HAER
DEL
2-TOWSE,
2-

STATE BRIDGE NO. 424
Wiggins Mill Road (Road 446) spanning
Wiggins Mill Pond Outlet
Townsend
New Castle County
Delaware

HAER No. DE-48

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

HAER
DEL
2-TOWSE,
2-

HISTORIC AMERICAN ENGINEERING RECORD
STATE BRIDGE NO. 424

HAER No. DE-48

LOCATION: Wiggins Mill Road (Road 446), spanning Wiggins Mill Pond Outlet, Townsend, New Castle County, Delaware.

USGS Middletown, DE Quadrangle, UTM Coordinates: 18.439370.4361780

DATE OF CONSTRUCTION: 1884

BUILDER: Edge Moor Bridge Works (Wilmington, Delaware), for New Castle County

PRESENT OWNER: Delaware Department of Transportation

PRESENT USE: Highway bridge

SIGNIFICANCE: Bridge No. 424 is a rare surviving representative of the Warren pony-truss bridge type, a form of metal truss that was commonly employed for small-scale rural crossings in Delaware during the late nineteenth century. It is one of just six metal truss bridges still in service in the state. The bridge was built in 1884 by the Edge Moor Bridge Works of Wilmington, Delaware, a nationally prominent manufacturer of iron bridges during the period 1873-circa 1900.

PROJECT INFORMATION: An August 1996 evaluation of Bridge No. 424 resulted in a recommendation of replacement. This recordation project was undertaken pursuant to an agreement between DelDOT and the Delaware State Historic Preservation Office. Bridge No. 424 was recorded in November 1996 by the Cultural Resource Group of Louis Berger & Associates, Inc., East Orange, New Jersey, for DelDOT. Photography was performed by Rob Tucher, Senior Photographer. Research was conducted by Philip E. Pendleton, Architectural Historian.

DESCRIPTION

Built in 1884, State Bridge No. 424 is a single-span iron truss bridge constructed on abutments of stone masonry. Located in Appoquinimink Hundred in New Castle County, the bridge carries Wiggins Mill Road (Road 446) over the Wiggins Mill Pond Outlet. The bridge's larger environment is a rural one of active farms and recent exurban residential development. The immediate setting is visually dominated by Wiggins Mill Pond and its surviving milldam, so that, with the historic bridge and its small road, the place conveys a strong and picturesque sense of its history as a former millseat dating back 200 years or more. A single house of recent construction is the sole building in view from the bridge.

Thirty-four feet in length and fourteen feet, eight inches in width, the bridge carries a single lane of traffic. It is oriented running north-south so as to span the creek with a 15-degree skew. The abutments and flared wing walls are laid up in semi-coursed rubble masonry, with coping for the wing walls consisting of large cut-granite slabs. The somewhat awkward-seeming fit of this coping over the rubble wing walls suggests that the abutments and wing walls may survive from an earlier bridge, perhaps of the timber beam type. A plaque fitted in the coping of the southwest wing wall reads:

Rebuilt 1884
J.T. Taylor L.T. Com

The riveted iron pony truss is a three-panel example of the Warren type. The top and bottom chords as well as the diagonals are composed of double three-and-a-half-by-three-and-a-half-inch angles. The posts are three-and-a-half-by-three-and-a-half angles. Transverse floor beams, located at each panel point, extend beyond the truss to support angle "A" braces for the posts. The wooden deck, made up of four-by-eight planks, is carried by a pair of iron girders and doubled four-by-ten timber beams.

HISTORY OF BRIDGE NO. 424

State Bridge No. 424 was constructed in 1884 for the New Castle County government as a replacement for an earlier bridge. As suggested above, it is possible that the stone-masonry abutments and wing walls survive from the 1884 bridge's predecessor, built at some date from 1807 onward. As of November 1996, Bridge No. 424 was slated for replacement with a modern structure.

The vicinity of the bridge location began to be settled by Europeans in significant numbers circa 1700. The production of wheat for export emerged as southern New Castle County's economic mainstay and remained so until around 1870. The area saw the rise of a briefly prosperous orchard industry, especially for peach cultivation, after 1856, when the opening of the Delaware Railroad from Wilmington to Dover facilitated shipment of the perishable fruit. By the 1870s, however, the failure of local farmers to mount the intensive effort necessary for proper orchard cultivation and

harvest had led to a decline in this form of agriculture. The decline of orchard husbandry was matched by the demise of the region's winter wheat business in the face of rising competition from the spring wheat crops of the upper Midwest and northern Plains. The agricultural economy of southern New Castle County entered a long depressed period from which it slowly emerged in the course of the twentieth century. However, it never regained the burgeoning prosperity it experienced in the early and mid-nineteenth century (Herman 1986:2-8, 124-27). The area's landscape remains largely dominated by general farming, including livestock raising and grain and truck crop cultivation.

