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

MHT No. M:22-39

SHA Bridge No. M0056B **Bridge name** Redland Road over Mill Creek

LOCATION:
Street/Road name and number [facility carried] Redland Road

City/town Gaithersburg **Vicinity** X

County Montgomery

This bridge projects over: Road ____ **Railway** ____ **Water** X **Land** ____

Ownership: State ____ **County** X **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 ____:
Concrete Arch ____ **Concrete Slab** X **Concrete Beam** ____ **Rigid Frame** ____
Other ____ **Type Name** ____

DESCRIPTION:

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

Describe Setting:

Bridge M0056B carries Redland Road over Mill Creek. The road runs in a north-south direction, connecting the cross-road villages of Derwood and Redland. Redland Road begins at its southernmost point at I-270 near Derwood, between Rockville and Gaithersburg, and extends north to Muncaster Mill Road (MD 115) at Redland crossroads. The road travels approximately 3.21 kilometers (2 miles) between endpoints. Mill Creek flows in a west to east direction. The bridge is surrounded by forested land, located in the Mill Creek Stream Valley Park and the Rock Creek Regional Park.

Describe Superstructure and Substructure:

Bridge M0056B, Redland Road over Mill Creek, is a single-span concrete slab bridge constructed circa 1930. The structure has a clear span is 5.4 meters (17.75 feet) and a total bridge length of 7.62 meters (25 feet). The roadway width of 7.7 meters (25.4 feet) between the curbs, carrying two lanes of traffic without sidewalks. The out-to-out width is 8.45 meters (27.75 feet). The superstructure, consisting of the parapet, roadway surface and slab, is in good condition. The pierced parapets have articulated endblocks with inscribed panels and a beveled concrete coping. The roadway surface has been resurfaced. The substructure consists of the concrete abutments and wingwalls. Flared wingwalls are located on both sides of the bridge.

Discuss Major Alterations:

The bridge parapets and abutments have been parged within the last ten years.

HISTORY:

WHEN was the bridge built: circa 1930

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

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

Other (specify):

According to the 1996 Montgomery County Bridge Inspection, Bridge M0056B was constructed in 1925. However, the Montgomery County Division of Transportation Engineering has no record of the construction of the bridge. In addition, the County is not aware of how the date was determined.

The Montgomery County Division of Transportation Engineering stated that Bridge M0056B has always been a county-owned structure located on a county road. The bridge has not had major alteration and the pierced concrete parapets are original to the structure. Due to the bridge dimensions, 5.4 meters (17.75 feet) in length, and the design treatment of the parapets, the bridge resembles a 1930 standardized plan bridge. The standardized plan for a "Standard 18'-0" Slab Bridge" was designed by the State Roads Commission in 1930 with an 5.4 meter (18 foot) length and pierced concrete parapets. In 1925, standardized plan slab bridges were constructed with solid parapets and a more narrow clear roadway width than found at Bridge M0056B. Due to the fact that the 1925 construction date put forth by the County cannot be substantiated and that the structure's design is consistent with the standardized plan of 1930, it is concluded that the bridge was constructed circa 1930.

WHY was the bridge built?

Unknown. No archives, record groups or bridge plans are available to research the factors which led to the selection of the site and design or the funding source of the bridge.

M:22-39

WHO was the designer?
State Highway Administration

WHO was the builder?
Unknown

WHY was the bridge altered?
The bridge was altered in an effort to extend the life of the bridge.

Was this bridge built as part of an organized bridge-building campaign?
Yes, post-World War I improvements to primary and secondary roads.

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 good example of concrete slab construction. The structure has a high degree of integrity and retains such character-defining elements of the type as the slab, parapet, abutments and wingwalls.

Was the bridge constructed in response to significant events in Maryland or local history?
There are indications that standard plans for Maryland bridges were drawn up in 1909, but the first clear issue of such plans occurred in 1912, concurrent with the reorganization of the State Roads Commission, which involved the consolidation of the construction and maintenance departments and the establishment of eight districts with their own Resident Engineers (Maryland State Roads Commission 1916:57). The decentralization of the Commission "saved the State thousands of dollars yearly in expenses" and resulted in increased effectiveness, a result experienced by other states which took the same approach.

Although decentralization had its advantages, there was the danger that "the right hand wouldn't know what the left hand was doing" as the Commission embarked upon the formidable task of improving the roads and bridges of Maryland. In addition to highway resurfacing, road improvement entailed the replacement of large numbers of bridges that were inadequate to the vehicular needs of the state. If Resident Engineers were to replace all of these bridges with individually designed spans, they would not be able to keep up with the amount of work that needed to be done. Reinforced concrete construction had been successfully used to build safe bridges with reduced labor costs and, it was hoped, had reduced maintenance costs, but the labor involved in individually designing all bridges would have been prohibitive. A method of reducing design time was critically needed.

The introduction of standard plans allowed the Resident Engineer to find a quick and effective solution to the problem. Although standard plans were not applicable to all bridge sites, for reasons of engineering or aesthetics, they could be used in a great number of cases.

