**Maryland Historical Trust**

Maryland Inventory of Historic Properties number: QA-495

Name: MD 300 (Swansboro Rd.) over Unicorn Branch

The bridge referenced herein was inventoried by the Maryland State Highway Administration as part of the Historic Bridge Inventory, and SHA provided the Trust with eligibility determinations in February 2001. The Trust accepted the Historic Bridge Inventory on April 3, 2001. The bridge received the following determination of eligibility.

| MARYLAND HISTORICAL TRUST | |
|---|---|
| Eligibility Recommended _____ | Eligibility Not Recommended __X____ |
| Criteria: ____A ____B ____C ____D | Considerations: ___A ___B ___C ___D ___E ___F ___G __None |
| Comments: _____ | |
| Reviewer, OPS: _Anne E. Bruder_____ | Date: __3 April 2001____ |
| Reviewer, NR Program: __Peter E. Kurtze_____ | Date: __3 April 2001____ |

MARYLAND INVENTORY OF HISTORIC BRIDGES
HISTORIC BRIDGE INVENTORY
MARYLAND STATE HIGHWAY ADMINISTRATION/
MARYLAND HISTORICAL TRUST

MHT No. QA-495

SHA Bridge No. 17025 Bridge name MD 300 (Sudlersville Road) over Unicorn Branch

LOCATION:
Street/Road name and number [facility carried] MD 300 (Sudlersville Road)

City/town Sudlersville Vicinity X

County Queen Anne's

This bridge projects over: Road____ Railway_____ Water X Land ____

Ownership: State X County _____ Municipal _____ Other _____

HISTORIC STATUS:
Is the bridge located within a designated historic district? Yes _____ No X
National Register-listed district ____ National Register-determined-eligible district __
Locally-designated district _____ Other ____ Name of district_____

BRIDGE TYPE:
Timber Bridge X:
Beam Bridge _____ Truss -Covered ___ Trestle ____ Timber-And-Concrete X

Stone Arch Bridge _____

Metal Truss Bridge _____

Movable Bridge ____:
Swing _____ Bascule Single Leaf __ Bascule Multiple Leaf _____
Vertical Lift _____ Retractile_____ Pontoon _____

Metal Girder_____:
Rolled Girder _____ Rolled Girder Concrete Encased _____
Plate Girder _____ Plate Girder Concrete Encased _____

Metal Suspension _____

Metal Arch _____

Metal Cantilever _____

Concrete _____:
Concrete Arch_____ Concrete Slab ____ Concrete Beam ___ Rigid Frame _____
Other _____ Type Name _____

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**DESCRIPTION:**

**Setting: Urban** _____ **Small town** _____ **Rural** X

**Describe Setting:**

Bridge No. 17025 carries Maryland Route 300 (Sudlersville Road) over Unicorn Branch in Queen Anne's County. Maryland Route 300 runs east-west and Unicorn Branch flows from the south to the north into the Chester River. The bridge is located in the vicinity of Sudlersville, and is surrounded by cultivated fields and trees.

**Describe Superstructure and Substructure:**

Bridge No. 17025 is a three-span, two-lane, composite timber and concrete bridge. The bridge was originally built in 1939, and steel pile bents were added in 1994. The structure is 19.3 meters (63.2 feet) long and has a clear roadway width of 7.9 meters (26 feet); there are no sidewalks. The out-to-out width is 9.4 meters (30.7 feet). The superstructure consists of two timber beams which support a composite and timber deck and reinforced concrete rails. The concrete deck has a bituminous wearing surface. The structure has reinforced concrete railings, with square posts, cyma curve end posts, both with Art Deco detailing, and two horizontal square rails set on the diagonal. A painted number on the endpost identifies the bridge. The substructure consists of two timber abutments augmented with a steel "H" beam for additional support, and two steel bents augmenting the two 6-pile timber bents which once supported the superstructure at 5.5 meter (18 foot) intervals. There are no wingwalls. The bridge is not posted, and has a sufficiency rating of 73.8.

According to the 1994 inspection report, this structure was in good condition; the timber bents were in marginal condition with wet and rotting timber piles and cross-braces. The timber substructure is no longer structural due to the addition of steel bents. The asphalt wearing surface has minor scaling and some patching. Also, the concrete parapet is chipped and scraped in some places.

**Discuss Major Alterations:**

The steel bents were constructed in 1994 to replace the timber bents as the structural support for the bridge. The original timber bents remain in place.

**HISTORY:**

**WHEN was the bridge built:** 1939
**This date is: Actual** X **Estimated** _____
**Source of date: Plaque** _____ **Design plans** X **County bridge files/inspection form** _____
**Other (specify)**: State Highway Administration bridge files/inspection reports

**WHY was the bridge built?**

The bridge was constructed in response to the need for more efficient transportation network and increased load capacity.