The nineteenth- and early twentieth-century history of the successive bridges at this location is linked with the history of the mill business that was conducted here. The mill was operating by 1797, when the tax assessment for Appoguinimink Hundred listed William Williams with a mill, other buildings, and 444 acres of land. When the property was purchased by Joseph Whitby in 1813, the deed noted that a gristmill and a sawmill were present. Many owners succeeded Williams and Whitby, among whom Israel Allston Harman was notable for the duration of his tenure, 1871-1915. The frame gristmill building was still standing in 1938, when it was depicted on highway improvement plans. It is not known when the mill business closed or when the building came down. The fact that it is by George Wiggins's name that the location is presently known suggests that Wiggins (owner from 1915-1928) was the last operator of the mill (Hunter Research 1996:1-5).

Access to and from the mill for its patrons, and for the export of its products, was evidently a primary concern for the petitioners who in 1803 besought the New Castle County Court of General Sessions to establish

> a public laid out road, to run from [another] public laid out road and from the easterly corner of Richard Reynolds's plantation to Williams's mill, and from thence to the main road leading from the Head of Sassafras [River] to Duck Creek [New Castle County Court of General Sessions (NCCCGS) 1794-1809:244].

This road, now Wiggins Mill Road or Road 446, was confirmed by the court in 1807. The courses and distances of the road crossed "a branch of the Appoquinimink . . . near Williams's sawmill," but no mention is made in this Court of General Sessions return of construction of a bridge (NCCCGS 1794-1809:414). Due to the possible heavy wagon traffic going to and from the mill, it may be that a bridge was built when the road was created or soon after. Bridge construction, however, was the province of the New Castle County Levy Court. Few of that court's bridge records from the nineteenth century have survived, so that the date of the first bridge at Wiggins Mill Pond is unknown.

Construction of the present span took place in 1884, as dated by the *in situ* plaque and by the records of the company that fabricated the truss, the Edge Moor Bridge Works. The Edge Moor Iron Company had been established in 1869 as an iron rolling mill refining iron for general purposes, located by the Delaware River on the northern edge of Wilmington. Edge Moor set

up its bridge works in 1873. It emerged as one of the nation's more prominent manufacturers of iron bridges during the late nineteenth century, constructing spans over the East River in New York City, the Susquehanna River at Harrisburg, Pennsylvania, and (for the Pennsylvania Railroad) the Schuylkill River in Philadelphia. Edge Moor built many Warren pony-truss bridges in New Castle County during this period, but in 1900, the company was taken over by J.P. Morgan's American Bridge Company. Within a few years, American shut down the bridge section of the Edge Moor works (HABS/HAER 1988).

Iron truss bridges began to be built in the United States in numbers in the 1850s. The iron pony-truss bridge form was considered highly suitable during the latter half of the nineteenth century for relatively short crossings carrying secondary roads at rural locations such as Wiggins Mill Pond. The pony truss, in which the bottom chord embodies the main strength of the structure, could be adapted to a broad range of site conditions. The relative simplicity of its design, enabling its on-site assembly from prefabricated components, facilitated production, shipping, and final construction. The Warren truss was one of the earliest iron truss designs, patented in 1848 by the British engineers James Warren and Willoughby Monzoni. The original form of the Warren truss was that of a series of equilateral triangles (HABS/HAER 1988). Bridge No. 424 embodies a pony-truss modification in which the bottom chord of each triangular panel is longer than the diagonals.

The replacement of Bridge No. 424 with a more modern structure was considered during the years 1936-1938 and 1982-1983. In the 1930s, a proposed straightening of Wiggins Mill Road would have necessitated demolition and new construction, but for unknown reasons, the project was not undertaken (DelDOT Plan Files). In the 1980s, replacement of the bridge was studied due to its narrowness and concerns regarding its stability. It was considered possible that the bridge had deteriorated too much to ensure public safety, despite repairs to the timber deck in 1968 and to the stringers in 1977. However, intensive investigation in 1983 found Bridge No. 424 to be in adequately sound condition (DelDOT Maintenance Files).

Bridge No. 424 is one of Delaware's six surviving metal truss bridges in service as highway bridges. In the 1920s, as many as 90 metal truss bridges were standing and in use in New Castle County alone (HABS/HAER 1988). The bridge possesses additional significance as a rare extant example of the Warren pony truss, one of the metal truss forms most commonly employed for small bridges in Delaware during the late nineteenth century. It is also important as a surviving small-scale structure manufactured by the Edge Moor Bridge Works, one of the nation's leading bridge-building firms during the period 1873-circa 1900.

