MARYLAND HISTORICAL TRUST
NR-ELIGIBILITY REVIEW FORM

NR Eligible: yes ___
no ___

Property Name: Bridge No. 1016 Inventory Number: AL-VI-C-338

Address: MD 935 over Georges Creek City: Pekin Zip Code: _____

County: Allegany USGS Topographic Map: Barton Quad

Owner: MDSHA

Tax Parcel Number: N/A Tax Map Number: N/A Tax Account ID Number: N/A

Project: AL848B22 Agency: SHA

Site visit by SHA Staff: ____no X yes Name: Liz Buxton Date: March 9, 2001

Eligibility recommended ____ Eligibility **not** recommended X

Criteria: ___A___B___C___D Considerations: ___A___B___C___D___E___F___G___None

Is the property located within a historic district? X no ____yes Name of district: _____

Is district listed? ___no ___yes Determined eligible? ___no ___yes District Inventory Number: _____

Documentation on the property/district is presented in: MD Inventory of Historic Bridges and SHA compliance files

Description of Property and Eligibility Determination: *(Use continuation sheet if necessary and attach map and photo)*

Bridge No. 1016 is a 2-span, 2-lane concrete beam bridge located on MD 935 over Georges Creek. It was originally built in 1928. The original concrete parapets have been removed; however, the removal date is unknown. The structure is 74 feet, 9 inches long and road width is 24 feet wide with an out- to-out width of 26 feet. There are no sidewalks. The superstructure consists of five T-beams that support a concrete deck and steel guardrails. The beams measure 15" X 29" and are spaced 4 feet apart. The concrete deck, an integral part of the T- beams, is 9 inches thick and has a bituminous surface. The structure has steel guardrails and the roadway approaches have narrow shoulders with steel guardrails. The substructure consists of two concrete abutments and an intermediate concrete pier at mid-length. There are four concrete wing walls; the north wing walls are u-shaped and south wingwalls are flared.

Bridge No. 1016 was included in the Maryland Inventory of Historic Bridges in 1997 (see Attachment). According to the Maryland Inventory Form, Bridge No. 1016 does not meet National Register criteria due to lack of significance. It was not built in response to significant events in Maryland history and is not a significant example of the work of a manufacturer, designer, and/or engineers. There is no evidence that the construction of this bridge had a significant impact on the growth and development of this area and the bridge is not located in an historic district or area that may be eligible for historic designation.

Bridge No. 1016 retains some important character defining elements such as the original beams, abutments, and wing walls however; the original concrete parapets have been removed resulting in a loss of integrity. According to the 1996 inspection

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended ____ **Eligibility not recommended** X

Criteria: ___A___B___C___D **Considerations:** ___A___B___C___D___E___F___G___None

Comments: _____

Andrew Lewis — 07/19/01

Reviewer, Office of Preservation Services — **Date**

R Kenty — 7/24/01

Reviewer, NR Program — **Date**

200102015

report, the bridge was in fair condition with deteriorated concrete along the pier. Both the substructure and substructure had cracks and areas of efflorescence. Numerous repairs to the piers, abutments, beams and deck with gunites have been made.

In addition to Bridge 1016, the ruins of an earlier bridge crossing consisting of a partial abutment of coursed cut stone is located just west of the MD 935. It is not known if this earlier bridge was originally constructed for rail or vehicular traffic. Based on the alignment of old route 935, however, it was probably used for vehicular traffic and removed when the road was realigned and new bridge was constructed in 1928. The remaining abutment has significantly deteriorated and lacks sufficient integrity to be considered eligible for the National Register.

Bridge No. 1016 is an undistinguished example of a concrete beam bridge that was widely built in Maryland. Due to the condition and lack of integrity, it does not represent a significant example of its type and therefore, is not eligible for the National Register.

Prepared by: Liz Buxton Date Prepared: May 15, 2001

Maryland Historical Trust

Maryland Inventory of Historic Properties Number: AL-VI-C-338

Name: MD 935 over Georges Crk (1016)

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 bridged received the following determination of eligibly.

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. AL-VI-C-338

SHA Bridge No. 1016 **Bridge name** MD 935 over Georges Creek

LOCATION:
Street/Road name and number [facility carried] MD 935 (Legislative Road)

City/town Pekin **Vicinity** X

County Allegany

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 ____:
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. 1016 carries MD 935 (Legislative Road) over Georges Creek in Allegany County. MD 935 runs north-south and Georges Creek flows east-west. The bridge is located in the vicinity of Pekin and is surrounded by wooded mountains and railroad tracks.

