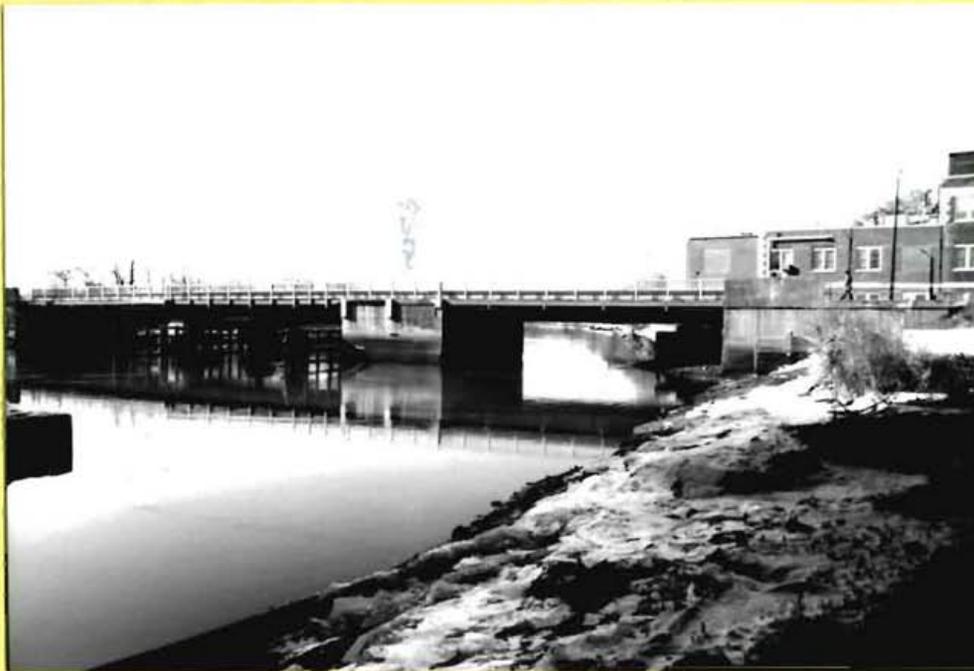


**10. NAME(S) OF STRUCTURE**

State Bridge Number 159

**11. PHOTOS (W/ FILM ROLL & FRAME NO.) AND SKETCH MAP OF LOCATION**

1A:2-15



1A:5

Mack, Warren W. "A History of Motor Highways in Delaware", in Reed, Henry Clay, Delaware: A History of the First State, vol.2, pp.535-550 (NY: Lewis Historical Publishing Co., 1947).

Delaware State Program. Delaware State Highways: The Story of Roads in Delaware.... [Newark, Delaware: Press of Kells, 1919].

Downs, Winfield S. ed. Who's Who in Engineering. (New York: Lewis Historical Publishing Co., Inc., 1931).

Federal Writers' Project. Delaware: A Guide to the First State. (New York: Viking Press, 1938).

Spero, Paula A. C. Metal Truss Bridges in Virginia: Suffolk Construction District. (Charlottesville, Virginia: Virginia Highway & Transportation Research Council, 1981).

Delaware State Archives. State of Delaware, New Castle County Levy Court, Specifications, Proposals, Contract and Bond ms., State Archives, Dover, DE.

Delaware State Archives. New Castle County Road Commissioners Papers, various years 1750-1940, ms. State Archives, Dover, Delaware.

Delaware DOT records: Annual Reports; Photo Archives; contract files.

Plans on file at Delaware DOT: Contract #103A, 103B, 85-074-01, 66-060-03, 962A

**12. SOURCES**

**13. INVENTORIED BY:**

**AFFILIATION**

**DATE**

P.A.C. Spero & Company with Kidde Consultants for Delaware DOT

April-November 1988

# HABS/HAER INVENTORY

See "HABS/HAER Inventory Guidelines" before filling out this card.

## 1. NAME(S) OF STRUCTURE

State Bridge Number 159

## 2. LOCATION

James Street Bridge over Christina River  
Newport, New Castle County, Delaware

## 3. DATE(S) OF CONSTRUCTION

1929

## 4. USE (ORIGINAL/CURRENT)

Vehicular

## 5. RATING

BASC

## 6. CONDITION

Good: Bascule out of service. Cracks in concrete substructure and scour.

