

CENTRAL RAILROAD OF NEW JERSEY, LEHIGH RIVER BRIDGE AT EASTON
(Lehigh & Susquehanna Division, Bridge No. 3)
Pennsylvania Historic Railroad Bridges Recording Project
Spanning Lehigh River at Third St.
Easton
Northampton County
Pennsylvania

HAER No. PA-542

HAER
PA
48-EATO
12-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

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Location: Spanning Lehigh River at Third St., Easton, Northampton County, Pennsylvania.

USGS Quadrangle: Easton, Pennsylvania-New Jersey (7.5-minute series).

UTM Coordinates: 18/482335/4503795

Dates of Construction: 1867 (substructure), 1897 (superstructure).

Basis for Dating: Secondary sources.

Dates of Alteration: 1902-03.

Designer: Charles Scheidl (engineer, Phoenix Bridge Co.).

Fabricator / Builder: Phoenix Bridge Co. (Phoenixville, Pennsylvania).

Present Owner: Black River & Western Railroad.

Present Use: Railroad bridge.

Structure Types: Pin-connected skew Pratt through truss; pin-connected skew Pratt deck truss; riveted skew Warren deck truss; riveted deck girder.

Significance: This skewed crossing of the Lehigh River, with one span over the Third Street Bridge, is significant as a highly visible local landmark. When the structure partially collapsed during a 1902 flood, repair efforts were of national interest.

Historian: Justin M. Spivey, April 2001.

Project Information: The Historic American Engineering Record (HAER) conducted the Pennsylvania Historic Railroad Bridges Recording Project during 1999 and 2000, under the direction of Eric M. DeLony, Chief. The project was supported by the Consolidated Rail Corporation (Conrail) and a grant from the Pennsylvania Historical and Museum Commission (PHMC). Justin M. Spivey, HAER

engineer, researched and wrote the final reports. Preston M. Thayer, historian, Fredericksburg, Virginia, conducted preliminary research under contract. Jet Lowe, HAER photographer, and Joseph E. B. Elliott, contract photographer, Sellersville, Pennsylvania, produced large-format photographs.

Description and History

From the late nineteenth century well into the twentieth, the Central Railroad of New Jersey (CNJ) and Lehigh Valley Railroad (LVRR) were chasing each other down the Lehigh River, usually on opposite banks. One exception to this rule was at Easton, where both ended up on the Lehigh's south bank just before its confluence with the Delaware. A lucrative market for shipping anthracite coal to East Coast port cities had motivated this duplication of railroad routes. LVRR was the first railroad to compete with canals in bringing coal down the Lehigh Valley to Easton, starting in 1855. There it connected with existing rail links to Philadelphia, Trenton, and New York. CNJ, which had reached Phillipsburg, New Jersey (across the Delaware from Easton), in 1852, provided the most direct of several routes to the Hudson River waterfront. According to railroad historian Robert F. Archer, CNJ initially envisioned LVRR as a "western feeder," even purchasing some of its stock. The two railroads also shared a bridge across the Delaware River between Easton and Phillipsburg.¹ This relationship soon soured, however, as LVRR began assembling its own route east to New York. In response, CNJ acquired its own route west into the coal fields in 1871.²

CNJ's route west was already in operation as the Lehigh & Susquehanna Railroad (L&S). L&S dated back to an 1837 charter, and was built as a series of inclined planes to carry canal boats over the mountains between Wilkes-Barré on the Susquehanna River and White Haven on the Lehigh. The charter was held by the Lehigh Coal & Navigation Co. (LC&N), which operated a canal between White Haven and Easton. After losing part of its canal to an 1862 flood, and troubled negotiations with LVRR over connecting service, LC&N decided to build its own railroad. The canal company extended the L&S route down the Lehigh into Easton from 1864 to 1867. A bridge over the Lehigh River at Easton connected with the CNJ-LVRR bridge over the Delaware. The cost of construction, paired with a decline in coal prices, left the canal company heavily saddled with debt. In 1871, CNJ seized an opportunity for westward expansion by leasing the railroad from LC&N as its Lehigh & Susquehanna Division.³