BIBLIOGRAPHY

Delaware Department of Transportation [DelDOT]
various Maintenance Files. File No. 1-424-446. On file at DelDOT Archives, Dover.

various Plan Files. Contract No. 365. On file at DelDOT Archives, Dover.

Herman, Bernard L.
1986 *Architecture and Rural Life in Central Delaware, 1700-1900.* The University of Tennessee Press, Knoxville.

Historic American Buildings Survey/Historic American Engineering Record [HABS/HAER]
1988 Delaware State Bridge No. 424, HABS/HAER Inventory Form. Prepared by P.A.C. Spero & Company. On file at HABS/HAER, National Park Service, Washington, D.C.

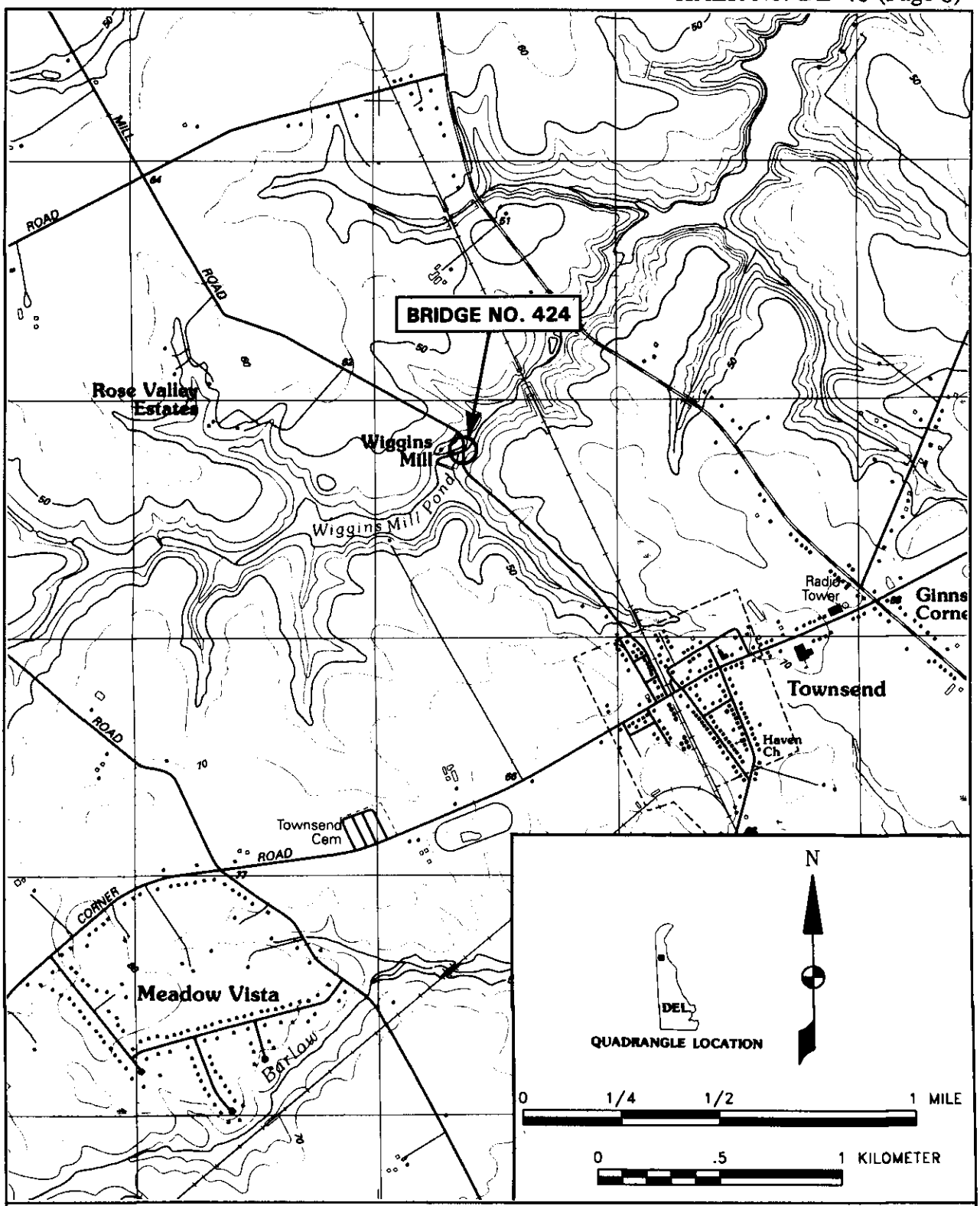
Hunter Research
1996 *Phase I Archaeological Survey Investigations: Wiggins Mill Road Bridge Replacement (Bridge #424), Appoquinimink Hundred, New Castle County, Delaware.* On file at the Delaware State Historic Preservation Office, Dover.