The creation of standard plans and a description of their use was first announced in the 1912-1915 *Reports* of the State Roads Commission:

> Standard plans have been made for all bridges of spans up to 36 feet in length and it is only necessary for the Resident Engineer to investigate the foundations, then refer to the standard

> plan and select the type of foundation that will fit the location and conditions and take off the length of spans. The water shed is carefully figured up by the Resident Engineer when he makes his preliminary inspection and it is afterwards checked by the Engineer of Surveys. On old roads all openings of the old bridges and culverts are carefully noted, the high-water mark established and the storm areas computed. On spans exceeding 36 feet separate designs are worked up for each individual case (Maryland State Roads Commission 1916:57).

Published on a single sheet, the 1912 Standard Plans included those structures that were amenable to such an approach: slab spans, (deck) girder spans, box culverts, box bridges, abutments, and piers (Maryland State Roads Commission 1912b). Slab spans, with lengths of 6 to 16 feet in two-foot increments, featured a solid parapet railing that was integrated into the slab. (Deck) girder spans, with lengths of 18 to 42 feet in irregular increments, also featured an integrated solid parapet railing. It is interesting to note that the Standard Plan features a 42-foot span, apparently contradicting the above statement that individual plans were drawn up for spans not exceeding 36 feet. The roadway for all spans was a uniform 22 feet, which exceeded by 8 feet the then current 14-foot-wide standard section for concrete road construction (Maryland State Roads Commission 1930b:85).

In the *Report* for the years 1916-1919, a revision of the standard plans was noted:

> During the four years covered by this report, it has been found necessary to revise our standard plans for culverts and bridges, to take care of the increased tonnage which they have been forced to carry. Army cantonments. . .increased their operations several hundred per cent, and the brunt of the enormous truck traffic resulting therefrom, was borne by the State Roads of Maryland. In addition to these war activities, freight motor lines from Baltimore to Washington, Philadelphia, New York, and various points throughout Maryland, and the weight of many of these trucks when loaded, was in excess of the loads for which our early bridges were designed [Maryland State Roads Commission 1920b:56].

The *Report* for 1920-1923 states that "new standard plans have been prepared for slab and girder spans and the type of the latter has been changed from the beam to the T-beam design, with a resulting saving in material" (Maryland State Roads Commission 1924b:58). Thus, by 1923 the State Roads Commission had decided to adopt the T-beam design which had been described by Tyrrell in 1909 (Tyrrell 1909:186), advocated by the U.S. Bureau of Roads in the teens, and already adopted by several states by 1920.

The 1924 standard plan for the T-beam spans contained a note which characterizes the new mode of construction: "No construction joint allowed between girders and slab. Girders with slab to be poured as a monolithic mass." Among the changes included in the 1924 standards for T-beams were a reduced beam section, span designs in lengths of regular two-foot increments, and a reduced range of span lengths which incorporated designs from 22 feet to 40 feet.

The 1924 standard plans remained in effect until 1930, when 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 (Maryland State Roads Commission 1930b). The range of span lengths remained the same, but there were some changes designed to increase load bearing capacities. The reinforcing bars were increased in thickness for both slab and T-beams, and the cross section of the T-beam bottom flange became more robust. (For the 22-foot-long span, thickness was increased by 3 inches and height by 4.5 inches.) Visually, the 1930 design can be distinguished from its predecessors by the pierced concrete railing that was introduced at this time.

Three years later, in 1933, a new set of standard plans was introduced (Maryland State Roads Commission 1933). This time, their preparation was not announced in the *Report*; new standard plans were by this time unremarkable. Once again accommodating the ever-increasing demands of traffic, the roadway width 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 bearing capacity. In order to accomplish the same goal for the T-beam span, the number of beams was increased from five to six, the first such change since the introduction of girder spans in 1912. The increase in the number of beams allowed a decrease in section size for girders which made them equivalent to the 1924 T-beam section.

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?
Although built during the post-World War I construction phase, this bridge did not greatly effect the area surrounding it. The structure did not increase settlement or industry.

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?
No, this bridge is not located in an area which is eligible for historic designation.

Is the bridge a significant example of its type?
Yes, this bridge is a good representative example of a structure built to State standardized bridge plans.

Does the bridge retain integrity of important elements described in Context Addendum?
Yes, this structure retains the integrity of its original design.

Is the bridge a significant example of the work of a manufacturer, designer, and/or engineer?
Yes, this bridge is a good representative example of the work of the designer. This bridge retains integrity of its original design when compared to 1930 standardized State bridge plans.

Should the bridge be given further study before an evaluation of its significance is made?
No, this bridge is a representative example of its type, with good integrity, and requires no further study to facilitate its evaluation.

BIBLIOGRAPHY:

County inspection/bridge files X **SHA inspection/bridge files** X
Other (list):

SURVEYOR:

Date bridge recorded October 1996/revised February 1998
Name of surveyor Caroline Hall/Tim Tamburrino
Organization/Address P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Baltimore, MD 21204
Phone number (410) 296-1635 **FAX number** (410) 296-1670

CONTINUATION SHEET

MARYLAND HISTORICAL TRUST
STATE HISTORIC SITES INVENTORY FORM
RESOURCE NAME: Bridge M56, Redland Road over Mill Creek
SURVEY NO.: M: 22-39 (PACS A8.5)
ADDRESS: Redland Road over Mill Creek, Gaithersburg vicinity, Montgomery County

Verbal Boundary Description and Justification:

The National Register Boundary of Bridge M56, Redland Road over Mill Creek encompasses approximately 41.8 square meters (450 square feet), extending the length and width of the bridge. It includes the entire bridge substructure and superstructure.

