Maryland Historical Trust

Maryland Inventory of Historic Properties Number: CE-1491

Name: MD 273 over Northeast Creek / 7040

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. CE-1491

SHA Bridge No. 7040 **Bridge name** MD 273 over Northeast Creek

LOCATION:
Street/Road name and number [facility carried] MD 273 (Telegraph Road)

City/town Calvert **Vicinity** X

County Cecil

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** ____

CE-1491

DESCRIPTION:

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

Describe Setting:

Bridge No. 7040 carries MD 273 (Telegraph Road) over Northeast Creek in Cecil County. MD 273 runs east-west and Northeast Creek flows north-south. The bridge is located in the vicinity of Calvert and is surrounded by open space.

Describe Superstructure and Substructure:

Bridge No. 7040 is a 2-span, 2-lane, concrete beam bridge. The date of construction of the bridge is unknown. In 1970, the structure was widened with the addition of a 24 foot wide rolled girder section. The structure is 72 feet long and has a clear roadway width of 46 feet. The out-to-out width is 48 feet. The original portion of the superstructure consists of five (5) concrete T-beams which support a concrete slab and modern concrete parapets. The beams measure 1 foot, 6 inches x 3 feet and are spaced 5 feet, 9 inches apart. The widened section added to the original structure consists of four (4) rolled, metal girders. The slab, an integral part of the T-beam, measures 1 foot thick and it has a bituminous wearing surface. The roadway approaches have w-section guard rails. Date imprints on both parapets state that the bridge was widened in 1970. The substructure consists of two (2) concrete abutments and a concrete intermediate pier at mid-length. There are two (2) straight wing walls. The inspection report was unavailable, and the sufficiency rating is 95.9.

Discuss Major Alterations:

The bridge was widened in 1970 with the addition of a rolled metal girder section. The modern concrete parapets were added to the bridge at this time, and the original parapets and northeast and northwest wing walls were removed.

HISTORY:

WHEN was the bridge built: Unknown

This date is: Actual _____ **Estimated** _____

Source of date: Plaque _____ **Design plans** ____ **County bridge files/inspection form** ____

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?

The bridge was altered to correct functional or structural deficiencies.

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

Unknown

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. The integrity of important elements and distinctive features of Bridge No. 7040, which are visible from the roadway, has been altered with the removal of the original parapets, which were replaced with modern concrete parapets during the 1970 widening of the bridge.

Furthermore, the north and northeast wing walls were removed as a result of the widening. Due to the loss of these character-defining elements, the structure is an undistinguished example of a concrete beam bridge.

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

This bridge was altered in 1970, resulting in the loss of such character-defining elements as the original parapets and northeast and northwest wing walls.

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.

