Maryland Historical Trust

Maryland Inventory of Historic Properties number: HO-679

Name: HENRYTON RD. OVER TRIB. TO PATAPSCO RIVER

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

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

MHT No. HO-679

SHA Bridge No. HO-105 **Bridge name** Henryton Road over Tributary to Patapsco River

LOCATION:

Street/Road name and number [facility carried] Henryton Road

City/town Henryton **Vicinity** X

County Howard

This bridge projects over: Road____ **Railway**____ **Water** X **Land** ____

Ownership: State ____ **County** X **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 ____:

Beam Bridge ____ **Truss -Covered** ____ **Trestle** ____ **Timber-And-Concrete** ____

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 X:

Concrete Arch ____ **Concrete Slab** ____ **Concrete Beam** X **Rigid Frame** ____

Other ____ **Type Name** ____

DESCRIPTION:

Setting: Urban ___________ **Small town** ___________ **Rural** ____X_________

Describe Setting:

Bridge No. HO-105 carries Henryton Road over a tributary of the Patapsco River in Howard County. Henryton Road runs north-south, while the tributatry of the Patapsco River flows west to east. The bridge is located in the Patapsco Valley State Park, near Henryton, and is surrounded by woodland.

Describe Superstructure and Substructure:

Bridge No. HO-105 is a 1-span, 2-lane concrete beam bridge. The bridge was built in 1925, and has not been altered. The structure has a span length of 35 feet, 5 inches between abutments with a total span length of 39 feet, 6 inches. The bridge has a clear roadway width of 23 feet, 4 inches between concrete curbs; there are no sidewalks, however, there are concrete curbs measuring 6 inches wide. The out-to-out width is 26 feet, 3 inches and the bridge is built on a skew of 35 degrees. The superstructure consists of five (5) concrete beams which support a concrete deck and concrete parapets. The beams are 2 feet, 11 inches wide by 1 foot, 3 inches deep and are spaced approximately 5 feet apart. The concrete deck is 6 inches thick and it has an asphalt wearing surface. The structure has raised panel parapets and the roadway approaches have w-beam guardrails along the southeast and northwest sides. The substructure consists of two (2) concrete abutments and four (4) flared wing walls. The bridge is posted for 12 tons, and has a Howard County sufficiency rating of 65.3.

According to the 1997 inspection report, this structure was in good to fair condition with cracking, spalling and efflorescence. The underside of the deck has longitudinal cracking with leaching efflorescence along 75 percent of the span. The east fascia beam has two (2) spalls which are 4 feet in length. Both fascia beams have hollow sounding areas. The west parapet has a spall up to 5 feet in length with exposed reinforcement bars. The wing walls are cracked and sound hollow. The north abutment backwall has cracking and leaching efflorescence.

Discuss Major Alterations:

According to the 1997 inspection report, there have been no major alterations to the bridge.

HISTORY:

WHEN was the bridge built: 1925
This date is: Actual ____X_______ **Estimated** ____________
Source of date: Plaque _____ **Design plans** ____ **County bridge files/inspection form** _X_
Other (specify) :

WHY was the bridge built?

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

WHO was the designer?

Unknown

WHO was the builder?

Unknown

WHY was the bridge altered?

N/A

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

There is no evidence that the bridge was built as part of an organized bridge building campaign.

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 concrete beam bridges in the nation were deck girder spans that featured concrete slabs supported by a series of longitudinal concrete beams. This method of construction was conceptually quite similar to the traditional timber beam bridge which had found such widespread use both in Europe and in America. Developed early in the twentieth century, deck girder spans continued to be widely used in 1920 when noted bridge engineer Milo Ketchum wrote *The Design of Highway Bridges of Steel, Timber and Concrete* (Ketchum 1920).

Although visually similar to deck girder bridges, the T-beam span features a series of reinforced concrete beams that are integrated into the concrete slab, forming a monolithic mass appearing in cross section like a series of upper-case "T"s connected at the top. Thaddeus Hyatt is believed to have been the first to come upon the idea of the T-beam when he was studying reinforced concrete in the 1850s, but the first useful T-beam was developed by the Belgian Francois Hennebique at the turn of the present century (Lay 1992:293). The earliest references to T-beam bridges refer to the type as concrete slab and beam construction, a description that does not distinguish the T-beam design from the concrete deck girder. Henry G. Tyrrell was perhaps the first American bridge engineer to use the now standard term "T-beam" in his treatise *Concrete Bridges and Culverts*, published in 1909. Tyrrell commented that "it is permissible and good practice in designing small concrete beams which are united by slabs, to consider the effect of a portion of the floor slab and to proportion the beams as T-beams" (Tyrrell 1909:186).

