

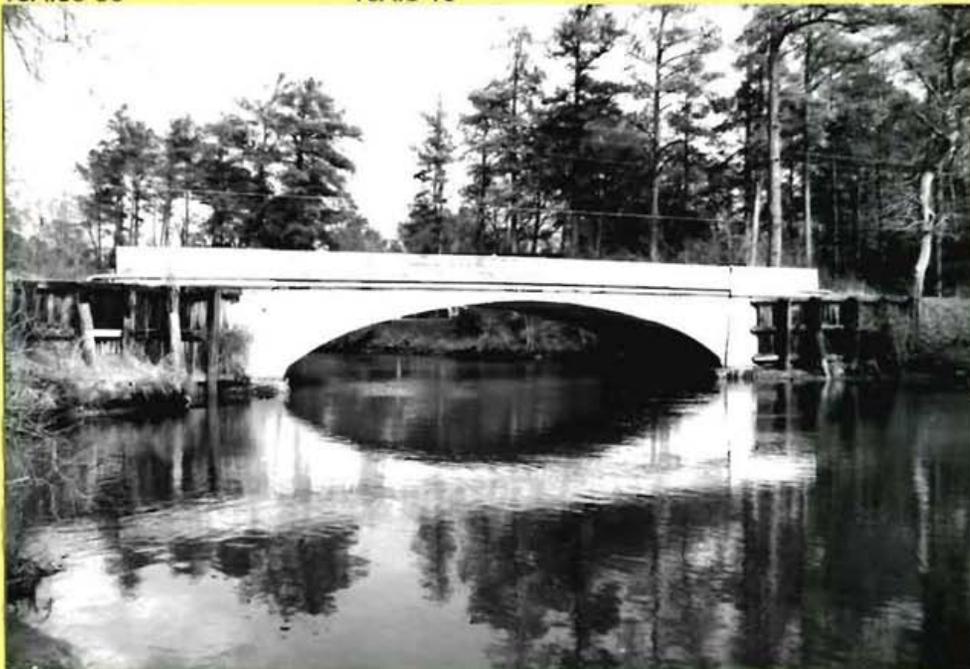
**10. NAME(S) OF STRUCTURE**

State Bridge Number 237

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

15A:35-36

16A:3-10



16A:6

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 Pub. Co., 1947).  
Delaware State Program. Delaware State Highways; The Story of Roads in Delaware.... [Newark, Delaware: Press of Kells, 1919].  
Federal Writers Project. Delaware: A Guide to the First State. (New York: Viking Press, 1938).  
Carter, Dick. The History of Sussex County. (Georgetown, Delaware: Community Newspaper Corp., 1976).  
Hancock, Harold Bell. The History of Sussex County, Delaware. [s.l. : s.n.] 1976.  
Spero, Paula A. C. A Survey and Photographic Inventory of Concrete and Masonry Arch Bridges in Virginia. (Charlottesville, Virginia: Virginia Highway & Transportation Research Council, 1984).

Delaware State Archives. Sussex County Road Records, 1875-1940.  
Delaware DOT: Structures Division files  
Plans on file at Delaware DOT: Contract (None)

**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 237

## 2. LOCATION

Rd. 46 over Gravelly Branch  
Middleford, Sussex County, Delaware

## 3. DATE(S) OF CONSTRUCTION

1919

## 4. USE (ORIGINAL/CURRENT)

Vehicular

## 5. RATING

CA

## 6. CONDITION

Good

State Highway Bridge 237 is a reinforced concrete arch bridge with a total structure length of 62 feet. This filled, solid spandrel arch carries two lanes of traffic on a 20'-4" wide deck. The substructure consists of concrete abutments with straight wingwalls; flared timber wingwalls have been added in an apparent effort to arrest erosion of the embankments. A corbeled band defines the top of the wingwalls and fascia; the simple concrete parapet has massive end blocks and incised rectangular panels.

Delaware Department of Transportation records state that Bridge 237 was built in 1919. An inscription in the parapet attributes the construction of Bridge No. 237 to the Luten Bridge Company of York, Pennsylvania under the supervision of W.E. Hawkins, County Engineer. Construction drawings do not survive.

Bridge 237, a solid spandrel arch, is an example of a proprietary type was designed by the Luten Bridge Company, the firm established by Daniel B. Luten, whose bridges found wide acceptance throughout the east and midwest in the early twentieth century. Luten, a 1894 civil engineering graduate from the University of Michigan, began patenting bridge designs in 1899. Luten's patents, totaling over 30, included his currently-recognized arch bridges, as well as numerous variations, such as a hinged arch and viaducts; systems of reinforcement; ingenious centering forms and methods; methods of bridge construction; and reinforced concrete beams. Luten's first bridge company was the National Bridge Company, established in 1902. A 1914 Luten publication stated that until 1905 the National Bridge Company did the contracting and constructing of its bridges, but after that it was involved only in engineering design and supervision. In 1907, a company catalog advertised a variety of earth filled arches reinforced with steel rods. By 1911, Luten had won national attention, and was singled out by bridge historian Henry Grattan Tyrell as a "designer and builder of many fine concrete bridges throughout America." Bridge 237 is one of four examples of Luten highway bridges in the present survey, and the only example in Sussex County. A solid spandrel arch similar to the other Luten arches, it was designed by the Luten Bridge Company. Characterized by the graceful arch and curved, inscribed solid parapets, this bridge type was described in Luten's company catalogs as "Highway Bridge of Plain Design". Although it is somewhat deteriorated, this structure represents a proprietary type designed by a nationally significant company. Other Luten bridges identified in Delaware include Bridge 383, constructed in 1910, and Bridge 337 (1912), and Bridge 120, constructed in 1922, all in New Castle County. All are Luten "plain" designs, similar to his patent number 852,970. This type of concrete arch was built widely as a proprietary type in the first quarter of the twentieth century. Variations in the Luten style arch and parapet detail soon developed and resulted in numerous, similar non-proprietary designs prepared by highway department staffs.