HO-1018
Patapsco River Bridge, No. 3109
US 40 over Patapsco River
Public

Description:
Bridge No. 3109 is a single-span, open spandrel concrete arch bridge with open abutments. The concrete arch is 334feet long, and has a clear arch span of 180 feet. The arch rises 48 feet 5 inches from the springline to the crown. The bridge carries a 50-foot clear roadway section, 2 sidewalks each measuring 3 feet, and a 10-inch balustrade. The road section has a bituminous wearing surface supported by a reinforced concrete deck. There are 4 longitudinal reinforced, composite concrete interior beams which support the deck. There is also an exterior composite concrete beam on each side which supports the balustrades and reinforced sidewalks. The exterior beams are supported by 28 curved exterior cantilever overhands of which 21 bear directly over a spandrel column, which in turn bear on the arch or abutment footing. The bridge has 3 arch ribs that are supported by a series of rib struts. The arch ribs support the spandrel columns. The columns are surmounted with simple geometric capitals. The bridge has an opened abutment with spandrel columns.

Significance:
With the end of World War I a new phase in road improvements began in Maryland, and this phase lasted until the start of World War II. In the case of Route 40 the plan was to create a major connector from Baltimore to Western Maryland that would bypass the old Frederick Turnpike and permit higher speeds. The bridge was actually constructed before the road, and was completed in 1937, with the road added later to connect to the bridge. The cost of the bridge was $136,503.30. Reinforced concrete began to be used in bridges in the early twentieth century and by the 1930s was typical. During this time engineers discovered that with arched bridges the barrel of the arch could be lightened and made into ribs, that spandrel walls could be opened, which made them lighter, and thus that arches could be made flatter and spans longer. The result was the open spandrel arch such as seen in the Patapsco River Bridge No. 3109. The arch bridge was often chosen for certain aesthetic conditions; spanning the Patapsco River, through what would become a state park, seems to have met these conditions, and the result is a dramatic arch that towers well above the river bed.

Maryland Historical Trust Maryland Inventory of Historic Properties Form

Inventory No. HO-1018

1. Name of Property (indicate preferred name)

historic	Patapsco River Bridge No. 3109
other	

2. Location

street and number	US 40 over Patapsco River	__ not for publication
city, town	Ellicott City	X vicinity
county	Howard	

3. Owner of Property (give names and mailing addresses of all owners)

name	Maryland State Highway Administration				
street and number	707 N. Calvert Street			telephone	
city, town	Baltimore	state	MD	zip code	21202

4. Location of Legal Description

courthouse, registry of deeds, etc.	Howard County Courthouse			liber	folio
city, town	Ellicott City	tax map 18	tax parcel		tax ID number

5. Primary Location of Additional Data

_____ Contributing Resource in National Register District
_____ Contributing Resource in Local Historic District
_____ Determined Eligible for the National Register/Maryland Register
_____ Determined Ineligible for the National Register/Maryland Register
_____ Recorded by HABS/HAER
_____ Historic Structure Report or Research Report at MHT
_____ Other:_____

6. Classification

Category
_____district
_____building(s)
__X__structure
_____site
_____object

Ownership
__X__public
_____private
_____both

Current Function
_____agriculture
_____commerce/trade
_____defense
_____domestic
_____education
_____funerary
_____government
_____health care
_____industry
_____landscape
_____recreation/culture
_____religion
_____social
__X__transportation
_____work in progress
_____unknown
_____vacant/not in use
_____other:

Resource Count

Contributing	Noncontributing	
0	0	buildings
0	0	sites
1	0	structures
0	0	objects
0	0	Total

Number of Contributing Resources previously listed in the Inventory
1

7. Description

Inventory No. HO-1018

Condition

___ excellent ___ deteriorated
___ good ___ ruins
_X_ fair ___ altered

Prepare both a one paragraph summary and a comprehensive description of the resource and its various elements as it exists today.

Note: This description is taken from Wallace, Montgomery & Associates/P.A.C. Spero & Company, "Patapsco River Bridge, No. 3109," BA-2557, *Maryland Inventory of Historic Properties*, 1997.

Bridge No. 3109 is a single-span, open spandrel concrete arch bridge with open abutments. The concrete arch is 334feet long, and has a clear arch span of 180 feet. The arch rises 48 feet 5 inches from the springline to the crown. The bridge carries a 50-foot clear roadway section, 2 sidewalks each measuring 3 feet, and a 10-inch balustrade. The road section has a bituminous wearing surface supported by a reinforced concrete deck. There are 4 longitudinal reinforced, composite concrete interior beams which support the deck. There is also an exterior composite concrete beam on each side which supports the balustrades and reinforced sidewalks.

