

Historical Survey of the Lehigh Gap Chain Bridge Toll House

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The existent Lehigh Gap Chain Bridge Toll House is closely connected to the history of the Lehigh Water Gap Chain Bridge (1826-1933).

The earliest attempt to build a bridge across the Lehigh River near Lehigh Gap occurred in 1818 when Thomas Craig (1739-1832) who lived in the vicinity, built a wooden bridge across the Lehigh River almost within the Gap itself. This was the first bridge to cross the river at that spot, but it was destroyed by a flood a few year later.¹ Before that first bridge, people crossed the river at Kuntz's ford, which was below the Gap proper.

Several years later, in February 1825, a company was incorporated for the building of a new suspension chain bridge across the river at the Lehigh Gap. Key principles included: John Dieter Bauman (1773-1853, who owned a grist-mill on the eastern bank of the river), John Rice (1790-1868), Christopher Kern (1768-1842, brother-in-law of John Dieter Bauman), and Dr. James Jameson (1771-1831).

Dr. Jameson was also an investor in other bridge projects, notably the bridge in Catasauqua, also a chain bridge in the corporation, more than any other shareholder.²

In March 1826, the Pennsylvania General Assembly passed an act "To authorise (sic) the governor of this commonwealth to incorporate a company for erecting a bridge over the river Lehigh, at Kuntz's Ford, in the counties of Lehigh and Northampton, and also to authorize (sic) the governor to incorporate the Lehigh Water Gap Bridge Company."³

The General Assembly laid out the provisions for the establishment of the corporation: Seven commissioners appointed to oversee sale of stock in the new corporation

- \$25 for each share. Once twenty or more persons subscribe, or one hundred or more subscribed, then the governor will charter corporation.

¹ Pictorial Souvenir: Scenes of Slatington and Vicinity (1964), page 1, et al.

² Dr. James Jameson (1771-1831), <http://jamesonfamily.org/thebook1.htm>

³ Pennsylvania. Acts of the General Assembly of the Commonwealth of Pennsylvania, Passed at a Session which was Begun and Held at the Borough of Harrisburg on Tuesday, the Sixth Day of December (Harrisburg, 1826), page 125. This was also taken up by the Pennsylvania Senate in 1829 in accordance with confirming that the three-year requirement had been met, "A supplement to an act entitled An act to Authorise (sic) the Governor to incorporate a company for erecting a bridge over the river Lehigh, at Kuntz's ford, in the counties of Lehigh and Northampton, and also to incorporate the Lehigh Water Gap bridge company. Pennsylvania. Journal of the Senate of the Commonwealth of Pennsylvania which Commenced at Harrisburg on the Second Day of December 1828 (Harrisburg, 1828-29), page 489.

- Appointed commissioners will supervise the election of officers and the establishment of the corporation.
- There will be a three-year deadline to erect the chain bridge.
- After inspection by appointed commissioners, then the “Lehigh Water Gap Bridge Company” will be chartered.
- Stockholders to meet the first Monday of each September.
- A board of managers to hire people to keep the bridge in good repair.
- Minutes, records and accounts to be kept. Dividends declared.
- An abstract of accounts is to be given to the General Assembly after the third year showing the cost of the bridge and any repairs along with an income statement to show at least a 6% return. Such an account to be submitted every three years.

Initial officers were Peter Ruch (1779-1838), president; John Rice, treasurer; managers: Walter C. Livingston (1800-1872), John D. Bauman, Christopher Kern, John Ringer (1775-1831), et al.

The chain bridge was erected in 1826.⁴ The bridge’s east abutment and the toll house were built on the property of Bauman who possessed considerable land holdings along the eastern shore of the Lehigh River. We do not have any information about the early toll keepers or their families.

Under the supervision of Jacob Blumer (1774-1830), a clockmaker by trade,⁵ at the time the only engineer in the Lehigh Valley. The Lehigh Gap water bridge was one of four early chain bridges constructed by Blumer: 1811 Easton, 1814 Allentown, 1824 Catasauqua, 1826 Lehigh Gap.⁶ All of these were all based on the 1808 James Finley patent for a chain link suspension bridge.

