grain and other commodities. Due to the bridge's one-track restriction, reduced speed limits and additional deterioration, the Union Pacific Railroad experienced huge bottlenecks in transportation. After several rehabilitation efforts over the last six years to make the bridge safe, the decision was made to construct a new bridge to accommodate the need for heavier loads and faster travel. Today's economy requires that the rail bridges be able to accommodate 100-ton rail cars and travel at speeds of up to 70 mph. The new Boone High Bridge will do just that.



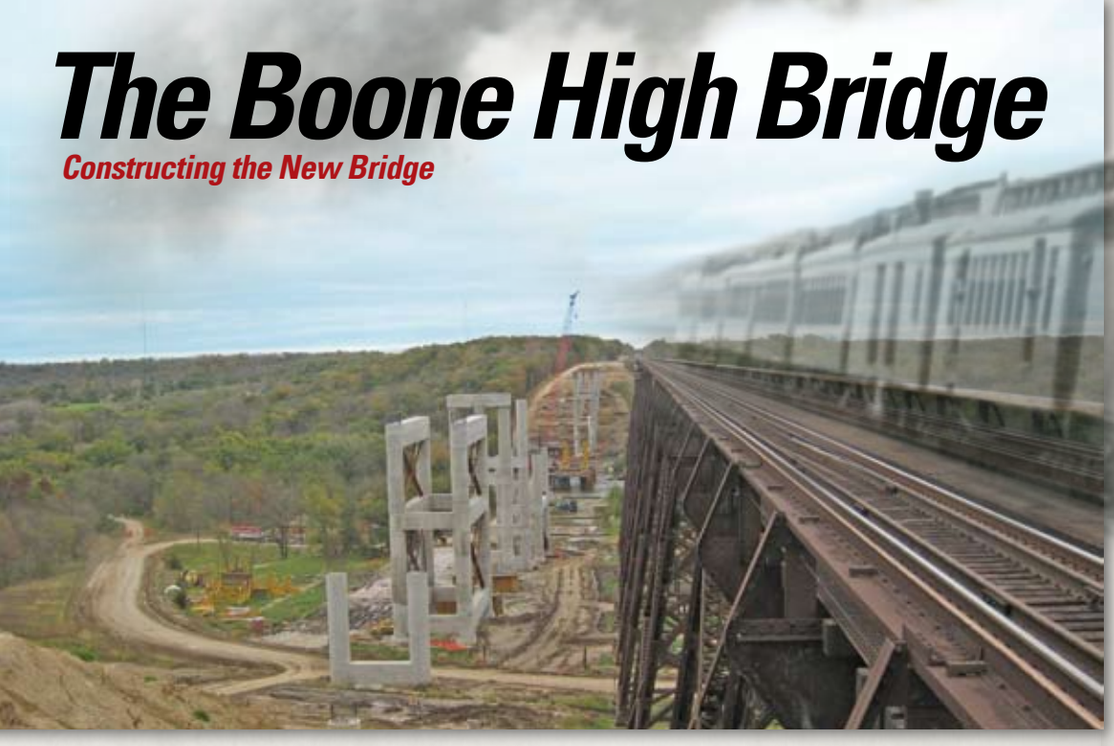


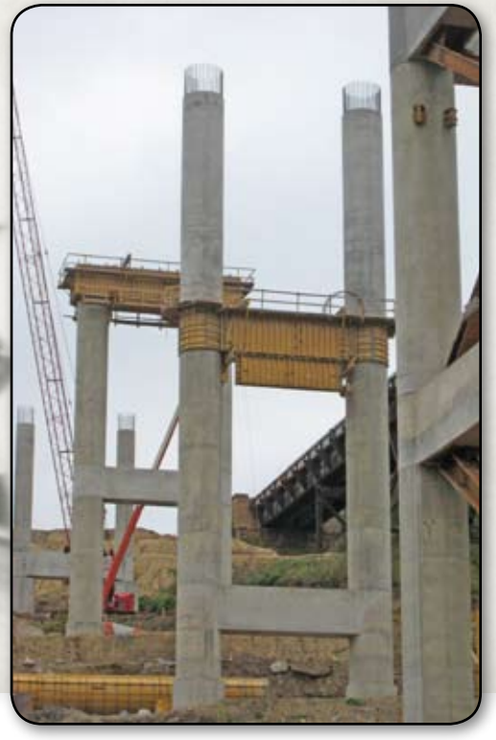
Photos courtesy of Boone County, Iowa Historical Society

continued...