The Lehigh River bridge at Easton, built for L&S in 1867, consisted of eleven spans with lengths identical to the present structure. An unknown contractor built ten stone piers and two abutments that were designed to accommodate a two-track superstructure. Three piers at the east end were turned 45 degrees to the bridge's axis in order to parallel the river's current. Seven smaller piers on the west approach were built perpendicular to the bridge. (Few of the stone piers remain, as explained below.) The three river spans originally consisted of a 160'-0" double-intersection Pratt deck truss, a 176'-0" double-intersection Pratt through truss crossing above the county-owned Third Street Bridge, and another deck truss similar to the first. All of these had

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skew ends, what appear to be cast-iron verticals, and wrought-iron tension members. Eight deck plate girder spans completed the west approach. Of the 1867 spans, only the through truss was wide enough to carry two tracks. The remainder were installed off-center on the south side of the piers, leaving room for trusses supporting the future second track.⁴ This bridge was rebuilt as a two-track structure some time after 1880, most likely during an 1897 reconstruction of CNJ's Lehigh & Susquehanna Division.⁵

The most significant event in the bridge's history was the flood of 28 February 1902, when a fast-flowing Lehigh River undermined the second pier from the east end. As the pier collapsed, deck truss span No. 3 dropped into the river and through truss span No. 2 fell onto the Third Street Bridge, which was also a through truss structure. The *Easton Express*, a local newspaper, initially speculated that a difference in flood stages at the Easton confluence "made the Lehigh much swifter than it would have been had the Delaware been higher." Another contributing factor was revealed in a subsequent article accusing CNJ of ignoring reports of scour around the pier.⁶ The railroad called in Phoenix Bridge Co., which used several creative techniques to put the bridge back in service by 28 March. Crews started almost immediately and worked around the clock to shore up span No. 2 and build a temporary trestle in place of span No. 3. The through truss span, while damaged, was stabilized by inserting supports through the Third Street Bridge floor into the river bed. When the contractors could not find a floating pile driver for the trestle, they cobbled one together by placing a stationary pile driver astride two LC&N boats. The work received national press coverage in *Engineering News* and *Engineering Record*.⁷

With the temporary structures in service, construction of a new reinforced concrete pier and replacement spans proceeded at a less hurried pace. Phoenix Bridge Co. erected a new pin-connected Pratt through truss in late 1902, and a riveted Warren deck truss in mid-1903. These spans are presently found with Span No. 1, the 1897 pin-connected Pratt deck truss unaffected by the flood. The west approach spans, however, have since been altered. Either in conjunction with the flood repair work or at a subsequent date, CNJ rebuilt the stone piers in concrete and installed a reinforced concrete slab deck. As a result, only two of the original stone piers remain. The bridge currently carries freight traffic for the Black River & Western Railroad on contract to Norfolk Southern.

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Notes

1. Robert F. Archer, *The History of the Lehigh Valley Railroad: "The Route of the Black Diamond"* (Forest Park, Ill.: Heimburger House Publishing Co., 1977), 31-32.
2. James N. J. Henwood, "Central Railroad of New Jersey," in *Encyclopedia of American Business History and Biography: Railroads in the Age of Regulation, 1900-1980*, edited by Keith L. Bryant, Jr. (New York: Facts on File, 1988), 63.
3. Elaine Anderson, *The Central Railroad of New Jersey's First 100 Years, 1849-1949: A Historical Survey* (Easton, Pa.: Center for Canal History & Technology, 1984), 42-44.
4. See image in Photograph Collection, Box 37, Railroad Museum of Pennsylvania, Pennsylvania Historical & Museum Commission, Strasburg, Pa. A similar view appears in the Raymond E. Holland Regional & Industrial History Collection, Allentown, Pa., identified in David F. Drinkhouse in letter to author, 18 Feb. 2000.
5. Anderson, *The Central Railroad of New Jersey*, 92.
6. "Flood's Damage Has No Parallel Hereabouts," *Easton Express*, 1 Mar. 1902, and article dated 3 Mar. 1902, included by Drinkhouse in letter to author.
7. "Rebuilding a Wrecked Bridge at Easton, Pa.," *Engineering Record* 50, No. 14 (1 Oct. 1904): 406-08; M. A. Zook, "Flood Repairs to the Lehigh & Susquehanna Division of the Central Railroad of New Jersey," *Engineering News* 51, No. 5 (4 Feb. 1904): 97-99.

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