

II. PROJECT METHODOLOGY

INTRODUCTION

GAI conducted an architectural survey and National Register evaluation of Bridge 599 for DelDOT (between October and November 2000) according to the requirements of Sections 106 and 110 of the National Historic Preservation Act of 1966 (36 CFR Part 800), as amended; the National Environmental Policy Act of 1969; and the National Transportation Act of 1970, as amended. The survey and evaluation of Bridge 599 followed the guidelines of the Delaware Department of State-Division of Historical and Cultural Affairs (SHPO), specifically *Guidelines for Architectural and Archeological Surveys in Delaware* (Delaware State Historic Preservation Office 1993) and those contained in the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (National Park Service 1983).

The methodology of the historic architectural survey and National Register evaluation of Bridge 599 consisted of four (4) phases: 1) GAI established an Area of Potential Effect (APE) consisting of 1,000 feet on all sides of Bridge 599; 2) GAI conducted background research in Delaware and Washington, D.C. on the history of the Bridge 599 project area as well as on previously surveyed historic resources in the vicinity; 3) GAI conducted fieldwork on Bridge 599 and completed a *Cultural Resource Survey Structure Form* on the bridge; 4) GAI evaluated Bridge 599 for its eligibility for individual listing in the National Register of Historic Places and/or as a contributing historic resource in the National Register-listed Auburn Mills Historic District.

ESTABLISHMENT OF AN APE

Architectural resources (including individual buildings, structures, objects, and historic districts) within 304 meters (1,000 feet) of the proposed undertaking are considered within the Bridge 599 Area of Potential Effect (APE). The Bridge 599 APE is shown on Figure 1.

BACKGROUND RESEARCH

Background research was conducted on historic resources in the Bridge 599 APE as well as on the general history of the Auburn Mills/Yorklyn area of northern New Castle County. In Delaware, background research was conducted at the DelDOT Archives, the Hall of Records, and the Delaware State Historic Preservation Office (SHPO), all located in Dover. Background research also was conducted at the New Castle County Government Center in Wilmington. In addition, GAI conducted historic map research at the Library of Congress, Geography and Map Division, in Washington, D.C.

GAI performed an intensive search for primary and secondary records pertaining to the construction of Bridge 599 and the history of the surrounding area. Research sources consulted include New Castle County Levy Court minutes, *Cultural Resource Survey Building Forms* for previously surveyed historic resources in the project APE, the National Register nomination form for the Auburn Mills Historic District, cultural resource management (CRM) reports for previous architectural and archeological surveys in the project APE, historic photographs and post cards, historic maps and atlases of New Castle County and Delaware, and informant interviews with

individuals knowledgeable about the history of Auburn Mills and its environs. This includes contacting other archaeologists with previous work experience in the area (i.e., Ned Heite).

GAI conducted a search for the State Highway Commission contracts and specifications for Bridge 599 at both the DelDOT Archives and at the Hall of Records. There are no contracts or specifications for Bridge 599 available at either location.

FIELDWORK

GAI Lead Architectural Historian Geoffrey Henry conducted fieldwork on Bridge 599 on November 17, 2000. Detailed notes were taken on the construction and physical condition of the bridge, as well as its setting. A *Cultural Resource Survey Structure Form* was completed for Bridge 599 (Appendix A), and black-and-white photographs showing the bridge, its details, and its setting were taken.

GAI also examined the five previously surveyed historic resources located within the Bridge 599 APE (see Section III). The locations of these historic resources were verified and photographed.

BRIDGE DESCRIPTION: Bridge 599 and Bengé Road (Route 253) are located in a predominately rural section of northern New Castle County, just north of the Christiana-Mill Creek Hundred dividing line (Photograph 1). Approximately 100 feet south of Bridge 599 along Bengé Road is a modern, reinforced concrete, two-lane highway bridge spanning Red Clay Creek, a tributary of the Christiana River (Photograph 2). Bridge 599 spans the NVF millrace north of Red Clay Creek (Photograph 3). The NVF millrace flows in a west-east direction towards the historic NVF-owned cotton and paper mill buildings located 75-100 feet to the northeast of the bridge. Several historic stone residences stand in a row on the west side of Bengé Road, beginning 100-150 feet northwest of Bridge 599 (Photograph 4).

According to DelDOT, Bridge 599 was constructed around 1932 under the authority of the New Castle County Levy Commission. It is a single-lane bridge or culvert measuring approximately 17'-8" long and 14'-6" wide which carries north-south traffic along Bengé Road (Route 253). The bridge is made up of a 12"-thick reinforced concrete slab that spans approximately 17' from the top edge of the north and south embankments. Two masonry gravity abutments support the slab, one on each bank. The clear opening below the bridge between the two abutments is 10'-8" in length.

The top surface of the bridge is composed of bituminous concrete laid atop the concrete slab. The bridge is bordered on the east and west sides by a short concrete curb that supports six concrete posts (three on each side) (Photographs 5 and 6). These two curbs and six posts serve as guardrails for the bridge.



Photograph 1. View of Bridge 599. Looking SSE along Benge Road (Route 253).



Photograph 2. View of Benge Road (Route 253). Looking South with Bridge 599 (foreground) and Bridge over Red Clay Creek (background).



Photograph 3. View of Bridge 599. Looking North, as it crosses NVF Millrace.



Photograph 4. Historic Residences along West Side of Bengie Road (Route 253), North of Bridge 599. Looking Northwest.



Photograph 5. West Wall of Bridge 599. Looking Northwest.



Photograph 6. East Wall of Bridge 599. Looking East.

CONDITION ASSESSMENT OF BRIDGE 599: Because of its age and inferior substructure, Bridge 599 has inherited several deteriorating conditions. The two masonry abutments have begun to fall apart. Significant portions of the abutment masonry on the north and south walls have fallen out. On the northeast corner, the slab is now completely unsupported (Photograph 7). Repairs to date have included sandbagging, patching (Photographs 8 and 9), and the placement of a large concrete block to help support the dilapidated abutments. These measures have proved insufficient, as the bridge has settled 1 to 1 ½-inches below the roadway and displays heavy cracking in the bituminous concrete. The underdeck is riddled with cracks and is coupled with moderate to heavy efflorescence (Photograph 10). Due to the excess stress on the span and the deterioration that has occurred over time, the bridge exhibits heavy spalling in several areas and in some cases exposed and heavily corroded reinforcement bars can be seen.



Photograph 7. View of Concrete Slab used to Support Portion of Deteriorated Northeast Abutment. Looking North.



Photograph 8. View of Repair to Southwest Post. Looking North.



Photograph 9. View of Sandbags Used to Support SW Corner of South Abutment. Looking East.



Photograph 10. View of Deteriorated Concrete on West Face of Bridge. Looking East.

NATIONAL REGISTER EVALUATION

GAI evaluated Bridge 599 for its eligibility for individual listing in the National Register of Historic Places and/or as a contributing historic resource in the National Register-listed Auburn Mills Historic District. GAI evaluated the National Register eligibility of Bridge 599 according to the National Register Criteria; the historic context for the Bridge 599 project area; and the bridge's structural condition and integrity. (See Section V).