

Philadelphia FALLS

BY JIM TALBOT



A Victorian-era landmark over the Schuylkill River, the Falls Bridge plays a prominent role in its Philadelphia neighborhood nearly 120 years after its opening.



STEEL CENTURIONS SPANNING 100 YEARS

Our nation's rich past was built on immovable determination and innovation that found a highly visible expression in the construction of steel bridges. The Steel Centurions series offers a testament to notable accomplishments of prior generations and celebrates the durability and strength of steel by showcasing bridges more than 100 years old that are still in service today.

MANY IN PHILADELPHIA may wonder how the Falls Bridge over the Schuylkill River got its name; there are no falls in the vicinity.

Back in the early 1800s, however, a natural waterfall did exist at the site, now known as the East Falls section of the city (girlhood home of Grace Kelly). But an overflow dam built downstream in 1821 backed up the river for six miles, covering up the falls and inundating some islands in the river. The dam ponded the river for the local water supply as well as hydropower; to this day, it continues to provide water storage for two pumping stations with river intakes. The dam also tamed the river, making it ideal various recreational activities, including sculling, regattas and canoeing.

Permanent Replacement

The Falls bridge, completed in 1895, replaced several predecessors that were destroyed by a variety of causes: overloading, floods and fire (flood waters lifted the earliest one, a covered bridge, off its piers and floated it down river in spectacular fashion). These early bridges carried workers and materials to major factories on the west side of the river. The community greatly celebrated the bridge opening in June 1895 because it provided a much needed link between the two sides of the river. Originally, flamboyant paint colors of red, buff and light blue made the bridge a striking sight.

Today, the Falls Bridge still serves as a vital link in Philadelphia's transportation system, connecting Kelly Drive (formerly East River Drive) with Mar-



Photo: Ryan Linton; Lighting Design: GWA Lighting



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▼ The bridge, under construction. It was completed in June of 1895.



East Falls Historical Society

tin Luther King Jr. Drive (formerly West River Drive). Both drives take commuters from the north in and out of the city. At last count (1981) the bridge still carries 1,300 vehicles per day on average.

Filbert Porter and Company built the Falls Bridge at a cost of \$262,000. At the time, James H. Windrim served as the director of public works and George S. Webster as the chief engineer. The bridge has a total length of 566 ft and its longest span is 192 ft. The 41-ft-wide deck provides two lanes for traffic as well as pedestrian walkways on each side. The deck is a closed grating with a bituminous wearing surface; overhead clearance reaches 16.4 ft.

Two piers and abutments of stone masonry, built on solid bedrock, form the substructure. These supports were started nearly ten years prior the bridge's completion.

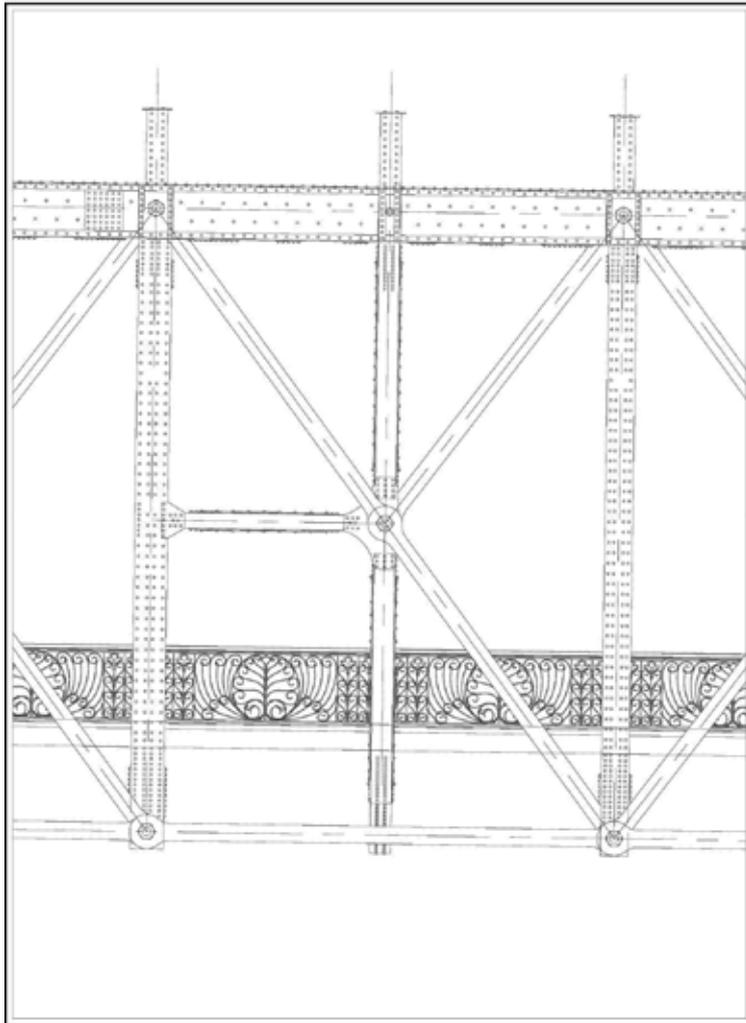
The superstructure divides into three connected spans, each nearly 190 ft in length. Each span is a modified steel Petit (Pennsylvania) through-truss having eight panels and riveted and pinned connections. The Pennsylvania Railroad pioneered the Petit truss design for bridges, which was popular through the 1920s; it's a variation of the Pratt truss, characterized by diagonals that slope down toward the middle of the truss. A Petit variation adds half-length struts or ties within a panel. In this case two struts connect a panel's center diagonally to the upper chord and horizontally to one side.