James Finley (1756-1828) is considered by many to have been the inventor of the modern, American, suspension bridge. In Finley’s design,⁷ the bridge is supported by two parallel chains made up of wrought iron links. (Steel cables had not yet been invented.) The chains are fixed in abutments, or anchoring pits, on each bank of the river. The chains are suspended on wooden, frame towers on piers of sufficient height to give a curve in the chain of one seventh of the span. Iron hangers hung from the chains to support the bridge decking, which allowed for a level roadway without any sag. The bridge design was a remarkable engineering achievement for its day. By

⁴ Charles Roberts et al, History of Lehigh County Pennsylvania, volume 1, 1914, page 383

⁵ Charles Roberts et al, History of Lehigh County Pennsylvania, volume 2, 1914, page 118

⁶ Suspension Bridges Crossing the Lehigh River,
<https://www.bridgemeister.com/list.php?type=crossing&crossing=Lehigh+River>

⁷ Finley published his description of his patent, “A Description of the Patent Chain Bridge,” The Port Folio, 3, no. 6 New York, 1910, pages 441-53.

1810, there were eight Finley bridges across the state, and in total his patent was used for probably forty bridges—the design was flexible enough to be adapted to local conditions.⁸ None of the Finley bridges survive; the Lehigh Gap bridge survived the longest at 107 years.⁹

For the Lehigh Gap bridge, Blumer used wrought iron from the Maria Furnace located at Harranty, a small village east of Weissport on the Pohopoco Creek and from the Albright and Clarissa Furnace located at Little Gap on the Aquashicola Creek. The eight-foot iron links were made from bars about 1.5" square bars as were the iron hangers (from the chains to the deck), which varied from 3 to 18 feet long. Timber for the decking, pier frames and stringers was easily acquired from the surrounding forests. The main span of the bridge was 160 feet between piers with 80-foot half spans at each end for a total span over the river of 320 feet. No specific construction records survive, but Boyer and Jelly wrote that Blumer was paid \$233.75 for his services and that the cost of the iron was \$980.19.¹⁰ Another estimate is that the total cost for the bridge was \$1,200.¹¹

Toll rates were established by the General Assembly: "Rates of toll bridge agreeably to the following rates, viz.: For every coach, landau, phaeton, or other pleasure carriage, with four wheels, or every sleigh or sled, drawn by four horses, the sum of thirty-seven cents and a half; and for the said carriages with two horses, thirty-one cents; for every wagon, with four horses, when loaded, the sum of thirty-seven and a half cents for the same, when empty, twenty-five cents; and for every carriage of the same description drawn by two horses, when loaded, the sum of thirty-one cents; and for the same, when empty, twenty cents; for every chaise, riding chair, sulky, cart, or other two wheeled carriage, or sleigh or sled with two horses, twenty-five cents; and for the same with one horse, fifteen cents; for a single horse and rider, the sum of six cents; and every led horse or mule, the sum of five cents; for every foot passenger, the sum of one cent; for every head of horned cattle, the sum of four cents; for every sheep and swine, the sum of two cents."¹²

⁸ Eda Kranakis, Constructing a Bridge. An Exploration of Engineering Culture, Design, and Research in Nineteenth-Century France and America (Cambridge, 1997), page 61; Kranakis, page 17, asserts that Finley was born in 1762.

⁹ William H. Shank, Historic Bridges of Pennsylvania. Revised edition (York, PA: 1980), pages 5-7

¹⁰ Emory L. Kemp, "National Styles in Engineering: The Case of the 19th-century Suspension Bridge," Journal of the Society for Industrial Archeology, vol. 19, no. 1 (1993), 21-36; W. H. Boyer and Irvin A. Jelly, "An Early American Suspension Span," Civil Engineering, 7 (May 1937), p 338-40

¹¹ Sean and Johanna Billings, Slatington, Walnutport, and Washington Township (Charleston, 2006), page 73

¹² Pennsylvania. Acts of the General Assembly of the Commonwealth of Pennsylvania, Passed at a Session which was Begun and Held at the Borough of Harrisburg on Tuesday, the Sixth Day of December (Harrisburg, 1826), page 130

