

COLONIAL PARKWAY,  
JONES MILL POND DAM  
crossing Jones Mill Pond  
Yorktown vicinity  
York County  
Virginia

HAER No. VA-48-G

HAER  
VA  
100-YORK,  
189-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Department of the Interior  
P.O. Box 37127  
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

HAER  
VA  
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JONES MILL POND DAM  
Colonial National Historical Park  
HAER No. VA-48-G

Location: Colonial Parkway, 3 miles east of Williamsburg, Williamsburg vicinity, York County, Virginia  
Quad: Williamsburg, VA  
UTM: 18/354450/4126325

Date of Construction: 1931-1932

Type of Structure: Dam and arch spillway

Use: Reservoir stabilization and drainage

Designer/Engineer: Eastern Division, Branch of Plans and Design, National Park Service; and the Engineering Division of the Bureau of Public Roads

Builder: Nello L. Teer, Durham, North Carolina

Owner: National Park Service

Significance: Between Yorktown and Williamsburg, the Colonial Parkway crosses Cub Creek on top of the reconstructed walls of a colonial mill dam. In 1931-1932, the largest of the Unit I drainage structures was built to manage the overflow from Jones Mill Pond to Cub Creek. An 18' arch culvert was constructed at the center of the dam with a 59' spillway to the creek side discharge. Consistent with other structures along the road, the concrete structure is clad with colonial style brickwork.

Project Information: Documentation of the Jones Mill Pond Dam is part of the Colonial National Historical Park Roads and Bridges

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Project, conducted in the summer of 1995  
by the Historic American Engineering  
Record, National Park Service.

Historian:

Michael G. Bennett, HAER Historian, 1995

## INTRODUCTION

Along with photographs, measured drawings, and an overview history of the Colonial National Historical Park roads and bridges (HAER No. VA-115), individual reports on certain bridges, park tour roads (Jamestown Island Tour Road HAER No. VA-116, and the Yorktown Battlefield Roads HAER No. VA-117), and other structural features of the Colonial Parkway are part of this documentation. These reports provide a more detailed history of a structure's design and construction. Similar documentation for Colonial National Historical Park was completed by HAER in 1988 for the Colonial Parkway (HAER No. VA-48), the Navy Mine Depot Overpass (HAER No. VA-48-A), Capitol Landing Underpass (HAER No. VA-48-B), the C & O Railroad Underpass (HAER No. VA-48-C), and the Williamsburg Tunnel (HAER No. VA-48-D).

## CONTEXT

Constructed between 1931 and 1957, the Colonial Parkway is the key transportation feature of Colonial National Historical Park. Crossing the Tidewater peninsula, the road is a scenic link between the "historic triangle" of Jamestown, Williamsburg, and Yorktown--a distance of about 23 miles--designed to provide continuity in the transition from one historical era to another. The Colonial Parkway represents one of the first attempts of the National Park Service to integrate parkway design principles standardized in Westchester County, New York during the 1920s with its own traditions of landscape architecture. Under the initial direction of Charles E. Peterson, chief landscape architect for the Eastern Division of the Branch of Plans and Design, the parkway was constructed to harmonize the scenic qualities of the Tidewater environment with the region's colonial material culture.

Modern highway design and engineering practices were utilized in the construction of the parkway. The alignment of the road is comprised of a variation of spiral and single-centered curves with limited tangents, set in a right-of-way averaging 500' with broad landscaped slopes. Commercial development is prohibited,

and access to the road is limited to provide motorists an uninterrupted flow through the landscape thought to be essential to the historic experience of the park. Extensive "cut and fill" operations were used to create a road with maximum curves of 5° and grades no greater than 5 percent.

The decision to align the parkway along both the York and the James Rivers required the use of hydraulic fill to create a road embankment. Low level concrete slab bridges blend with the sandy areas of fill, providing open views of the rivers and marshes. In the vicinity of Williamsburg, filled spandrel concrete arch bridges with colonial style brick veneer provide separated grade underpasses for federal, state, and county roads. To simulate the character of a "country road," the parkway's pavement was limited to a width of 30' and specially treated to expose the extra large aggregate in the concrete. All of these features, along with interpretive markers, create a roadscape with unity, variety, and character, three common elements of NPS landscape design tradition.

