10. NAME(S) OF STRUCTURE

State Bridge Number 337

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

24B:28-36 25B:2-4

24B:32A

12. SOURCES

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

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. New Castle County Levy Court Records. Specifications, Proposals, Contract and Bond files.

Delaware State Archives. New Castle County Road Commissioners Records, 1750-1940.

Delaware State Archives. New Castle County Engineer Records.

Delaware DOT records: Photo archives; contract files.

Plans on file at Delaware DOT: Contract #BNC-11

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 337

2. LOCATION
Road 408 over tributary to Christina Creek
New Castle County, Delaware

3. DATE(S) OF CONSTRUCTION
1912

4. USE (ORIGINAL/CURRENT)
Vehicular

5. RATING
CA

6. CONDITION
Good

7. DESCRIPTION

State Highway Bridge 337 is a single span filled, solid spandrel concrete arch bridge. It has been widened with the addition of a concrete slab, 7'-6" wide, to its west elevation. The bridge is built on approximately a 20 degree skew. The arch has a clear span of 8'-6" and an arch rise of 5'-0". It carries two lanes of traffic and has a total horizontal clearance of 28'-10". The substructure consists of concrete abutments with U-shaped concrete wing walls. Both elevations have corbeling on the fascia and are capped with a concrete parapet ornamented with incised horizontal rectangles.

8. HISTORICAL DATA

Delaware Department of Transportation records for Bridge 337 do not include original drawings. The bridge has a plaque which gives the date of construction as 1912 and the builders as the Luten Bridge Company of York, Pennsylvania. Bridge 337 is located adjacent to Cooch's Bridge Drawings are on file at the Department for the 1932 alteration, the addition of a concrete slab extension on the west elevation. Bridge 337 is an example of a proprietary type 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 20th 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."

9. SIGNIFICANCE

Bridge 337, a solid spandrel arch, 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". This structure represents a proprietary type designed by a nationally significant company. The alterations to this bridge consist of a widening in 1932. This widening occurred during the historic period and consists of a concrete slab span which is typical of the period and is in good condition. This composite bridge comprises a good representative example of a typical bridge type from the early growth and expansion periods of the highway network. Bridge 337 is one of four examples of Luten highway bridges in the present survey. Other Luten bridges identified in Delaware include Bridge 383, constructed in 1910, Bridge 120 (1922), both in New Castle County, and Bridge 237, constructed in 1919 and located in Sussex 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.