Historic Bridge Foundation Facebook Archives

Did You Know… the Tunkhannock Viaduct, the largest concrete bridge in the world when completed, celebrates its 100th Anniversary this year?

June 2015

Located in Nicholson, Wyoming County, Pennsylvania, the Tunkhannock Viaduct (also known as the Nicholson Bridge) spans not just the small Tunkhannock Creek, but also the large valley in which the creek flows. The bridge was built for the Delaware, Lackawanna, and Western Railroad Company, commonly called simply the Lackawanna Railroad. The bridge was part of a larger project to reduce the curves and hills on the railroad line, to improve the speed and efficiency of the railroad line. With the Tunkhannock Viaduct, trains no longer needed to descend and ascend the valley using the previous bridge which only crossed the creek itself rather than the whole valley.

The Tunkhannock Viaduct soars over the valley with its height of 240 feet. The length of the bridge is 2,375 feet, which consists of 12 spans. The largest spans are 180 feet. The bridge is a reinforced concrete open spandrel deck arch bridge.

As with any concrete deck arch bridge, special temporary falsework called “centers” was required to enable the construction of the concrete arch spans. The purpose of the centers was to support the formwork in which the concrete was poured, as well as to support the concrete itself until it had time to cure. The centers for the Tunkhannock Viaduct were a special design that could be reused and acted as three hinged steel arch spans. The largest ones, for the 180 foot spans, were composed of four ribs, each weighing 47 tons. The ribs were moved into place via a special cableway system that soared over the entire bridge construction site and was used to move a variety of materials through the vast construction site. A special pin-connection system at the crown of the centers allowed for minor adjustments, and also allowed for their removal after the concrete was poured. The removal process was called “striking the centers.”

The American Society of Civil Engineers (ASCE) designated the bridge as a National Historic Civil Engineering Landmark in 1975 and on April 11, 1977 the bridge was listed on the National Register of

Historic Places. Recognized as the largest concrete bridge in the world when completed, the bridge is among the most significant of America's historic concrete bridges and a major feat of both engineering and construction.

Nicholson, the small community located next to the Tunkhannock Viaduct is planning a variety of special events to celebrate the 100th Anniversary of this bridge, which is also the area's most prominent landmark. The official celebration is schedule to take place from September 11-13, 2015. More information about the 100th Anniversary Celebration can be found at http://www.nicholsonheritage.org/nicholson-bridge-100th-celebration/ and additional information including numerous historical articles are available at http://historicbridges.org/bridges/browser/?bridgebrowser=pennsylvania/tunkhannock/

Modern-day photos of the bridge. Note the size of the bridge in contrast to the surrounding environment.