The vertical compression members that define the panels combine steel plate and steel angles with continuous riveted connections. Eye bars resist tension forces in the diagonals and the bottom chord. Built-up lateral plate girders serve as the floor beams that support the deck roadway. A pair of longitudinal stringers connects the floor beams.

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PLATE, F



Ian Smith

0 3FT 6FT 14FT

◀ An engineering drawing of one of the bridge's truss panels (from Ian Smith's *The Connections of Mechanical Fasteners*).

The original plan called for an upper deck to support a roadway and a two-way railroad track. The existing heavy upper bracing would have served as the floor beams for the upper deck, which was never built. The need to acquire more land and to displace existing structures on approaches, along with estimates for further work on the upper deck, would have exceeded the \$300,000 appropriated by the city.

The railing consists of stock iron $\frac{5}{16}$ in. by 1.5 in. The iron is wrought into a decorative curvilinear pattern that repeats twice across each panel, and the pattern has a centered medallion with curved scrolls reaching upward on each side. Two vertical vine-like structures on each end complete a repeated pattern.

The Falls Bridge continues to serve Philadelphia and the East Falls community. Participants in the annual Philadelphia Marathon cross the bridge during their run. An eight-mile loop of the Schuylkill River Trail that runs on both sides of the river between East Falls to the Philadelphia Art Museum crosses the river at the Falls Bridge. The loop is a scenic recreational path for walkers, joggers, bicyclists and rollerbladers.

Hitting a Hundred

The community held a Centennial celebration of the bridge in June of 1995. Festivities included postmark cancellations (graphics were done by local artist), a fishing contest, a regatta and sculling demonstrations. Kids got pony rides while adults rode horse-drawn carriages across the bridge. Local groups provided singing and dancing during the day followed by a band concert in the evening, and businesses and residents contributed to a fund to provide bridge lighting in the future.

That future arrived in January 2008 with a lighting ceremony attended by 500, including then-Governor Rendell, the late Senator Arlen Specter and Philadelphia Mayor Nutter. Rendell, an East Falls resident for 28 years, said he had long been a huge fan of the bridge, and after a countdown he and Mayor Nutter triggered the initial bridge lighting. The crowd cheered while white lights flooded the side of the bridge, and blue LED lights atop each of the main vertical members blinked on.

In September of 2011 the East Falls Development Corporation sponsored the First Annual Dance on the Falls Bridge, an event that has continued annually ever since. A silent auction usually benefits a local charity. Proceeds from ticket sales for the dance also help to improve the East Falls neighborhood streetscapes, signage and business development. ■



Wendy Moody, East Falls

◀ Crossing the Falls Bridge during its 100-year celebration.