#### JONES MILL POND DAM

The Jones Mill Pond dam and spillway were constructed as part of the Unit I contract for the Colonial Parkway, the first phase of the parkway's development. Unit I consisted of grading, and the excavation and construction of drainage structures (except over Indian Field, Felgate, and King creeks) between Ballard Creek (station 74+) and Hubbard Lane (station 577), a distance of about 8 miles. Specifications for Unit I construction established the standards which guided the construction of the parkway throughout its length. Consistent with National Park Service road-building techniques, special efforts were made to preserve the landscape and avoid unnecessary destruction of the natural environment. According to construction provisions,

Any timber or other landscape features scarred or damaged by the contractor's operations shall be removed, neatly trimmed up as required by the engineer, or restored as nearly as

possible to their original condition."<sup>1</sup>

Plans and specifications were prepared and submitted by the Bureau of Public Roads in May 1931. Bids for the work were opened in Yorktown, and the contract was awarded to Nello L. Teer of Durham, North Carolina, who began work on 8 July 1931.<sup>2</sup> For all structures in the view of the motorist, special attempts were made to recreate a "colonial atmosphere" by hiding modern construction materials. While reinforced concrete pipe was used for all pipe culverts, one length of vitrified clay pipe was attached to both ends to screen from view the concrete on the interior walls of the culverts. Drainage structures which required an opening greater than 24" were constructed as reinforced concrete arches with spans of 4', 6' and 8'. All exposed concrete surfaces, including culvert headwalls, walls of arches, and bridges were clad with "hand-made Virginia style" clay brick.<sup>3</sup>

To insure an antique finish, all clay for the bricks was pit-pugged for twelve hours, and was ordered in a variety of shades. Bricks were sand struck and oversized, averaging 2-5/8" x 8'1/2" x 4". The contractor was required to hire only "expert" bricklayers and use both Flemish and English bonds depending upon the location of the structure and the specifications of the Eastern

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<sup>1</sup>U.S. Department of Agriculture, Bureau of Public Roads, "Special Provisions, Proposal and Contract Forms for Colonial National Monument Parkway," 29 May 1931, 2, file 630.C-2.4, "Planning the Parkway, 1931," collection of the Colonial National Historical Park.

<sup>2</sup>Oliver Taylor, Superintendents Monthly Narrative Reports, May-June 1931, file 207.02.3, collection of the Colonial National Historical Park.

<sup>3</sup>William H. Smith, U.S. Department of Agriculture, Bureau of Public Roads, "Final Construction Report - 1932, Colonial National Memorial Parkway, Units I and II," 3-4, collection of the Colonial National Historical Park, Engineer's office, Maintenance Division, Yorktown, Virginia.

Division of the Branch of Plans and Design. Architectural treatments for culverts were drawn by draftsman William M. Haussman in April 1931. Beveled and half round bricks of the same color and texture were used to top parapet walls along the parkway. Bricks for the arch rings were pre-molded and delivered to the job site packed in sawdust. Mortar consisted of one part portland cement, one part lime putty, and three parts sand free of any salt that could produce a yellow shade. Upon completion, the brick was scrubbed with bristle brushes and a solution of water with 10 percent muriatic acid.<sup>4</sup>

Concrete used varied in the proportion of portland cement, fine aggregate, coarse aggregate, and water. Generally, only class A and class B concrete was used for the arch culverts and footing in Unit 1 construction of the parkway.<sup>5</sup> Special attention was made to bond the brickwork to the concrete in order to insure a lasting seal. According to Unit 1 construction specifications,

Just before concrete is to be deposited against the masonry, the surfaces shall be thoroughly washed with a stream of water from a hose. The brick masonry shall be coated with a mixture of neat cement and water immediately ahead of the placing of the concrete. The concrete backing shall be placed in layers not more than six inches thick. All bonding pockets shall be completely filled and the concrete worked around the projecting headers and thoroughly spaded and worked until it is brought into intimate contact with every part of the back face of the brick.<sup>6</sup>

While these specifications pertained to the Jones Mill Pond spillway, its construction required the rebuilding a colonial era

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<sup>4</sup>"Special Provisions," 15-17.

<sup>5</sup>U.S. Department of Agriculture, Bureau of Public Roads, "Specifications for Concrete," supplement to FR 50 specifications for Forest Road Construction, February 1931.

<sup>6</sup>Smith, "Final Construction Report, 1932, Colonial Parkway, Units I and II," 16.

mill dam. The dam was located about two miles west of King Creek, a section of the parkway where a series of spiral curves bisect the woodlands on the way toward Williamsburg. The dam created Jones Mill Pond on Cub Creek, a small tributary of Queen Creek which feeds into the York River. During Peterson's initial survey of the parkway alignment in 1930, a decision was made to use the existing dam as a control point for crossing the creek. This decision necessitated a substantial enlargement of the existing dam to create an embankment capable of supporting a modern highway. A concrete arch culvert/spillway was constructed at the center of the embankment to handle water overflow from the pond to Cub Creek.<sup>7</sup>