The Boone High Bridge

Constructing the New Bridge





On several occasions, **OCCI of St Louis, Missouri** visited EFCO's Concrete Construction and Forming Institute and worked with EFCO's Engineering and Customer Service Group in the initial preplanning of the new bridge that will replace the Kate Shelley Bridge. In March of 2007, construction on the new $43 million bridge began. Faced with many challenges, the contractor chose EFCO to engineer the forming requirements of the project using the EFCO PLATE GIRDER® and Round Column forming systems. Work began on the west side of the Des Moines River with the construction of the first tower. There are a total of five four-legged towers for this project and a total of 14 piers and caps.

The Towers

Each tower, dependent on positioning through the river valley, required either three or four rings weighing 1.2 million lb. each. Each transverse strut measures 28' from center of column to center of column while the longer longitudinal struts measure 70' center-to-center. The columns were poured in 38' sections and measured seven and eight feet in diameter.

The Remaining Piers and Caps

Each bent consists of two columns and two to four transverse struts. Each column measured between seven and eight feet in diameter and is being constructed in the same manner as the towers.

At the same time that the OCCI crew started on the first tower, they also began construction on a temporary bridge that would allow them a fixed location for drilling and performing work within the Des Moines River. Had they decided to utilize barges for performing the work in the river, their schedule would have been drastically hampered as central Iowa experienced flooding in both late spring and the middle of summer. Once the temporary bridge was complete, OCCI shifted their priority to completing the work on the east side of the river. The goal was to complete the work on the east side of the river so that the temporary bridge could be removed prior to the river freezing over during the winter. Weather permitting, this sequence of the schedule should allow the contractor to work throughout the year.

If you have an interesting or historically significant project that you think our readers of FORM MARKS might enjoy learning more about, give me a call or drop me a note.

Cathy Howell, Editor
(800) 223-3440
Email: cathy.howell@efcoforms.com

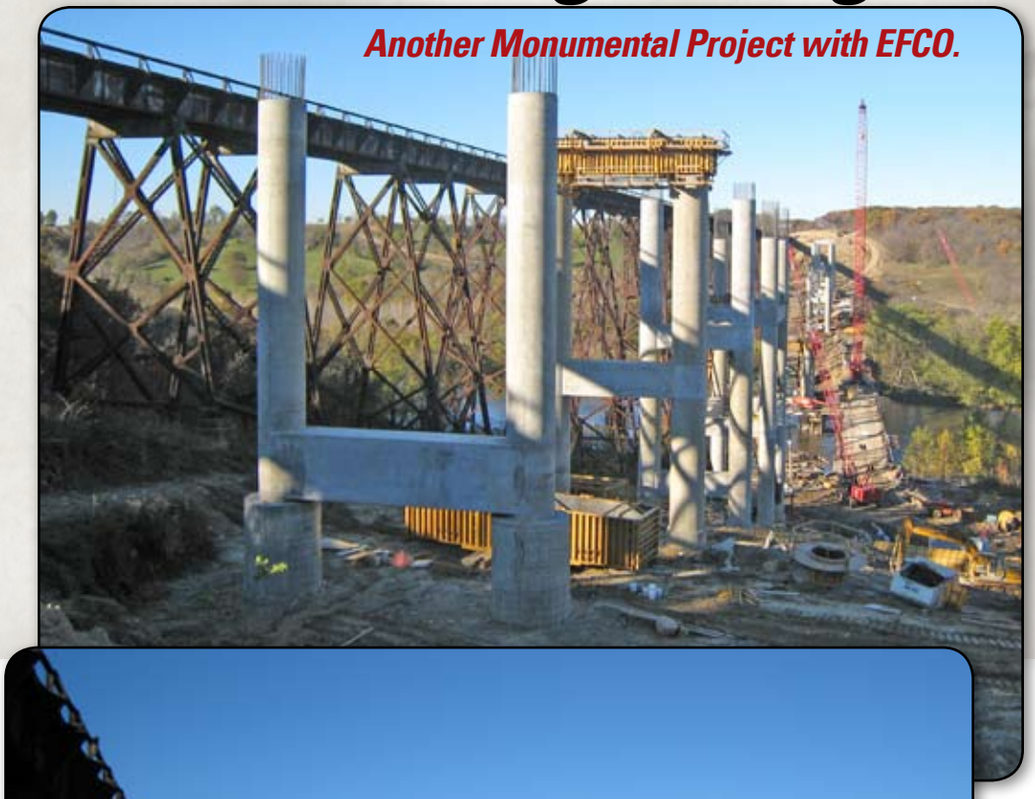
When completed in November of 2008, the new Boone High Bridge will last well into the next century. The old Kate Shelley Bridge will remain in its current location unchanged and serving as a constant reminder of a very brave 15-year-old girl who risked her life to save others.