Describe Superstructure and Substructure:

Bridge No. 1016 is a 2-span, 2-lane, concrete beam bridge. The bridge was originally built in 1928, and the original concrete parapets have been removed, however, the date of removal is unknown. The structure is 74 feet, 9 inches long and has a clear roadway width of 24 feet; there are no sidewalks. The out-to-out width is 26 feet. The superstructure consists of five (5) T-beams which support a concrete deck and steel guard rails. The beams measure 15 inches x 29 inches and are spaced 4 feet apart. The concrete deck, an integral part of the T-beams, is 9 inches thick and it has a bituminous wearing surface. The structure has steel guard rails and the roadway approaches have narrow shoulders and steel guard rails. The substructure consists of two (2) concrete abutments and an intermediate concrete pier at mid-length. There are four (4) concrete wing walls; the north wing walls are u-shaped, and the south wing walls are flared. The bridge is not posted, and has a sufficiency rating of 2.0.

According to the 1996 inspection report, this structure was in fair condition with deteriorated concrete along the pier and superstructure. The asphalt wearing surface has depressions in the traffic lanes. The concrete is spalling on the superstructure, especially on the downstream side. Both the substructure and superstructure have cracks and areas of efflorescence. Also, there is traffic damage at the southwest steel guard rail.

Discuss Major Alterations:

The original concrete parapets were removed, however, the date of removal is unknown. The inspection report from 1996 details numerous repairs to the piers, abutments, beams, and deck with gunite.

HISTORY:

WHEN was the bridge built: 1928

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 form

WHY was the bridge built?

The bridge was constructed when the original road was widened and realigned in the 1920s.

WHO was the designer?

State Roads Commission

WHO was the builder?

State Roads Commission

WHY was the bridge altered?

The bridge was altered to correct functional or structural deficiencies.

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. This bridge, which is lacking such features as the original concrete parapets, has experienced 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 important character-defining elements such as the original beams, abutments, and wing walls. However, this bridge was altered at an unknown date, resulting in the loss of the original concrete parapets.

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.

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.

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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.

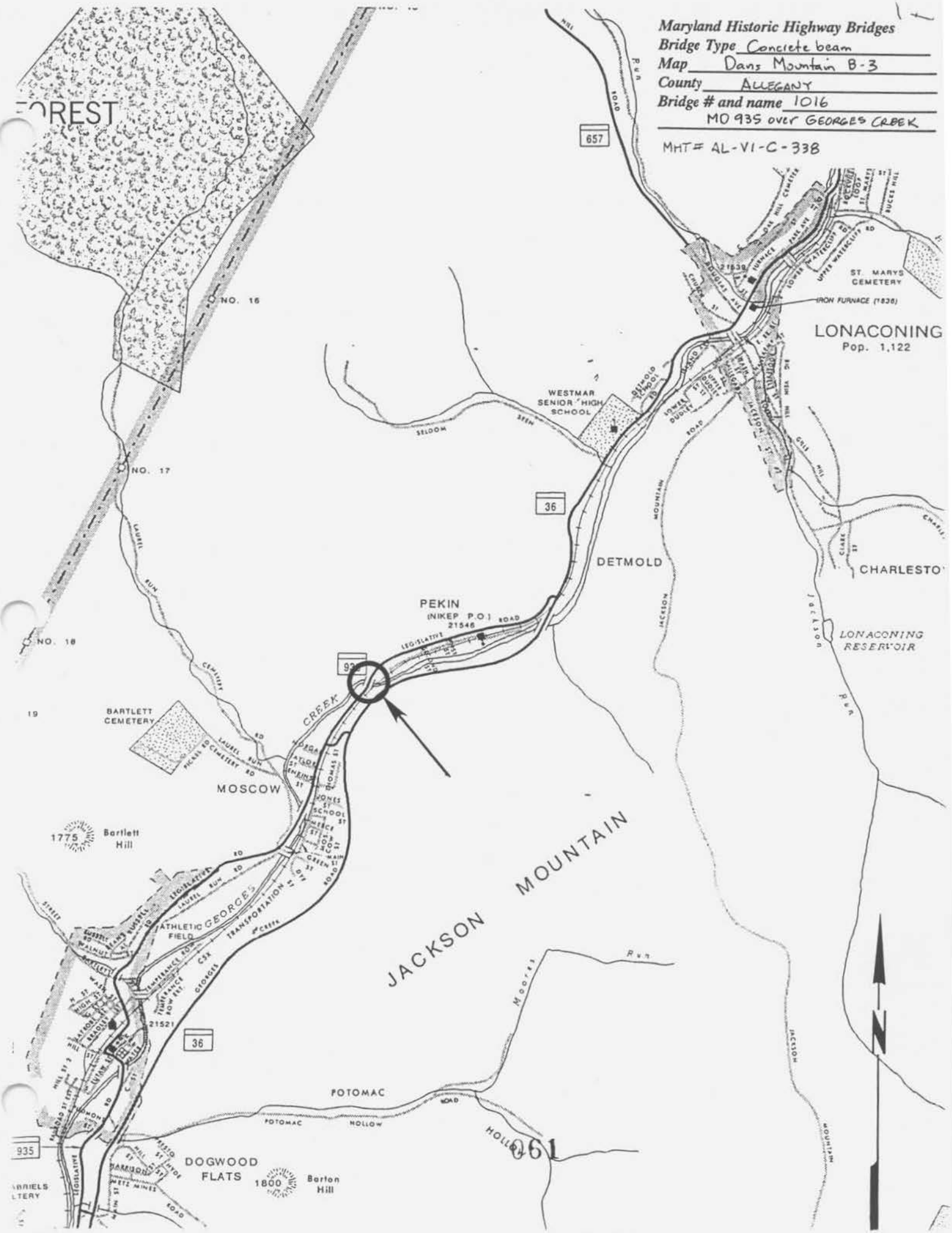
Tyrrell, H. Grattan
1909 *Concrete Bridges and Culverts for Both Railroads and Highways*. The Myron C. Clark Publishing Company, Chicago and New York.