Completed in November and December 1931, the embankment is an earthfill structure approximately 38' wide and 600' long, with a maximum height of 26'. The angle of repose from the embankment crest varies from the pond face at 1.3:1 (horizontal:vertical) to 1.5:1, to the creek face at 1.6:1 to 2.5:1. The pond covers an area of about sixty-five acres and its volume varies depending upon the pond's elevation in relation to the crest of the embankment. A spillway in the center of the dam discharges pond overflow through a 21' wide x 58'-10" long concrete conduit from an inlet located 10' below the road surface to an outlet 26' below the road surface.<sup>8</sup>

By November 1931, the contractors erected a cofferdam in the

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<sup>7</sup>Information concerning the alignment of the parkway over the existing dam comes from Charles E. Peterson, interview with James Haskett, "Recollections of the Years 1930-35 at Jamestown, Williamsburg, and Yorktown, Virginia," 4 February 1989, collection of the Colonial National Historical Park.

<sup>8</sup>William Robinson, Superintendent's Monthly Narrative Reports, November-December 1931; and U.S. Department of the Interior, National Park Service, "Jones Mill Pond Dam, Colonial National Historical Park," draft report prepared for Special Directive 87-4, "Dams and Appurtenant Works," 10 November 1994. Collection of the Colonial National Historical Park, Engineer's office, Maintenance Division, Yorktown, Virginia.



location of the spillway inlet to allow for pile driving, foundation work and cement pouring.<sup>9</sup> Wakefield sheet piles were driven 12'-6" out from the location of the face wall, and anchored to the outside reinforced concrete wall of the spillway with 1 3/4" steel bolts. The spillway is 21' wide and extends 12'-6" from the archway. At its crest (located at an elevation of 20'), the spillway wall is 2'-1" wide. Vitrified paving brick is used in all locations below the elevation of the spillway crest. On both sides of the spillway, stepped toe walls with a beveled brick course and 4" flat brick coping extend from the headwall to the spillway crest.

The arch is 10'-7" from the crest of the spillway to the bottom of the Indiana limestone keystone and 21'-4" wide. The brick arch ring is laid in a vertical running bond, with a 2'-2 5/8" long keystone projecting about 1" from the wall. The keystone extends up to the top course of a three course stringer. The 1'-7" wide parapet is topped with beveled brick and a flat 8 1/2" wide brick coping. The parapet is 50'-6" long, and has a projecting course of brick extending about 15'-3" from both ends. From the road grade, the parapet wall is about 2'-6" high and has a slight projecting water table for the bottom three courses on the inlet side. English bond brick is used along the flat areas of the headwall.<sup>10</sup>

On the outlet side, the concrete arch is 17'-8" wide and 10'-11" high and has a matching Indiana limestone keystone. The headwall and coping, however, have a slight variation in design. The headwall is 57' end-to-end and less ornate than the inlet wall with no projecting string course or stepped toe walls. An extending buttress wall slants from the bottom of the coping to the footing just outside the end of the arch ring. This added structural element was designed to strengthen the culvert from

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<sup>9</sup>Robinson, Superintendent's Monthly Narrative Reports, November, 1931.

<sup>10</sup>U.S. Department of Agriculture, Bureau of Public Roads, Drawing G-640, "Colonial National Monument Parkway, Bridge over Cub Creek," Collection of the Colonial National Historical Park.

the extra weight of the embankment on the outlet side of the dam. A discharge swell of concrete extends 5' from the end of the arch into Cub Creek, but it is buried under earth.

A 30" diameter discharge pipe was constructed through the spillway at an elevation of about 25' to provide added control over the level of water in the pond. The stem for the control gate is visible in the inlet spillway but the key has been removed for safety reasons. According to engineer Roy Bigelow, the park is reluctant to test the gate valve since they are unsure if they can stop the flow once it is opened.

When the parkway between Hubbard Lane and Ballard Creek opened to traffic in 1935, the Jones Mill Pond was considered one of the more beautiful areas with open vistas to both the pond and stream sides. However, the embankment has caused serious problems since its construction. Heavy rains have caused numerous slides over the years and at times have damaged the pavement.<sup>11</sup> In 1935, E. R. Boney of Norfolk, Virginia was awarded a contract to construct a pile revetment on the pond side of the embankment to stabilize the fill. Completed between June 26 and 6 July 1935, the timber reinforcement decreased the number of slides but did not remove the threat altogether.<sup>12</sup> The park has \$1 million to spend on the reconstruction and stabilization of the dam, but no plans have been proposed for the work.

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<sup>11</sup>B. Floyd Flickinger, Superintendent's Monthly Narrative Reports, 1934-1935.

<sup>12</sup>U.S. Department of Agriculture, Bureau of Public Roads, "Final Construction Report, Project 1B7, Pile Revetment, Jones Mill Pond, Colonial National Monument Parkway," collection of the Colonial National Historical Park, Engineer's office, Maintenance Division, Yorktown, Virginia.

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