State Highway Bridge 159 (James Street/Newport Bridge) comprises a 83'-3" single leaf, plate girder bascule span, and two plate girder approach spans measuring 63'-7" and 64'-4", for an overall length of 212'-1". The bascule span is currently inoperable. Designed by Keller and Harrington, the bascule movement occurs about a simple trunnion, with a track girder guiding the circular portion of the bascule girder within the bascule pier. The lifting mechanism is not visible; it is housed in the bascule pier below the deck, along with the counterweight. The draw span, when working, was operated by an electrically driven motor with rack and pinion gearing and a 480,000 pound concrete counterweight. The bridge carries two lanes of traffic on a 30'-0" wide roadway, flanked on each side by 7'-0" cantilevered sidewalks. There is an aluminum balustrade and handrail; ornamental light standards are located on the deck. The substructure includes concrete abutments with U-shaped wing walls.

Delaware Department of Transportation records state that Bridge 159 was built in 1929, replacing a hand-operated swing bridge built in 1879 by Edge Moor Iron Works. Keller and Harrington of Chicago, Illinois, specialists in movable bridges, designed the Newport bascule bridge. Original drawings, dating from March to November 1928, document construction details for the bridge. Plan notes specified that a bascule span was the preferred type and "a pleasing elevation, from an architectural standpoint, will be required". The notes further indicated estimates for the lift span opening were 300 times a year (60 openings for acid barges and 240 openings for ore barges), primarily providing service for barges from Krebs Pigment and Chemical Company, located a short distance northwest of the bridge. Specifications, dating from April 1927 are also on file at Delaware DOT. The design of the Bridge #159 was approved by A.G. Livingston, Bridge Engineer of the Delaware State Highway Department. Construction of the bridge began in 1928. The substructure contractor, Carl S. Camp of Philadelphia, completed the substructure by June 4, 1929. The superstructure was erected by Al. S. Fox of Dayton, Ohio. The Bethlehem Steel Company supplied the structural steel. The James Saunders Machine Company of Dayton, Ohio provided the machinery, and the Rubbert Steel Casting Co. of East Chicago, Indiana produced the castings. The approaches were constructed by D. E. O'Connell and Sons, Inc., under a separate contract for \$11,669.00. To alleviate traffic congestion during the bridge construction, a temporary bridge was located about 60 feet downstream. The bridge was opened to traffic on December 1, 1929; the total construction cost was \$149,035.00, assisted by Federal Aid Program funds (Project No. 48). Drawings on file at the Delaware Department of Transportation document the replacement of the bridge floor and construction of a timber fender system in 1948-49. At that time, timber deck material was removed and replaced with a combination of 5" open and 3" I-beam interlock slab flooring. Interlock flooring was fabricated by the Reliance Steel Products Company of McKeesport, Pa; the Belmont Iron Works of Philadelphia supplied structural steel. The McCormick Construction Co. was contractor under contract #962A. In 1966 extensive renovations were performed on the bridge and the draw span was permanently closed. Original drawings indicate the bridge design included concrete balustrade and handrail, with matching steel railing over the bascule span. Principals in the firm of Keller and Harrington were C. L. Keller and H. P. Harrington. Charles Lincoln Keller received his degree in engineering from Lehigh University in 1893. He was involved in the design of numerous movable bridges throughout his career. From 1916 to 1922 Keller was president and chief engineer of the Scherzer Rolling Lift Bridge Company, located at 1616 Monadnock Block, Chicago. He later joined H.P. Harrington to form the Chicago-based engineering firm, Keller and Harrington, which specialized in movable bridges. This firm was responsible for other movable bridges in Delaware, including State Bridge #21A in Milford. The James Street Bridge site has been a crossing for the Christina River since at least the middle of the eighteenth century. A toll ferry operated out of Newport until 1790 at which time the Levy Court was petitioned to eliminate all fees. The New Castle Turnpike Company, chartered in 1811 by the General Assembly, was authorized to macadamize the Newport Road; the project included a bridge at this crossing. The present bascule bridge replaced an 1879 iron truss bridge built by the Edge Moor Iron Works of Wilmington, Delaware. The 1879 bridge included a fixed 95'-0" pony truss span and a manually operated 92'-0" pony truss swing span. Rubble masonry piers supported the truss spans. The piers were reconstructed in 1920 and the swing span was strengthened.

State Bridge 159 is one of seven remaining historic bascule bridges carrying vehicular traffic in Delaware. Designed by Keller and Harrington, this bascule is a hybrid trunnion type; the lifting portion consists of a trunnion with counterweight, riveted to the circular end of the bascule girder which moves along a track plate. The lifting mechanism is no longer operational, but it remains intact below the deck in the bascule pier. Constructed with funding assistance from the Federal Aid highway program, this major structure is among the projects for which Delaware received federal aid in the 1920s and 1930s, and illustrates the important role this funding played in enabling the State Highway Department to achieve its program of modernization and expansion of the state road network during this period.