In April 1829, in compliance with the Act of March 1826 and the Charter dated 16 June 1826, John Rice, secretary and treasurer of the company, submitted the following record of accounts to the legislature.¹³

Sold 267 shares at \$25 = \$6,675 capital investment

Bridge, amount expended in building \$7,930.22 (a much different amount than other estimates)

Dividend declared, no. 6, April 8, 1829 = 266\$

Tolls received, nine months from 1/1/1826 to 8/2/26 = \$274.85

Tolls received, six months from 6 October 1828 to 6 April 1829 = 484.20.

some months lower, 2 April 1827 to 1 October 1827 = 263.41

Sere showing a net profit. \$1,084.86

Semi-Annual dividend at 6 percent per annum, last divided was at 8 percent (leaving a little over \$100 left in treasury)

The chain bridge was the only access to the Lehigh Canal for early slate manufacturers from Slatington until the Slatington-Walnutport bridge opened in 1854. It remained the only connection between upper Lehigh and Northampton counties until the opening of the new state highway bridge in 1931.

The chain bridge appears to have been minimally profitable throughout the nineteenth century. In the 1910s with the increase in traffic from automobile use, income also rose significantly.¹⁴

¹³ Pennsylvania. Journal of the Senate of the Commonwealth of Pennsylvania which Commenced at Harrisburg on the Second Day of December 1828 (Harrisburg, 1828-29), page 510-12

¹⁴ The annual Report of the Auditor General on the finances of the Commonwealth of Pennsylvania shows that the Lehigh Water Gap Bridge paid little on the capital stock tax, which was a property tax, first assessed in 1844, based on average net income and capital net worth. For example, the Bridge paid to the state \$8.50 in 1844; \$19.75 in 1870; \$15.30 in 1902, \$118.50 in 1920.

Timeline of the Lehigh Water Gap Chain Bridge Toll House

It was never swept away by any floods of the Lehigh River (unlike other bridges), but it was damaged in 1841, 1857, and 1862.

March 1826, Lehigh Water Gap Bridge Company erects the chain bridge.

January 1841, a flood damaged the west abutment and broke one chain. (Every other bridge on the river below Lehigh Gap was swept away.) Repairs were financed by John Dieter Bauman.

1857, Ice damaged the west abutment, moving it about one foot off its foundation.

June 1862, another major flood occurred when the dam at White Haven gave way after heavy rain. A canal boat caught in the flood struck the bridge and broke one chain link.

28 February 1902, rain and snow melt resulted in the second highest crest of Lehigh River. The Chain bridge suffered no damage.

1925, the state explored the possibility of a building a new steel, highway bridge with financial contributions from Lehigh and Northampton counties and the Lehigh Valley and Central of New Jersey railroads, but local opposition scuttled the plan.

On the night of 24-25 May 1926, a fire destroyed most of bridge's wood work especially the decking and the two pier housings. The center and west spans collapsed. The state offered to buy and then build a new bridge, but Northampton county politicians refused.

April 1927, bridge stockholders decided to rebuild even though they knew that the state was planning to build a new bridge. The same chains were used and reinforced with three cables on each side. I-beam truss work installed to stiffen the bridge.

June 1927, the bridge re-opened to traffic (5 cents for a two-passenger car; 10 cents for larger cars, and trucks).

August 1929, the Pennsylvania Public Service Commission (PSC) ordered the construction of the new state highway bridge to bypass dangerous railroad grade crossings of the Lehigh Valley Railroad (on the west side of the river) and the Central of New Jersey Railroad (on the east side of the river).

1930, the highway department received bids and awarded a contract. Work on the new bridge started in September.

26 September 1931, the new highway bridge (north of the chain bridge) opened for traffic.

1932, the Lehigh Water Gap Bridge Company sued the PSC for \$120,000 in damages, contending the loss of at least \$17,000 annually. The PSC disallowed the claim.

December 1933, the bridges was salvaged and razed. The Lehigh Gap chain bridge had lasted 107 years, in almost continuous use for that entire time, and had been the last surviving Finley-type chain bridge.

The toll house became a private residence and passed through the hands of several owners in the twentieth century before passing into the possession of the Anthracite Railroads Historical Society.