By 1920, reinforced concrete, T-beam construction had found broad application in standardized bridge design across the United States. In his text, *The Design of Highway Bridges of Steel, Timber and Concrete*, Milo S. Ketchum included drawings of standard T-beam spans recommended by the U.S. Bureau of Public Roads as well as drawings of T-beam bridges built by state highway departments in Ohio, Michigan, Illinois, and Massachusetts (Ketchum 1920). By the 1930s the T-beam bridge was widely built in Maryland and Virginia.

Maryland's roads and bridge improvement programs mirrored economic cycles. The first road improvement of the State Roads Commission was a 7 year program, starting with the Commission's establishment in 1908 and ending in 1915. Due to World War I, the period from 1916-1920 was one of relative inactivity; only roads of first priority were built. Truck traffic resulting from war related factories and military installations generated new, heavy traffic unanticipated by the builders of the early road system. From 1920-1929, numerous highway improvements occurred in response to the increase in Maryland motor vehicles from 103,000 in 1920 to 320,000 in 1929, with emphasis on the secondary system of feeder roads which moved traffic from the primary roads built before World War I. After World War I, Maryland's bridge system also was appraised as too narrow and structurally inadequate for the increasing traffic , with plans for an expanded bridge program to be handled by the Bridge Division, set up in 1920. In 1920 under Chapter 508 of the Acts of 1920 the State issued a bond of $3,000,000.00 for road construction; the primary purpose of these monies was to meet the state obligations involving the construction of rural post roads. The secondary purpose of these monies was to fund (with an equal sum from the counties) the building of lateral roads. The number of hard surfaced roads on the state system grew from 2000 in 1920 to 3200 in 1930. By 1930, Maryland's primary system had been inadequate to the huge freight trucks and volume of passenger cars in use, with major improvements occurring in the late 1930's. Most improvements to local roads waited until the years after World War I.

In the early years, there was a need to replace the numerous single lane timber bridges. Walter Wilson Crosby, Chief Engineer, stated in 1906, "the general plan has been to replace these [wood bridges] with pipe culverts or concrete bridges and thus forever do away with the further expense of the maintenance of expensive and dangerous wooden structures." Within a few years, readily constructed standardized bridges of concrete were being built throughout the state.

In 1930, the roadway width for all standard plan bridges was increased to 27 feet in order to accommodate the increasing demands of automobile and truck traffic (State Roads Commission 1930). The range of span lengths remained the same, but there were some changes designed to increase the load bearing capacities. The reinforcing bars increased in thickness. Visually, the 1930 design can be distinguished from its predecessors by the pierced concrete railing that was introduced at this time.

In 1933, a new set of standard plans were introduced by the State Roads Commission. This time their preparation was not announced in the Report; new standard plans were by this time nothing special - they had indeed become standard. Once again accommodating the ever-increasing demands of traffic, the roadway was increased, this time to 30 feet. The slab span's reinforcing bars remained the same diameter but were placed closer together to achieve still more load capacity.

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?

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?

A significant example of a concrete beam bridge should possess character-defining elements of its type, and be readily recognizable as an historic structure from the perspective of the traveler. The integrity of distinctive features visible from the roadway approach, including parapet walls or railings, is important in structures which are common examples of their type. In addition, the structure must be in excellent condition. Despite the retention of such features as the parapets, this bridge has considerable deterioration and is an undistinguished example of a concrete beam bridge.

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

The bridge retains the character-defining elements of its type, as defined by the Statewide Historic Bridge Context, including concrete slab, beams, abutments and wing walls, however some deterioration is evident.

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 ____X____ **SHA inspection/bridge files** ______
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.

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.

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.

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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 2/25/97
Name of surveyor Caroline Hall/Tim Tamburrino
Organization/Address P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Baltimore, MD 21204
Phone number (410) 296-1685 **FAX number** (410) 296-1670