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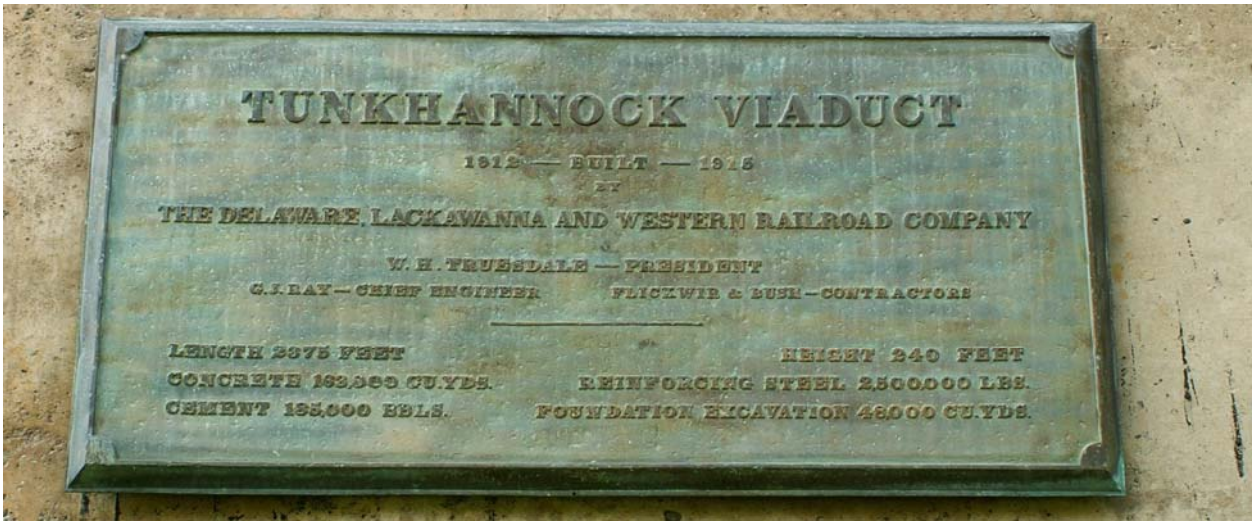
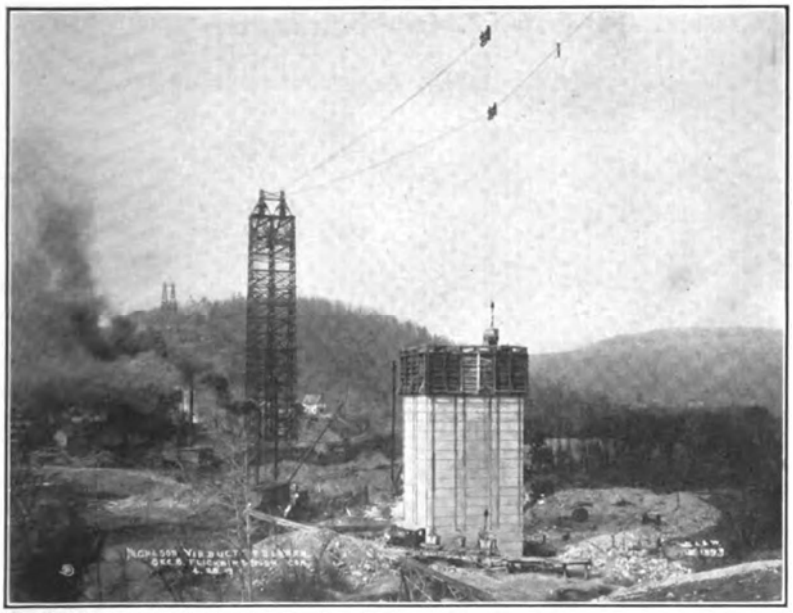
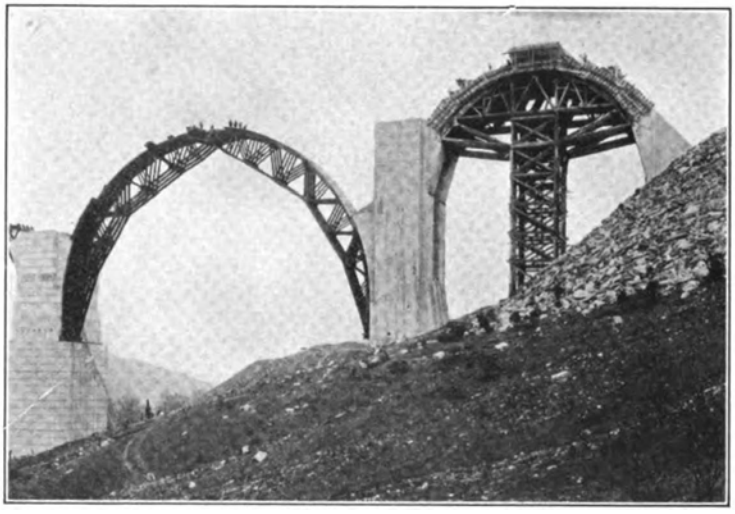


The plaque, mounted on one of the bridge's piers, boasted some of the bridge's impressive construction statistics including the length and amount of concrete used.