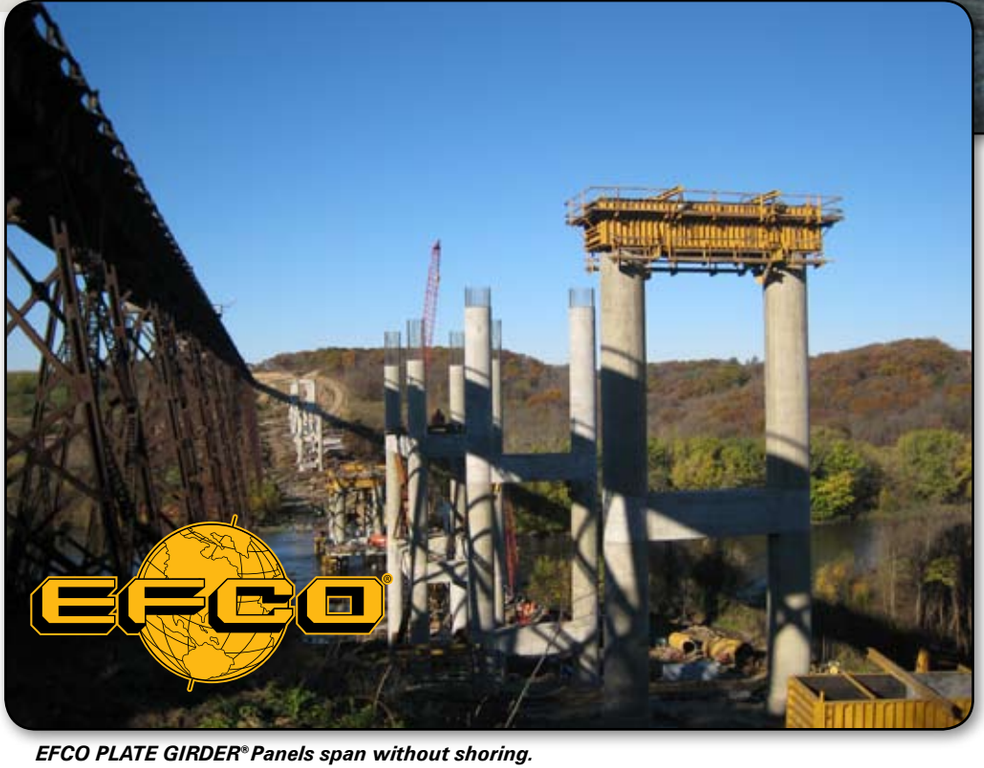
Tom Smith.....President OCCI
Tony Humphrey.....Project Manager
Ted Martin.....Superintendent
Randy Pauly ...EFCO Customer Solutions Group
Randy Elliott.....EFCO Territory Manager
Brian Elliott.....EFCO Engineer
Matt Harrington.....EFCO Field Supervisor

continued...

The Boone High Bridge

Another Monumental Project with EFCO.

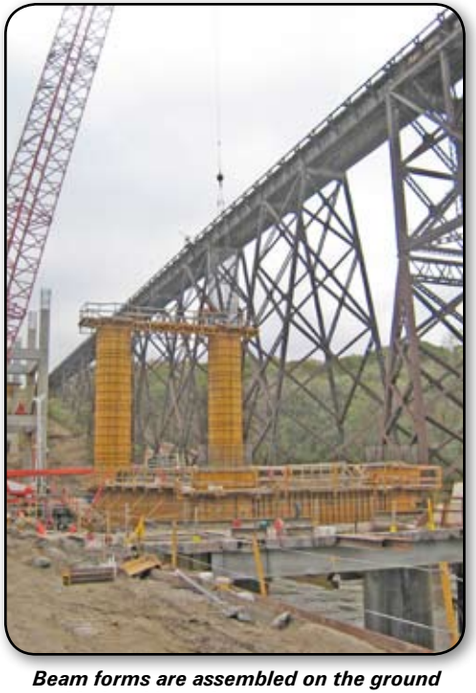




EFCO PLATE GIRDER® Panels span without shoring.

The Union Pacific is off for the Long Haul.

PLATE GIRDER® beam soffit forms can be hinged down to be stripped with side forms.



Beam forms are assembled on the ground and hoisted into place.

Steel forms deliver a quality concrete finish.