The exterior beams are supported by 28 curved exterior cantilever overhands of which 21 bear directly over a spandrel column, which in turn bear on the arch or abutment footing. Those on the arch diminish in height from end to center. Those on the abutment increase in size from the end of the abutment to the beginning of the arch. The bridge has 3 arch ribs that are supported by a series of rib struts. The arch ribs support the spandrel columns. The columns are surmounted with simple geometric capitals and are adjoined by dentils.

The bridge has taken the open spandrel concept one step further than most arches. Instead of having massive closed abutments, the Patapsco River Bridge has an opened abutment with spandrel columns protruding through a 2 foot 6 inch concrete slope protection to a thick spread footing that also support the thrust block of the arch.

The balustrades are 3 feet 3 inches high with coping. They are divided into 27 sections of 10 and 11 posts by short, solid intermittent post that are aligned above the curved corbelled cantilevered sections. The posts are adjoined by dentils. Above the thrust block and at each end of the bridge are incised 2-panel end posts.

The bridge carries a 24-inch water main on its north interior side.

8. Significance

Inventory No. HO-1018

Period	Areas of Significance	Check and justify below		
__ 1600-1699	__ agriculture	__ economics	__ health/medicine	__ performing arts
__ 1700-1799	__ archeology	__ education	__ industry	__ philosophy
__ 1800-1899	__ architecture	X engineering	__ invention	__ politics/government
X 1900-1999	__ art	__ entertainment/ recreation	__ landscape architecture	__ religion
__ 2000-	__ commerce		__ law	__ science
	__ communications	__ ethnic heritage	__ literature	__ social history
	__ community planning	__ exploration/ settlement	__ maritime history	X transportation
	__ conservation		__ military	__ other: ____

Specific dates N/A **Architect/Builder** unknown

Construction dates 1936-37

Evaluation for:

_____ National Register _____Maryland Register ___X___not evaluated

Prepare a one-paragraph summary statement of significance addressing applicable criteria, followed by a narrative discussion of the history of the resource and its context. (For compliance projects, complete evaluation on a DOE Form – see manual.)

With the end of World War I a new phase in road improvements began in Maryland, and this phase lasted until the start of World War II. These improvements focused on building hard-surfaced feeder roads to connect to the primary roads built before World War I, though in the case of Route 40 the plan was to create a major connector from Baltimore to Western Maryland that would bypass the old Frederick Turnpike and permit higher speeds. The bridge was actually constructed before the road, and was completed in 1937, with the road added later to connect to the bridge. The cost of the bridge was $136,503.30. Reinforced concrete began to be used in bridges in the early twentieth century and by the 1930s was typical. During this time engineers discovered that with arched bridges the barrel of the arch could be lightened and made into ribs, that spandrel walls could be opened, which made them lighter, and thus that arches could be made flatter and spans longer. The result was the open spandrel arch such as seen in the Patapsco River Bridge No. 3109. During this same period beam and slab bridges grew in popularity, in large part because they were cheaper to build, and eventually completely replaced concrete arch bridges. The latter required forms to be made, which required a lot of hand work, and that drove up the cost. Standardization in bridge design also became important since there was such a great need for new bridges, and this standardization reduced costs and favored beam and slab bridges. An earlier inventory of the Patapsco River Bridge noted that the arch bridge was often chosen for certain aesthetic conditions, and this point was reiterated in the historic context report on Maryland highway bridges. Spanning the Patapsco River, through what would become a state park, seems to have met these conditions, and the result is a dramatic arch that towers well above the river bed.[1]

[1] Rita Suffness, "Patapsco River Bridge, No. 3109," BA-2557, *Maryland Inventory of Historic Properties*, 1992. Wallace, Montgomery & Associates/P.A.C. Spero & Company, "Patapsco River Bridge, No. 3109," BA-2557, *Maryland Inventory of Historic Properties*, 1997. Ellicott City (Maryland) Times, 24 June 1937, p. 1, cols. 4-5. Carl W. Condit, *American Building: Materials and Techniques from the Beginning of the Colonial Settlements to the Present*. 2nd ed. (Chicago: University of Chicago Press, 1982), p. 251-56. P.A.C. Spero & Company and Louis Berger & Associates, *Historic Highway Bridges in Maryland: 1631-1960: Historic Context Report*, October 1995.