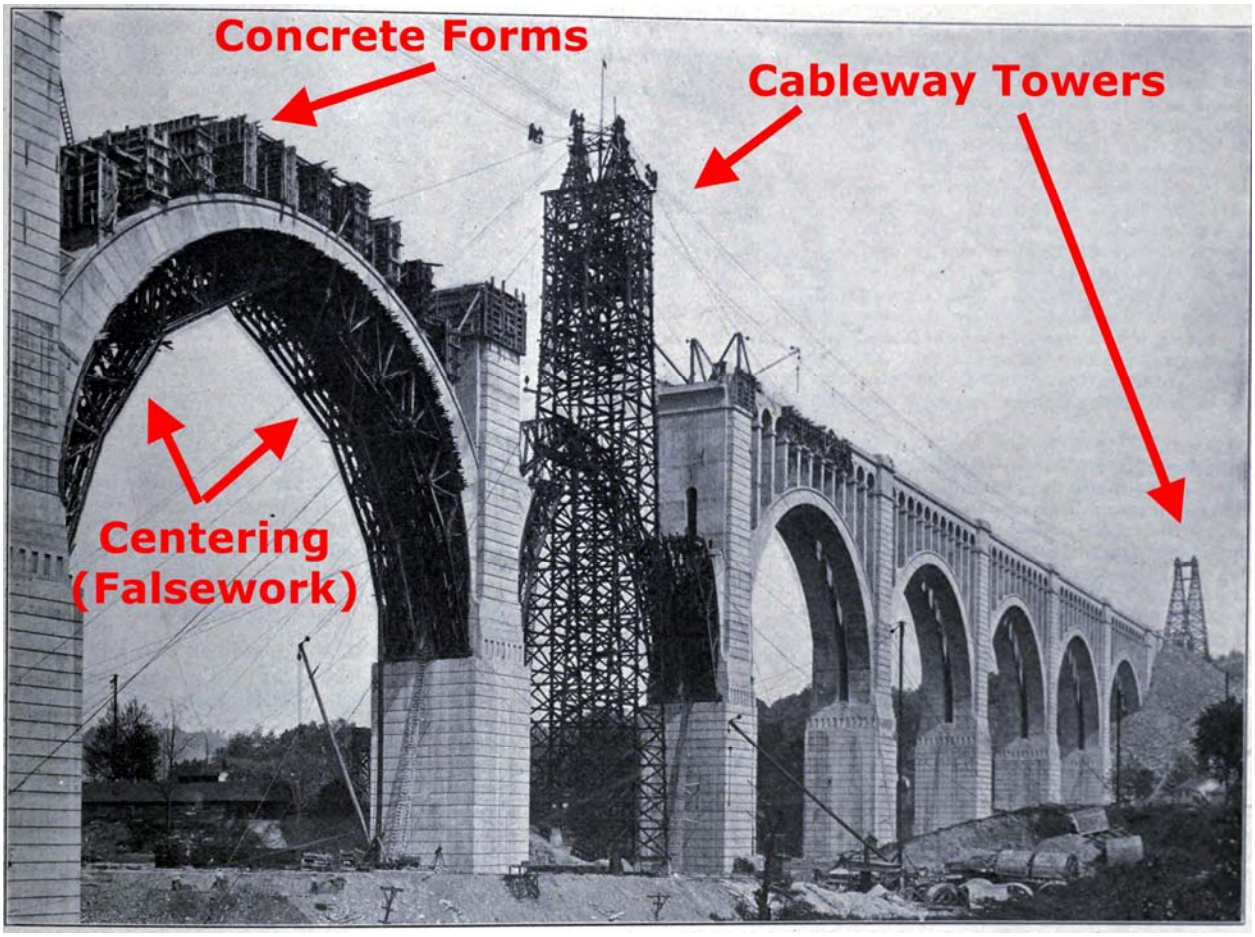


Courtesy of Mr. C. W. Simpson, Res. Eng'r.