**WHO was the designer?**

State Roads Commission

**WHO was the builder?**

State Roads Commission

**WHY was the bridge altered?**

The bridge was altered to ensure its structural integrity.

**Was this bridge built as part of an organized bridge-building campaign?**

The bridge was constructed by the State, as part of a campaign to improve Tidewater highways and crossings over bodies of water during the late 1930s.

**SURVEYOR/HISTORIAN ANALYSIS:**

**This bridge may have National Register significance for its association with:**
**A - Events _____ B- Person _____**
**C- Engineering/architectural character _____**

The bridge does not have National Register significance.

**Was the bridge constructed in response to significant events in Maryland or local history?**

The earliest bridges built in North America were timber bridges. According to one account, European settlers at first utilized the bridges constructed by the Native American populations, which consisted of tied timbers laid across up-turned forked tree trunks (American Association of State Highway Officials 1953: 19). This design was adopted by the settlers, who then modified the design by hewing the upper portions of the timbers to provide a flat surface and by adding a handrail to one side (American Society of Civil Engineers 1976: 143). Where crossings exceeded the length of the available timber, short spans were joined and supported on wood piles or on timber cribs filled with earth or stone. In fact, the earliest recorded bridge built by European settlers in America was most likely this type of design. Constructed in 1611 on James Towne Island, Virginia, this timber bridge extended approximately 200 feet into the water and provided docking facilities in the 12 foot deep channel (American Association of State Highway Officials 1953: 19).

The combination of timber with other materials began with the invention of the Howe truss in 1840. William Howe patented a truss which utilized iron verticals as tension members and wood diagonals as compression members. The Howe truss became a standard of railroad bridge design. By the 1860s, the problem of wood deterioration was under better control with the invention of pressure creosote treatments, which extended the life of the wood members. Timber pile bent structures remained popular, in particular in tidal areas, into the twentieth century. These were most often used in combination with concrete.

Timber bridges continued to be constructed in the United States during the twentieth century. A significant technological development of the 1930s permitted construction of timber-concrete composite structures, featuring decks utilizing both timber and reinforced concrete. The 1975 American Society of Civil Engineers Design Guide and Commentary on Wood Structures offered the following description of composite decks of timber and concrete:

> Composite timber-concrete decks are commonly used in bridge construction. Construction is such that timber carries most of the tension forces. Composite construction is of two basic types, T-beams and slab decks.... Composite T-beam sections consist of timber stringers,

which form the stem, and concrete slab for the flange area. Notches are cut into the top edge of the stringers to resist horizontal shear and mechanical fasteners are driven into the top to prevent vertical separation so that the two components perform integrally. Stresses due to temperature changes must be considered in the concrete section.

Composite slabs consist of nominal 2-inch lumber, usually nailed-laminated with the wide faces vertical, and a concrete section cast monolithically in place. Grooves are formed by using alternate laminations that differ in width by 2 inches or by fabricating panels with a 2-inch offset between laminations. Horizontal shear is resisted by grooves cut into the projecting laminations or by metal shear plates. Transverse joints in the timber portion are made by dapping or cutting alternate laminations to a different length to provide finger joints. The concrete slab should be reinforced for temperature stress and for negative bending stresses when the deck is continuous over a support. No falsework or extensive forming is necessary with this construction (American Society of Civil Engineers 1975:372-73).

The timber-concrete composite slab type of bridge construction was pioneered in the United States by James F. Seiler and the American Wood-Preservers Association between 1932 and 1935. The latter organization's 1935 patent for "composite wood and concrete construction" became the basis for such technology.

Such timber-and-concrete composite structures were evidently introduced in Maryland by the State Roads Commission engineers, who kept abreast of early twentieth century trends in composite bridge design. In the 1937-1938 *Report of the State Roads Commission*, Bridge Division Chief Engineer Walter C. Hopkins acknowledged professional interest in such structures:

> The bridges constructed have been varied, with miscellaneous types and of different materials. Bridges have been built of concrete, steel, timber, or stone, or combinations thereof. Careful study is given the employment of those materials most satisfactorily adapted to the structure in question. Balance, proportion and treatment that will result in simplicity, gracefulness and pleasing appearance are always considered and sought by the designer (State of Maryland, State Roads Commission 1938:71).