9. Major Bibliographical References

Inventory No. HO-1018

See footnotes

10. Geographical Data

Acreage of surveyed property _____
Acreage of historical setting _____
Quadrangle name Ellicott City Quadrangle scale: 1:24000

Verbal boundary description and justification

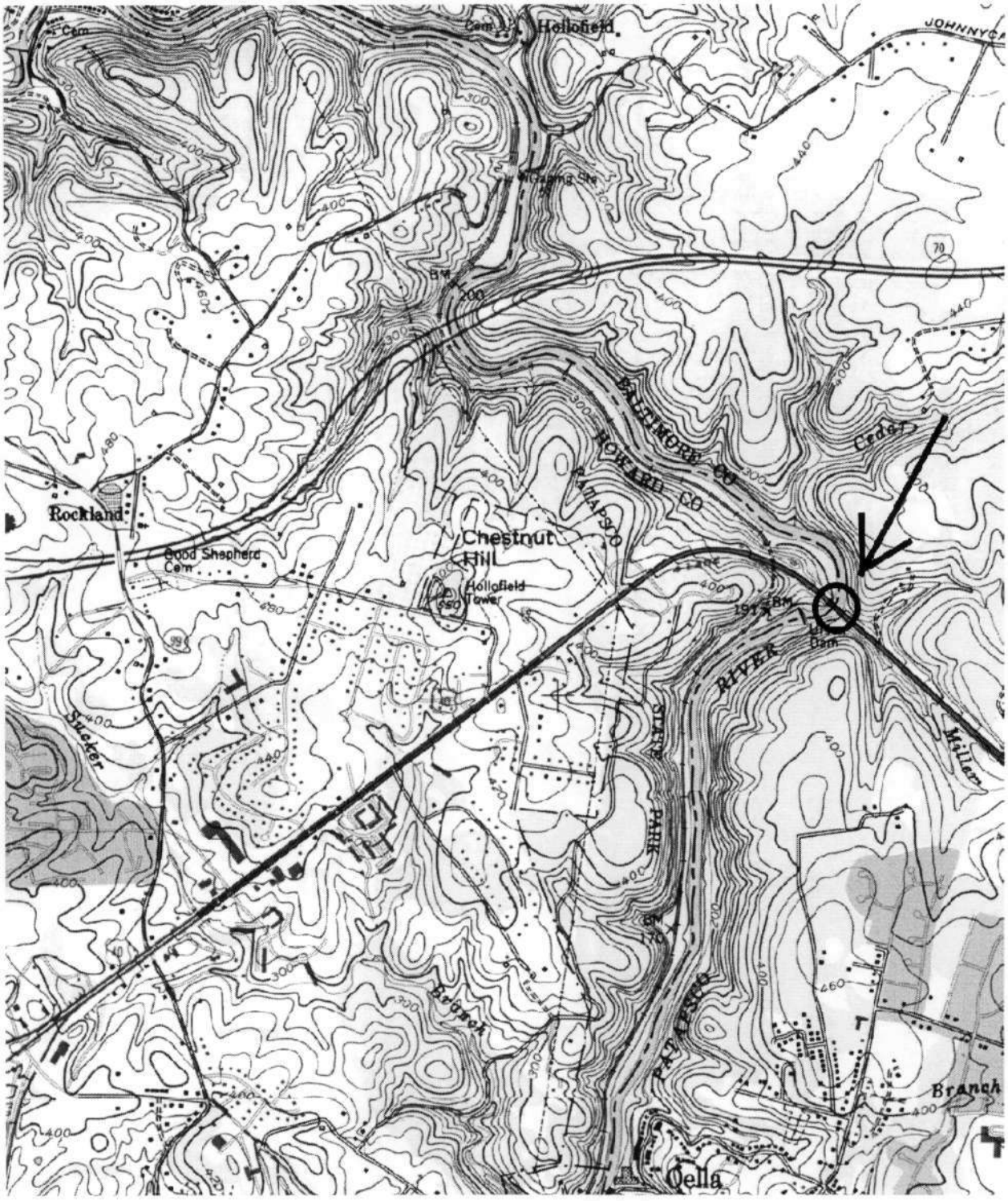
11. Form Prepared by

name/title	Ken Short		
organization	Howard County Department of Planning & Zoning	date	February 2010
street & number	3430 Courthouse Drive	telephone	410-313-4335
city or town	Ellicott City	state	Maryland

The Maryland Inventory of Historic Properties was officially created by an Act of the Maryland Legislature to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 supplement.

The survey and inventory are being prepared for information and record purposes only and do not constitute any infringement of individual property rights.

return to: Maryland Historical Trust
DHCD/DHCP
100 Community Place
Crownsville, MD 21032-2023
410-514-7600



HO-1018
Patapsco River Bridge, No. 3109
US 40 over Patapsco River
Ellicott City quad

HO-1018
Patapsco River Bridge No. 3109
US 40 over Patapsco River
Howard County, Maryland
Ken Short, photographer

Photo Log

Nikon D-70 camera
HP Premium Plus paper
HP Gray Photo print cartridge

HO-1018_2009-04-21_01
View northeast from west bank

HO-1018_2009-04-21_02
East end detail

HO-1018
Patapsco River Bridge No. 3109
US 40 over Patapsco River
Howard County, MD
Ken Short
April 21, 2009
MD SHPO
View northeast from west bank
1/2

HO-1018
Patapsco River Bridge No. 3109
US 40 over Patapsco River
Howard County, MD
Ken Short
April 21, 2009
MD SHPO
East end detail
2/2