SURVEYOR:

Date bridge recorded 2/28/97
Name of surveyor Caroline Hall/Ryan McKay
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
Map Dans Mountain B-3
County ALLEGANY
Bridge # and name 1016
MD 935 over GEORGES CREEK

MHT# AL-VI-C-338



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INDIVIDUAL PROPERTY/DISTRICT
MARYLAND HISTORICAL TRUST
INTERNAL NR-ELIGIBILITY REVIEW FORM

Property/District Name: Bridge #1016 Survey Number: AL-VI-C-338

Project: Mainten. BR1016, MD935 over Georges Cr. Agency: SHA

Site visit by MHT Staff: X no ___ yes Name _____ Date _____

Eligibility recommended ____ Eligibility not recommended X

Criteria: ___A ___B X C ___D Considerations: ___A ___B ___C ___D ___E ___F ___G ___None

Justification for decision: (Use continuation sheet if necessary and attach map)

According to information provided by SHA, Bridge #1016 does not meet the criteria for individual listing on the National Register of Historic Places. It is a 1925 concrete grider bridge. Concrete girder bridges were constructed in great number, often built to standards, by which the amount of material, excavation requirements and other quantities were predetermined based on the length of span. Many similar structures remain in the state. The structure has no engineering or historical significance. In addition, the bridge is not located in any known historic district.

Documentation on the property/district is presented in: Project File

Preparedby: RitaSuffness

Elizabeth Hannold — February 1, 1993
Reviewer, Office of Preservation Services — Date

NR program concurrence: ✓ yes ___ no ___ not applicable

[signature] — 3-2-93
Reviewer, NR program — Date

DI

Survey No. AL-VI-C-338

MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA - HISTORIC CONTEXT

I. Geographic Region:

____	Eastern Shore	(all Eastern Shore counties, and Cecil)
____	Western Shore	(Anne Arundel, Calvert, Charles, Prince George's and St. Mary's)
____	Piedmont	(Baltimore City, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery)
X	Western Maryland	(Allegany, Garrett and Washington)

II. Chronological/Developmental Periods:

____	Paleo-Indian	10000-7500 B.C.
____	Early Archaic	7500-6000 B.C.
____	Middle Archaic	6000-4000 B.C.
____	Late Archaic	4000-2000 B.C.
____	Early Woodland	2000-500 B.C.
____	Middle Woodland	500 B.C. - A.D. 900
____	Late Woodland/Archaic	A.D. 900-1600
____	Contact and Settlement	A.D. 1570-1750
____	Rural Agrarian Intensification	A.D. 1680-1815
____	Agricultural-Industrial Transition	A.D. 1815-1870
X	Industrial/Urban Dominance	A.D. 1870-1930
____	Modern Period	A.D. 1930-Present
____	Unknown Period (___ prehistoric	___ historic)

III. Prehistoric Period Themes:

____	Subsistence
____	Settlement
____	Political
____	Demographic
____	Religion
____	Technology
____	Environmental Adaption

IV. Historic Period Themes:

____	Agriculture
X	Architecture, Landscape Architecture, and Community Planning
____	Economic (Commercial and Industrial)
____	Government/Law
____	Military
____	Religion
____	Social/Educational/Cultural
____	Transportation

