

Maryland Historical Trust

Maryland Inventory of Historic Properties number: CH-487

Name: #8002 / MD 510^{SB} over Zekiah Swamp

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 <input checked="" type="checkbox"/> X	Eligibility Not Recommended <input type="checkbox"/>
Criteria: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	Considerations: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> None
Comments: _____ _____ _____	
Reviewer, OPS: <u>Anne E. Bruder</u>	Date: <u>3 April 2001</u>
Reviewer, NR Program: <u>Peter E. Kurtze</u>	Date: <u>3 April 2001</u>

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

MHT No. CH-487

SHA Bridge No. 8002 Bridge name MD 5 Southbound over Zekiah Swamp

LOCATION:

Street/Road name and number [facility carried] MD 5 Southbound (Leonardtwn Road)

City/town Bryantown Vicinity X

County Charles

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 Retractable 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. 8002 carries southbound MD 5 (Leonardtwn Road) over Zekiah Swamp in Charles County. Southbound MD 5 runs north-south as it crosses Zekiah Swamp. The swamp flows east-west. The bridge is located north of Bryantown, and is surrounded by woodland.

Describe Superstructure and Substructure:

Bridge No. 8002 is a 2-span, 2-lane concrete beam bridge. This bridge resembles Bridge No. 8003 in materials and detail; Bridge 8003 is located just south of Bridge No. 8002 on MD 5 southbound. An inspection report dated from 1995 indicates that Bridge No. 8002 was built in 1917; however, a plan for Bridge No. 8002 is dated 1931 which is the same construction date for Bridge No. 8003. The structure consists of two (2) spans of 32 feet, with a total structure length of 72 feet and has a clear roadway width of 27 feet between curbs; there are two (2) sidewalks, each measuring 4 feet, 1 inch wide. The superstructure consists of five (5) T-beams which support a concrete deck and concrete posts with a metal railing. The beams are 2 feet, 4 inches wide by 1 foot, 7 inches deep and are spaced 5 feet, 6 inches apart. The concrete deck is 1 foot, 2 inches thick without a bituminous wearing surface. The railing consists of panels of ornamental iron work with metal pipe rails between concrete posts. The end posts are influenced by the Art Deco style. The substructure consists of two (2) concrete abutments and a concrete intermediate pier at mid-length. There are four (4) flared wing walls. The bridge is not posted, and the sufficiency rating is 64.7.

Discuss Major Alterations:

Though the inspection report lists the construction date as 1917, the bridge resembles Bridge No.8003 which was dated from 1931. Additional plans suggest that the 1931 pierced concrete parapet was replaced with metal railings as per the 1938 plans.

HISTORY:

WHEN was the bridge built: 1917/1931

This date is: Actual _____ Estimated X

Source of date: Plaque _____ Design plans X 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?

State Roads Commission

WHO was the builder?

State Roads Commission

WHY was the bridge altered?

N/A

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 X

The bridge is eligible for the National Register of Historic Places under Criterion C, as a significant example of concrete beam construction. The structure has a high degree of integrity and retains such character-defining elements of the type as the T-beams, abutments, pier and ornate metal and concrete railings.

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?

The bridge is a potentially significant example of a concrete beam bridge, possessing distinctive ornamentation and design.

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 with integral T-beams, abutments, wing walls, piers and railing.

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

This bridge is a significant example of the work of the State Roads Commission in the 1930s.

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:

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Other (list):