The Bridge Division's earliest timber-and-concrete composite bridges were built in 1937-1938 in Tidewater Maryland. Three such bridges were constructed in Wicomico County, and one each in Calvert, St. Mary's, Queen Anne's, Kent, and Caroline counties. Pictured in the 1937-1938 State Roads Commission report, the longest such bridge was "a timber and concrete composite bridge of twelve 20-foot spans, providing a clear roadway of 26 feet, and two 3-foot, 1-inch sidewalks, over Tony Tank Pond, on the road from Salisbury to Princess Anne near Salisbury, Wicomico County" (State of Maryland, State Roads Commission 1938:83).

Subsequent State Roads Commission reports refer to additional timber-concrete composite bridges constructed under state authority between 1939 and 1960, primarily at Tidewater (Coastal Plain) sites on the Eastern Shore and in Southern Maryland (State of Maryland, State Roads Commission 1939:71; 1943:45). In 1947, Bridge Division engineers observed that "the development of the composite use of timber and concrete has permitted the design of economical structures with the general appearance from the roadway of a much more costly bridge" (State of Maryland, State Roads Commission 1947:53).

**When the bridge was built and/or given a major alteration, did it have a significant impact on the growth and development of the area?**

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There is no evidence that the construction of this bridge had a significant impact on the growth and development of this area.

**Is the bridge located in an area which may be eligible for historic designation and would the bridge add to or detract from the historic/visual character of the potential district?**

The bridge is located in an area which does not appear to be eligible for historic designation.

**Is the bridge a significant example of its type?**

This bridge, which has been greatly altered by the addition of structural steel bents and steel "H" beams supporting the timber abutments, is an undistinguished example of a composite timber and concrete bridge.

**Does the bridge retain integrity of important elements described in Context Addendum?**

The bridge retains many of the character-defining elements of its type, however, the integrity of these elements has been compromised by severe deterioration and the addition of steel structural elements in 1994.

**Is the bridge a significant example of the work of a manufacturer, designer, and/or engineer?**

This bridge is not a significant example of the work of a manufacturer, designer, and/or engineer.

**Should the bridge be given further study before an evaluation of its significance is made?**

No further study of this bridge is required to evaluate its significance.

**BIBLIOGRAPHY:**

**County inspection/bridge files** _____ **SHA inspection/bridge files** X
**Other (list):**


Ketchum, Milo S.
1908 *The Design of Highway Bridges and the Calculation of Stresses in Bridge Trusses.* The Engineering News Publishing Co., New York.

1920 *The Design of Highway Bridges of Steel, Timber and Concrete.* Second edition. McGraw-Hill Book Company, New York.

Lay, Maxwell Gordon
1992 *Ways of the World: A History of the World's Roads and of the Vehicles That Used Them.* Rutgers University Press, New Brunswick, New Jersey.

Luten, Daniel B.
1912 Concrete Bridges. *American Concrete Institute Proceedings* 8:631-640.

1917 *Reinforced Concrete Bridges.* National Bridge Company, Indianapolis, Indiana.

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Maryland State Roads Commission
1930a *Report of the State Roads Commission for the Years 1927, 1928, 1929 and 1930.* State of Maryland, State Roads Commission, Baltimore.

1930b *Standard Plans.* State of Maryland, State Roads Commission, Baltimore.

P.A.C. Spero and Company and Louis Berger and Associates
*Historic Highway Bridges in Maryland: Historic Context Report.* Prepared for the Maryland State Highway Administration.