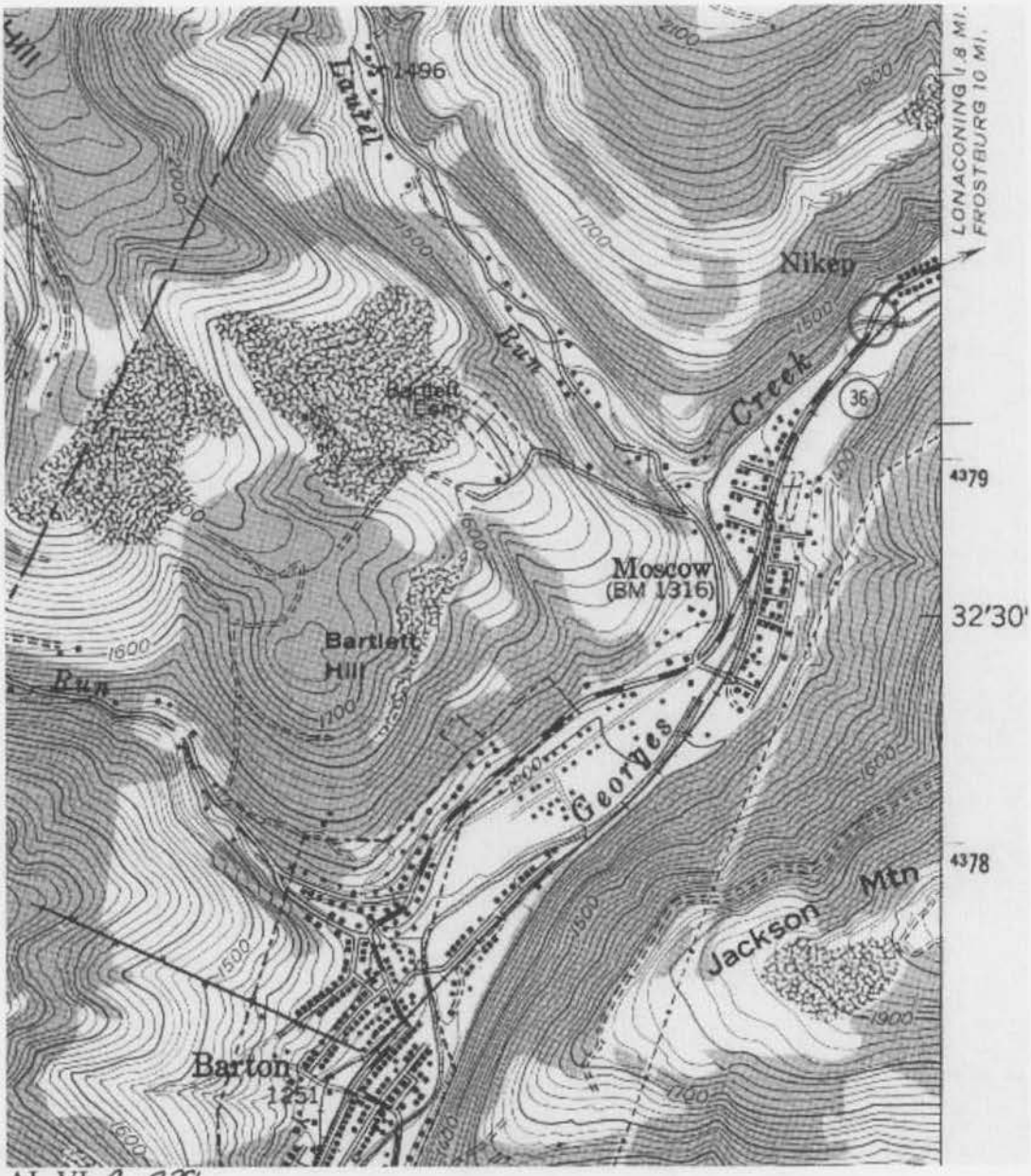
V. Resource Type:

Category: Structure

Historic Environment: Rural

Historic Function(s) and Use(s): Transportation

Known Design Source: Unknown



AL-VI- C-338
Bridge # 1016
MD 935 Over Georges Creek
Allegany County
Barton Quad

1 AL-VI-C-338

2 MC 935 over George's Creek

3 Allegany Co, MD

4 Ryan McKay

5 3/97

6 MD SHPO

7 Upstream elevation

8 1 of 6

1 AL-VI-C-338
2 MD 935 over George's Creek
3 Allegany Co, MD
4 Ryan McKay
5 3/97
6 MD SHPO
7 Downstream elevation
8 2 of 6

1 AL-VI-C-338

2 MD 935 over George's Creek

3 Allegany Co, MD

4 Ryan McKay

5. 3/97

6. MD SHPO

7. Detail of pier & beams

8. 3 of 6

1. AL-VI-C-338

2 MD 935 over George's Creek

3 Allegany Co, Md

4. Ryan McKay

5. 3/97

6 MD SHPO

7. Detail of downstream superstructure

8 4 of 6

1. AL-VI-C-338
2. MD 935 over Georges Creek
3. Allegany Co, MD
4. Ryan McKay
5. 3/97
6. MD SHPO
7. West approach
8. 5 of 6

1. AL-VI-C-338
2. MD 935 over George's Creek
3. Allegany Co, MD
4. Ryan McKay
5. 03/97
6. MD SHPO
7. Original abutment
8. 6 of 6