This historical photo taken during construction of one of the bridge piers shows the temporary cableway system that was used to move materials around the construction site. Note the cables overhead, and the temporary tower that supported the cables.



This historical construction photo shows the temporary falsework, called “centering,” that was used to construct the arches. In this photo, note that the centering for the shorter end span extends all the way to the ground, while for the longer and taller span to the left, a centering system that did not require additional support from the ground was used.



Labels have been added to this historical photo of the construction of the bridge to note the major aspects of the bridge's construction process.

This historical photo showing the newly completed bridge also serves to show the scale of the bridge. In particular, note the people standing on top of the bridge, and note the difference in elevation between the high level concrete viaduct, and the older low-level railroad bridge visible in the background.

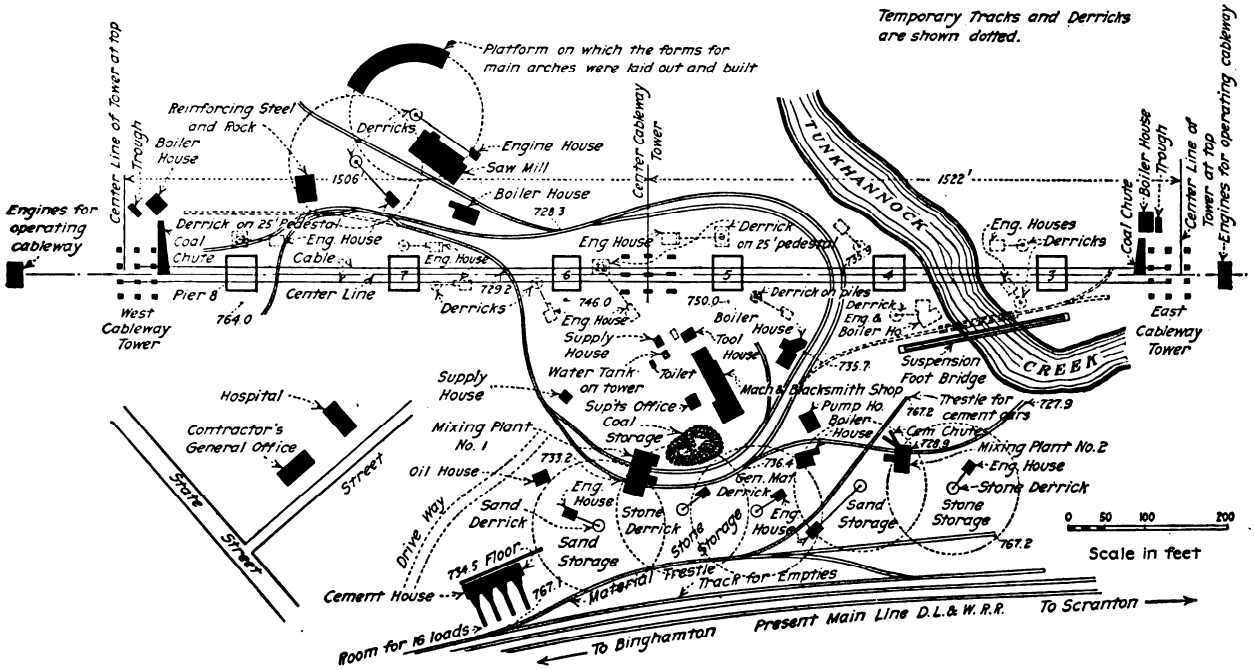
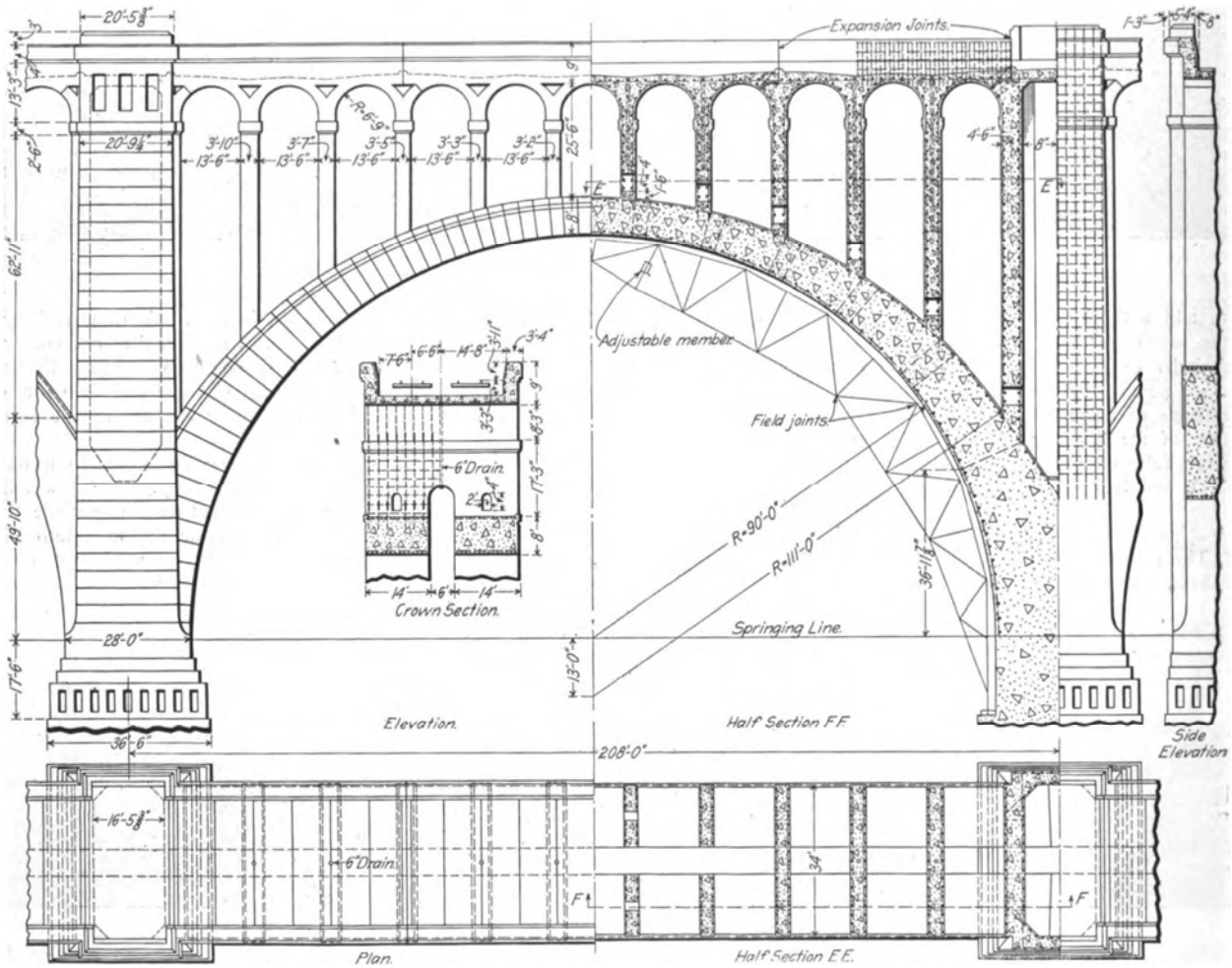


FIG. 429.—Tunkhannock viaduct. Layout of contractor's plant.

Construction of a bridge of this size was a complicated process that required extensive equipment and numerous buildings, as this diagram of the construction site from a period news article showed.



This drawing was featured in a period news article showing the design of one of the bridge spans, as well as the design of the centering used to erect the arches.