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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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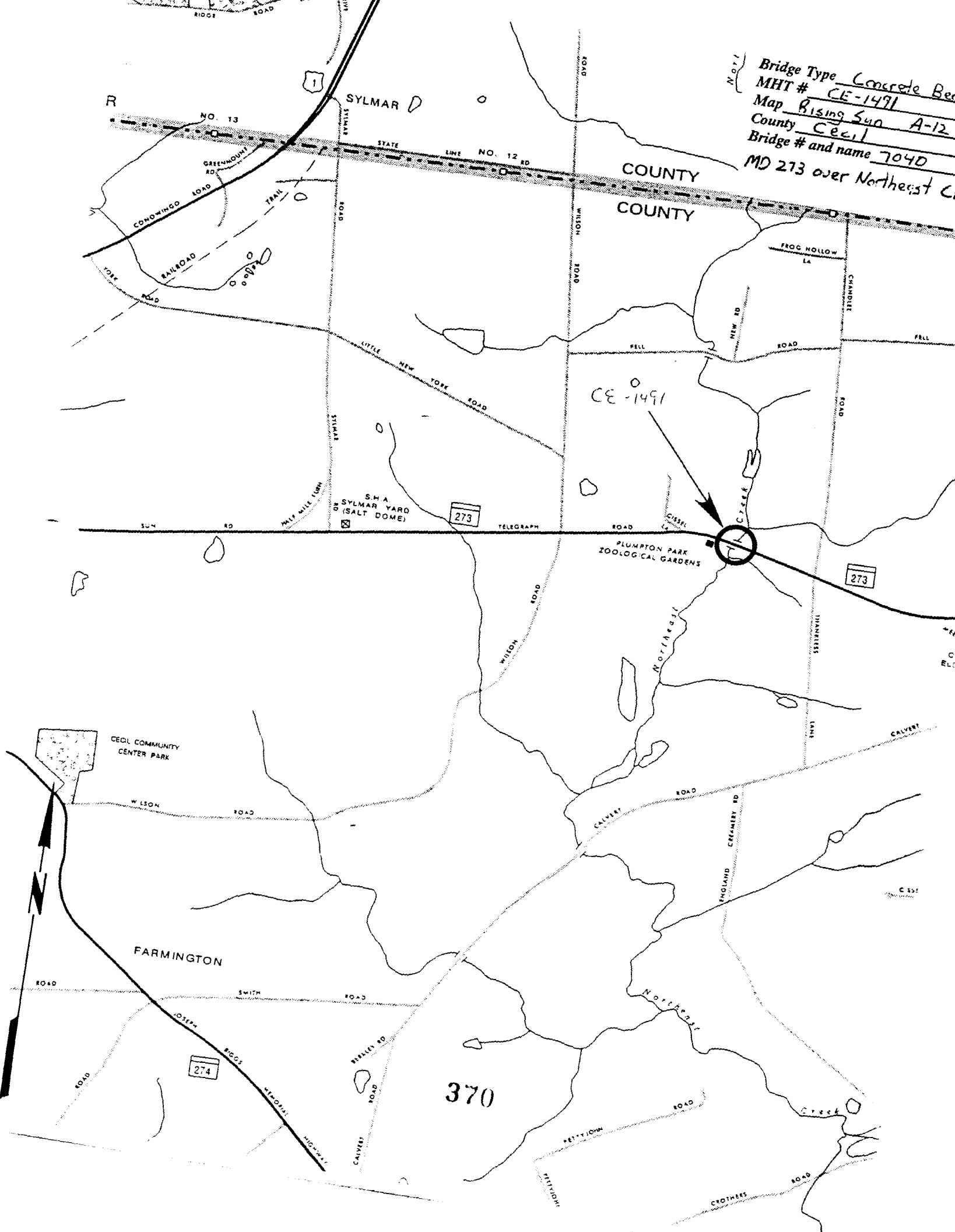
1939 *Reinforced-Concrete Bridges with Formulas Applicable to Structural Steel and Concrete.* John Wiley & Sons, Inc., New York.

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

CE-1491

SURVEYOR:

Date bridge recorded 3/5/97
Name of surveyor Caroline Hall/Eric F. Griffitts
Organization/Address P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Baltimore, MD 21204
Phone number (410) 296-1685 **FAX number** (410) 296-1670


Bridge Type Concrete Bea
MHT # CE-1491
Map Rising Sun A-12
County Cecil
Bridge # and name 7040
MD 273 over Northeast C
SYLMAR
NO. 13
STATE LINE NO. 12 RD
COUNTY
COUNTY
CONOWINGO ROAD
GREENMOUNT RD
TRAIL
RAILROAD
YORK ROAD
LITTLE NEW YORK ROAD
FROG HOLLOW LA
CHANDLEE
FELL ROAD
NEW RD
CE-1491
S.H.A. SYLMAR YARD (SALT DOME)
HALF MILE LINE
273
TELEGRAPH ROAD
CISSEL LA
PLUMPTON PARK ZOOLOGICAL GARDENS
NORTHEAST
WILSON ROAD
CECIL COMMUNITY CENTER PARK
CALVERT ROAD
CREAMERY RD
ENGLAND
FARMINGTON
SMITH ROAD
JOSEPH BIGGS MEMORIAL HIGHWAY
274
BEASLEY RD
370
PETTYJOHN ROAD
CROTHERS ROAD
N

1. CE-1491
2. MD 273 over Northeast Creek
(1940)
3. Cecil
4. Eric Griffiths
5. 3-97
6. MD SHPO
7. North Elevation
8 1 of 5

1. CE-1491
2. MD 273 over Northeast Creek (7040)
3. Cecil
4. Eric Griffiths
5. 3-97
6. MD SHPO
7. East Approach
8. 2 of 5

1. CE-1491
2. MD 273 over Northeast Creek
3. Cecil (7040)
4. Eric Griffiths
5. 3-97
6. MD SHPO
7. West Approach
8. 3 of 3

1. CE-1491
2. MD 273 over Northeast Creek (7040)
3. Cecil
4. Eric Griffiths
5. 3-97
6. MD SHPO
7. Detail Underbridge
8. 4 of 5

1. CE-1491

2. MS 273 over Northeast Creek (7040)

3. Cecil

4. Eric Griffiths

5. 3-97

6. MS SHPO

7. South Elevation

8. 5 of 5