New Castle County Records
1903 New Castle County Bridge Book. On file at the Delaware State Archives, Dover.

various New Castle County Court of General Sessions. Road Dockets. On file at the Delaware State Archives, Dover.

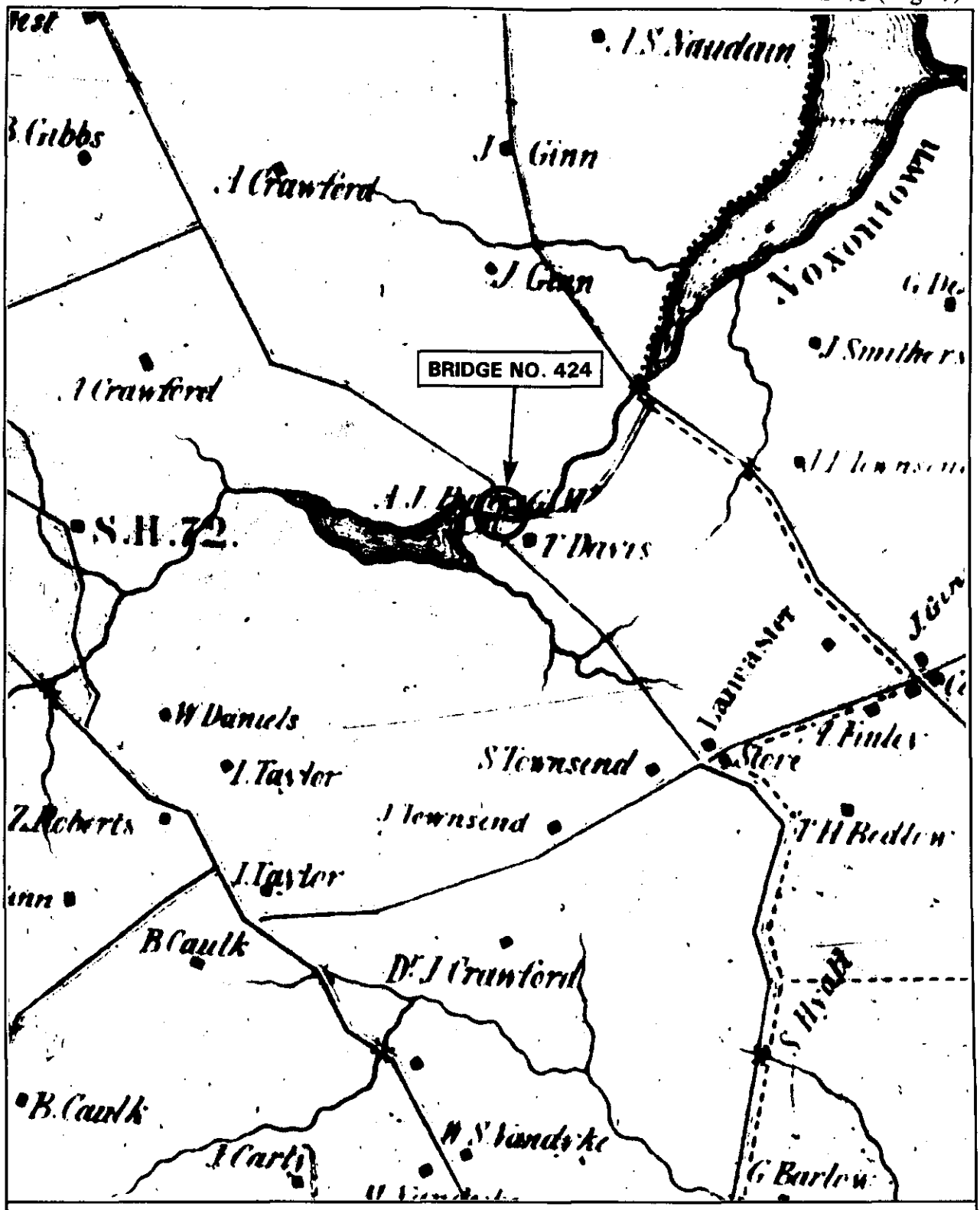
P.A.C. Spero & Company
1991 *Delaware Historic Bridges: Survey and Evaluation.* DelDOT Historic Architecture and Engineering Series No. 89. Delaware Department of Transportation, Dover.

Rea, Samuel, and Jacob Price
1849 *Map of New Castle County, Delaware.* Smith & Wistar, Philadelphia. On file at the Geography and Map Division, Library of Congress, Washington, D.C.



Location Map

SOURCE: USGS 7.5 Minute Quadrangle, Middletown, DE, 1993



Bridge Location Vicinity, 1849

Source: Rea and Price, 1849