

# New bridge, historic design

## Arches erected at Big Chiques span

Two precast concrete arches were lifted into place Wednesday evening at the new bridge straddling Big Chiques Creek between Penn and Rapho townships.

The original Big Chiques No. 2 Bridge had been one of only four reinforced concrete through-arch style bridges remaining in Pennsylvania. Erected in 1922, it was eligible for listing on the National Register of Historic Places.

However, the single-lane bridge on Auction Road was unsuited to modern transportation needs, so the county in 2005 decided to replace it as part of its ongoing program to upgrade deficient bridges.

The new bridge replicates the original's technical and aesthetic features, said Anthony Haubert, a public relations specialist for the Lancaster-based firm RETTEW, which designed the new bridge.

The 47-ton, 72-foot-long arches are the main structural elements and the most prominent feature of the new bridge.

As a vehicle is driven across the bridge, the arches compress to counteract the downward force on the bridge deck, Quentin D. Rissler, RETTEW's chief bridge engineer and transportation project manager, said. The diagonal members help distribute

forces between horizontal members and the arches, he said. "It's almost like a truss bridge," he said.

What is unique about the 10-foot, 11-inch high bridge is that it is made of concrete, not steel, Rissler said.

The original bridge had many shortcomings. It was a single-lane bridge, designed for 20-ton trucks, but nowadays, trucks up to 40 tons travel the state's roads.

In its final 10 years, the bridge's weight limit had been reduced for safety reasons to 3 tons, the weight of an SUV.

The bridge had a hump in the middle, and vehicles could become airborne. Trucks often got hung up in the middle, according to Daniel A. Rogers, RETTEW bridge project engineer. The old bridge was torn down in June. The new one is expected to be opened to traffic in mid-December.

The new bridge will be two lanes and will not have any weight restriction, Rissler said.

Penn Township still has traffic issues to overcome on Auction Road. Curves leading to the bridge make it difficult for trucks to maneuver, he said.

The construction costs of the replacement bridge total \$965,000. The county will pay

for it through liquid fuels funding from the state.

Kinsley Construction of York is building the bridge, while Newcrete Products of Roaring Springs precast the concrete through-arches.

Work on the bridge began in 2005. The county chose RETTEW because the firm has experience with "context-sensitive bridges," fitting them in with the area's natural setting, Haubert said.

"As a firm with roots in Lancaster County, RETTEW was honored to be part of an initiative that not only preserves the county's history but also improves a local roadway," Rissler said.

Lancaster County owns 64 bridges, including two that are closed, one that is stored in a barn, and 20 wooden covered bridges. Eight of the bridges are being rebuilt, according to Keith L. Harner, assistant county engineer.

This year, the county commissioners allocated additional money from the capital fund to address the structurally deficient bridges.



▲ Workers stand next to one of the precast concrete through-arches being installed Wednesday night to replace the bridge that carries Auction Road over Big Chiques Creek. Right, a crane moves into place part of the support structure.



▲ This 2007 photo shows the historic through-arch bridge built in 1922 to carry Auction Road over Big Chiques Creek. Because of its deficiencies, it is being replaced with a similar-style bridge.

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