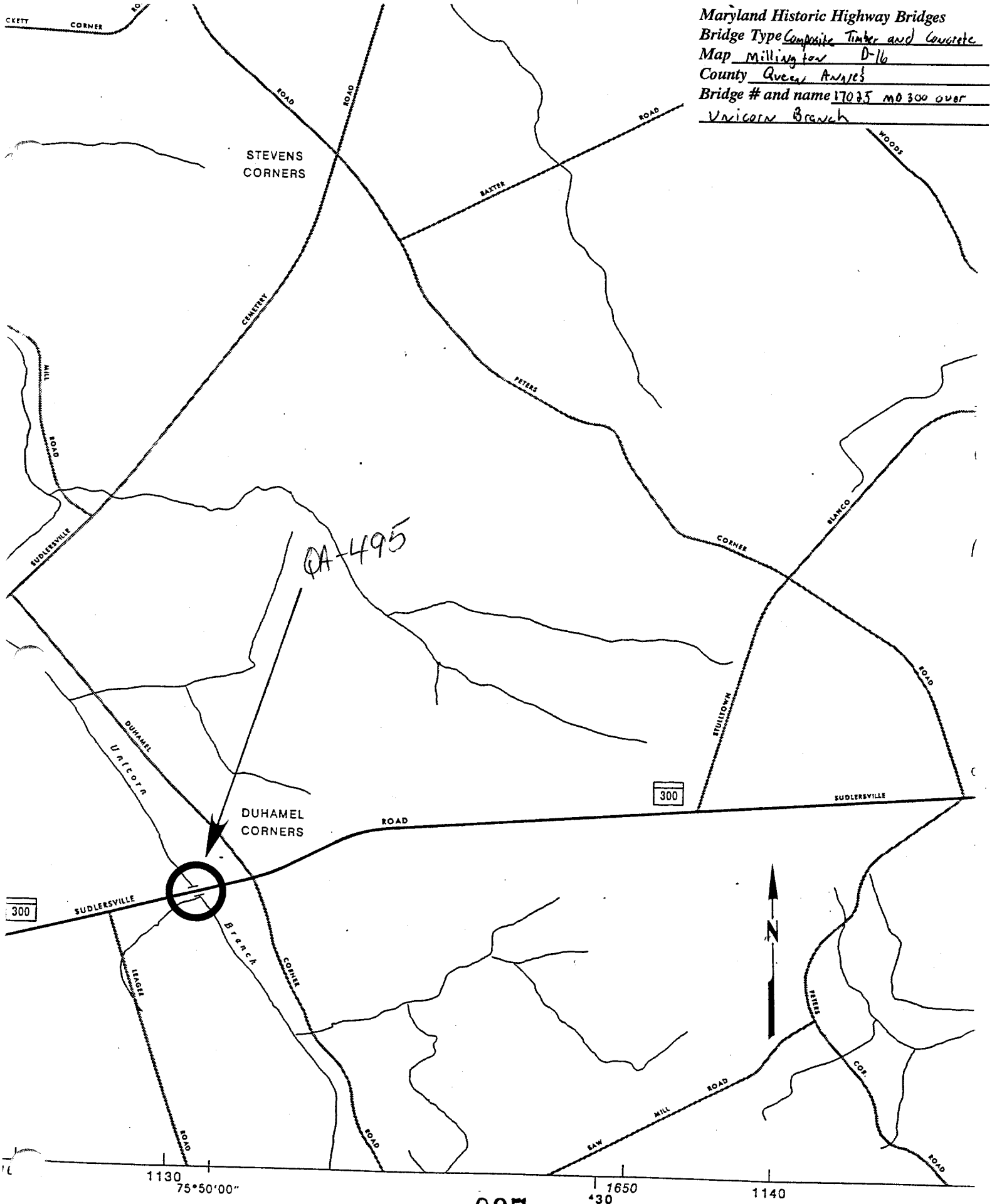
Taylor, Frederick W., Sanford E. Thompson, and Edward Smulski
1939 *Reinforced-Concrete Bridges with Formulas Applicable to Structural Steel and Concrete.* John Wiley & Sons, Inc., New York.

Tyrrell, H. Grattan
1909 *Concrete Bridges and Culverts for Both Railroads and Highways.* The Myron C. Clark Publishing Company, Chicago and New York.

**SURVEYOR:**

**Date bridge recorded** 7/18/97
**Name of surveyor** Caroline Hall/Susan Taylor
**Organization/Address** P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Suite 412, Baltimore, MD 21204 **Phone number** (410) 296-1635 **FAX number** (410) 296-1670

*Maryland Historic Highway Bridges*
*Bridge Type* Composite Timber and Concrete
*Map* Millington D-16
*County* Queen Anne's
*Bridge # and name* 17035 MD 300 over Unicorn Branch

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ROADSIDE CULTURE

Armory

1. QA-495
2. 17025, MD 300 over Unicorn Branch
3. Queen Annes County
4. Susan Taylor
5. July 1997
6. MD SHA
7. west approach
8. 1 of 6

1. QA-495
2. 17035, MD 300 over Unicorn Branch
3. Queen Annes County, MD
4. Susan Taylor
5. July 1997
6. MD SHPO
7. East approach
8. 2 of 6

1. QA-495
2. I 7025, MD 300 over Unicorn Branch
3. Queen Anne's County, MD
4. Susan Taylor
5. July 1997
6. MD SHA
7. North parapet
8. 3 of 6

1. QA-495
2. 17025, MD 300 over Unicorn Branch
3. Queen Annie County, MD
4. Susan Taylor
5. July 1997
6. MD SHA
7. South parapet
8. 4 of 6

1. QA. 495
2. 17625, MD 300 over Unicorn Branch
3. Queen Anne's County, MD
4. Susan Taylor
5. July 1997
6. MD SHPO
7. Detail of Post
8. 5 of 6

1. QA-145
2. 17025, MD 300 over Unicorn Branch
3. Queen Anne's County, MD
4. Susan Taylor
5. July 1997
6. MD SHA
7. Detail of north parapet
8. 6 of 6