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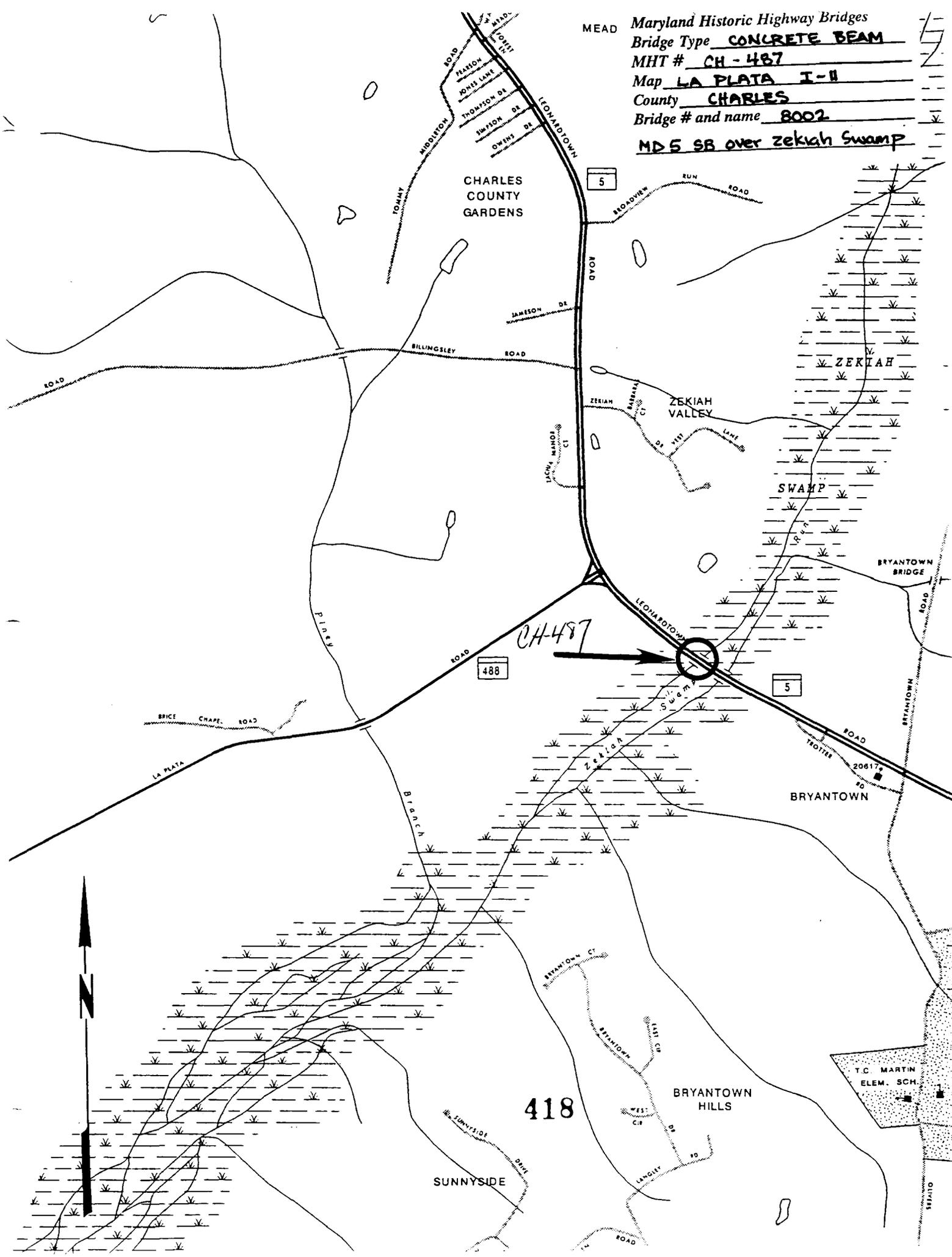
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SURVEYOR:

Date bridge recorded 2/25/97
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MEAD Maryland Historic Highway Bridges
 Bridge Type CONCRETE BEAM
 MHT # CH-487
 Map LA PLATA I-II
 County CHARLES
 Bridge # and name 8002
MD 5 SB over zekiah Swamp





1. CH-487

2. MD5 South bound over Zekiah Swamp (8002)

3. Charles Co. MD

4. Tim Tamburino

5. 3-97

6. MD SHPO

7. South approach

8. 10 F 5



1. CH-487
2. MD 5 Southbound over Zekiah Swamp (8002)
3. Charles Co. MD
4. Tim Tamburino
5. 3-97
6. MD SHPO
7. North approach
8. 2 of 5



1. CH-487
2. MD 5 Southbound over Zekiah Swamp (8002)
3. Charles Co. MD
4. Tim Tamburino
5. 3-97
6. MD SHPO
7. west elevation
8. 3 of 5



1. CH-487
2. MD5 Southbound over Ze Kich Swamp (8002)
3. Charles Co. MD
4. Tim Tamburino
5. 3-97
6. MD SHPO
7. east elevation
8. 4 of 5



1. CH-487
2. MD5 Southbound over Ze Kiah Swamp (E002)
3. Charles Co. MD
4. Tim Tamburino
5. 3-97
6. MD SAPO
7. Detail of east railing
8. 5 of 5