Maryland Historic Highway Bridges

Bridge Type CONCRETE BEAM

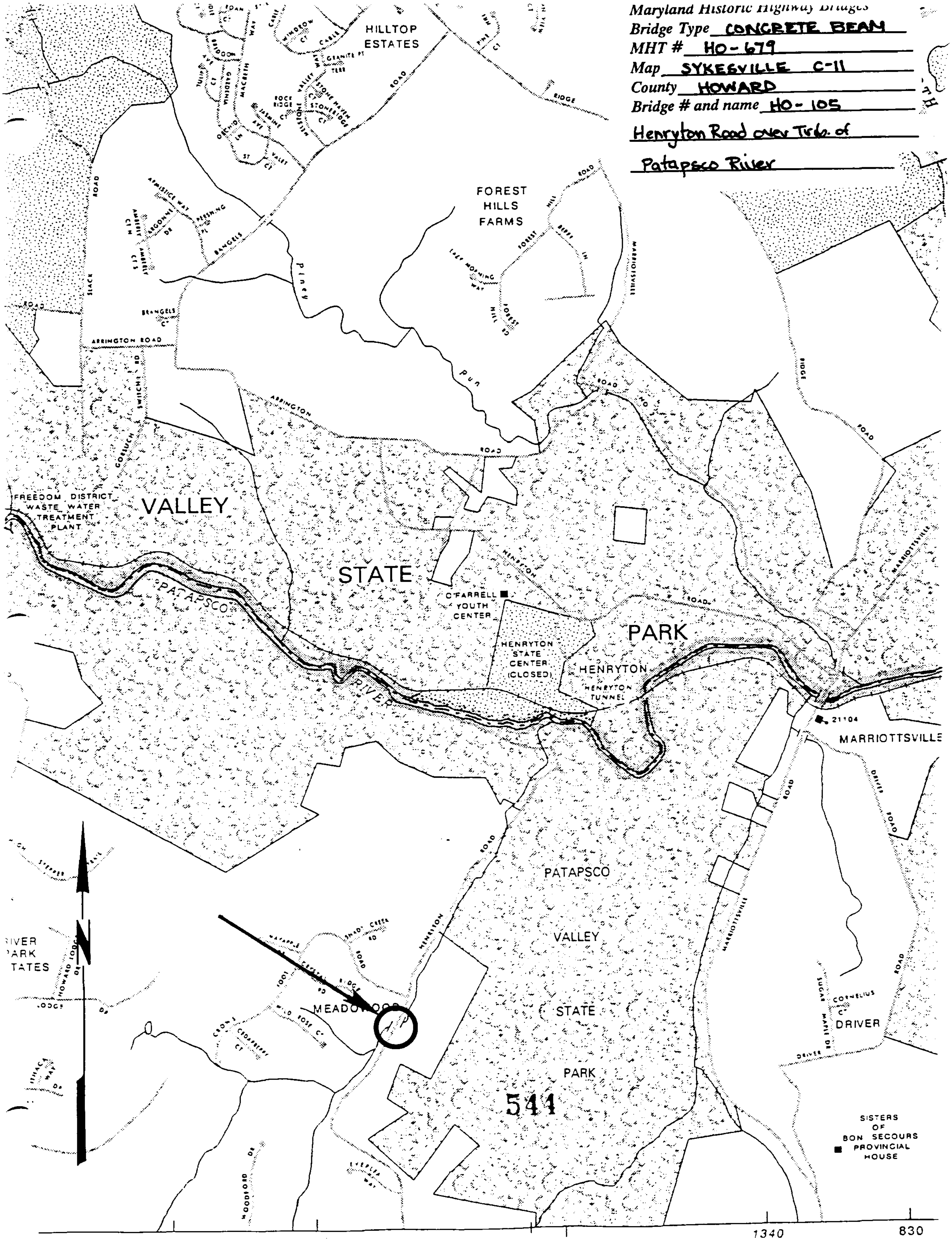
MHT # HO-679

Map SYKESVILLE C-11

County HOWARD

Bridge # and name HO-105

Henryton Road over Trib. of Patapsco River



1. [illegible]

2. (MD 103?) HONRYTON ROAD OVER [illegible] BRANCH OF PATAPSCO RIVER

3. HOWARD CO. MD

4. TIM TAMBURRINO

5. 3/97

6. MD SHPO

7. NORTH APPROACH

8. 1 of 6

1. 9-279

2. (HOLDS) HENNYSON ROAD OVER TRIBUTARY OF PATAPSCO RIVER

3. HOWARD CO, MD

4. TIM TAMBURINO

5. 5-97

6. MD SHA

7. SOUTH APPROACH

8. 2 of 6

1 HO 679

2 (HO 109) [illegible] ROAD OVER TRIBUTARY OF
PATAPSCO RIVER

3. HOWARD CO MD

4 TIM TAMBURE[illegible]

5 3 91

6 MI SHPO

7 WEST ELEVATION

8 5 of 6

1. [illegible]
2. 0-25 [illegible]
   [illegible]
3. [illegible] MD
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]

1 HD-379

2 40-10° [illegible] [illegible] 4
PATAI 50 [illegible]

3 HOWARD 50 MU

4 [illegible]

5 8-177

6 MR SMITH

7 DIMENSION OF 7 BEAM

8 8 ([illegible]

[illegible]

1 [illegible]
[illegible]

2 [illegible] WARM [illegible]

4 [illegible]

5 [illegible] 71

6 MI [illegible]

7 [illegible]

8 [illegible]