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended X Eligibility not recommended ____

Criteria: ___ A ___ B X C ___ D Considerations: ___ A ___ B ___ C ___ D ___ E ___ F ___ G ___ None

MHT Comments

Andrew Lenin 6/13/03
Reviewer, Office of Preservation Services Date

B Kurtze 6/13/03
Reviewer, NR Program Date

Preparer:
P.A.C. Spero & Company
December 1996

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RESOURCE NAME: Bridge M56, Redland Road over Mill Creek
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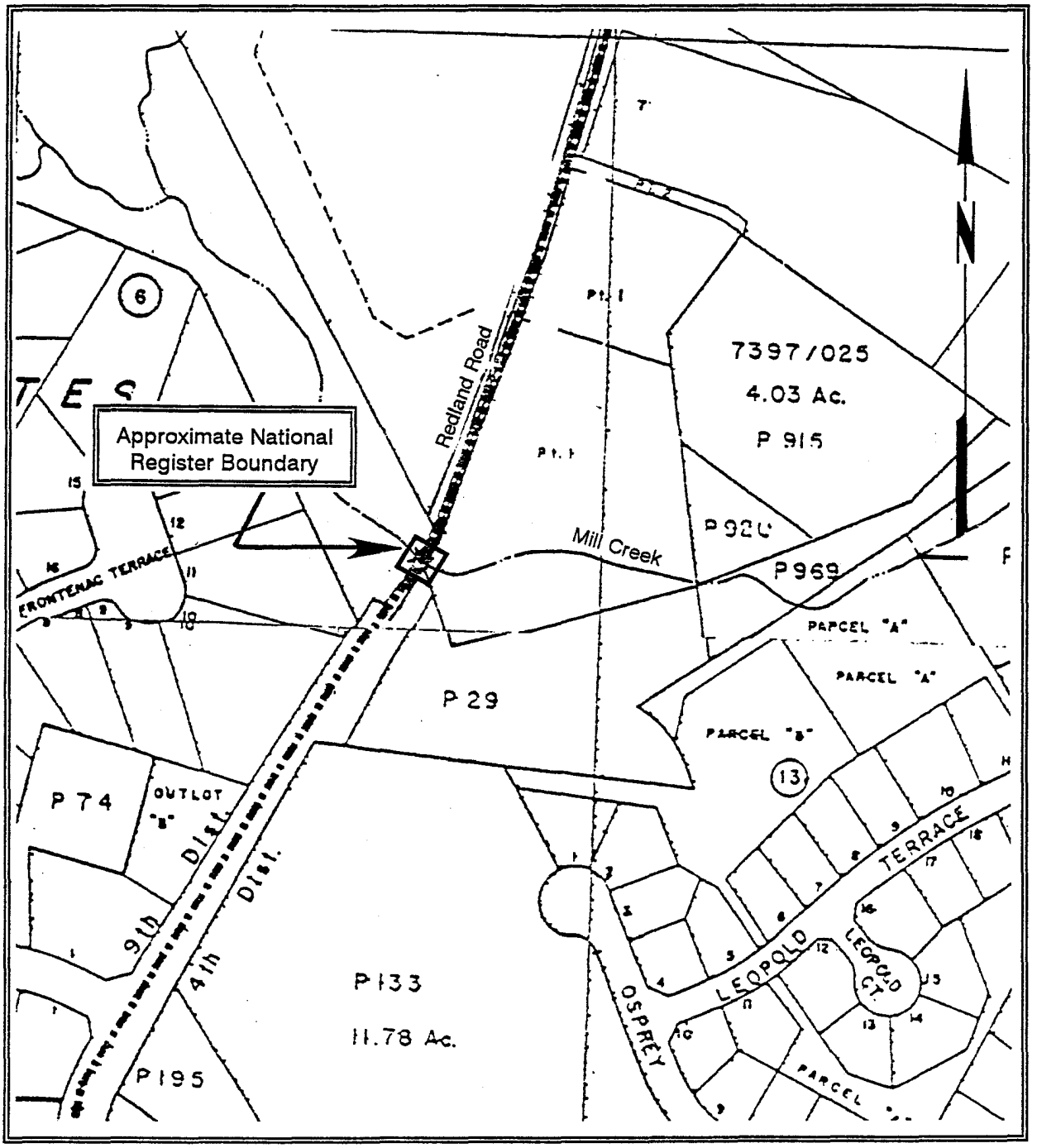
ADDRESS: Redland Road over Mill Creek, Gaithersburg vicinity, Montgomery County

National Register Boundary Map:



Preparer:
P.A.C. Spero & Company
December 1996/revised February 1998

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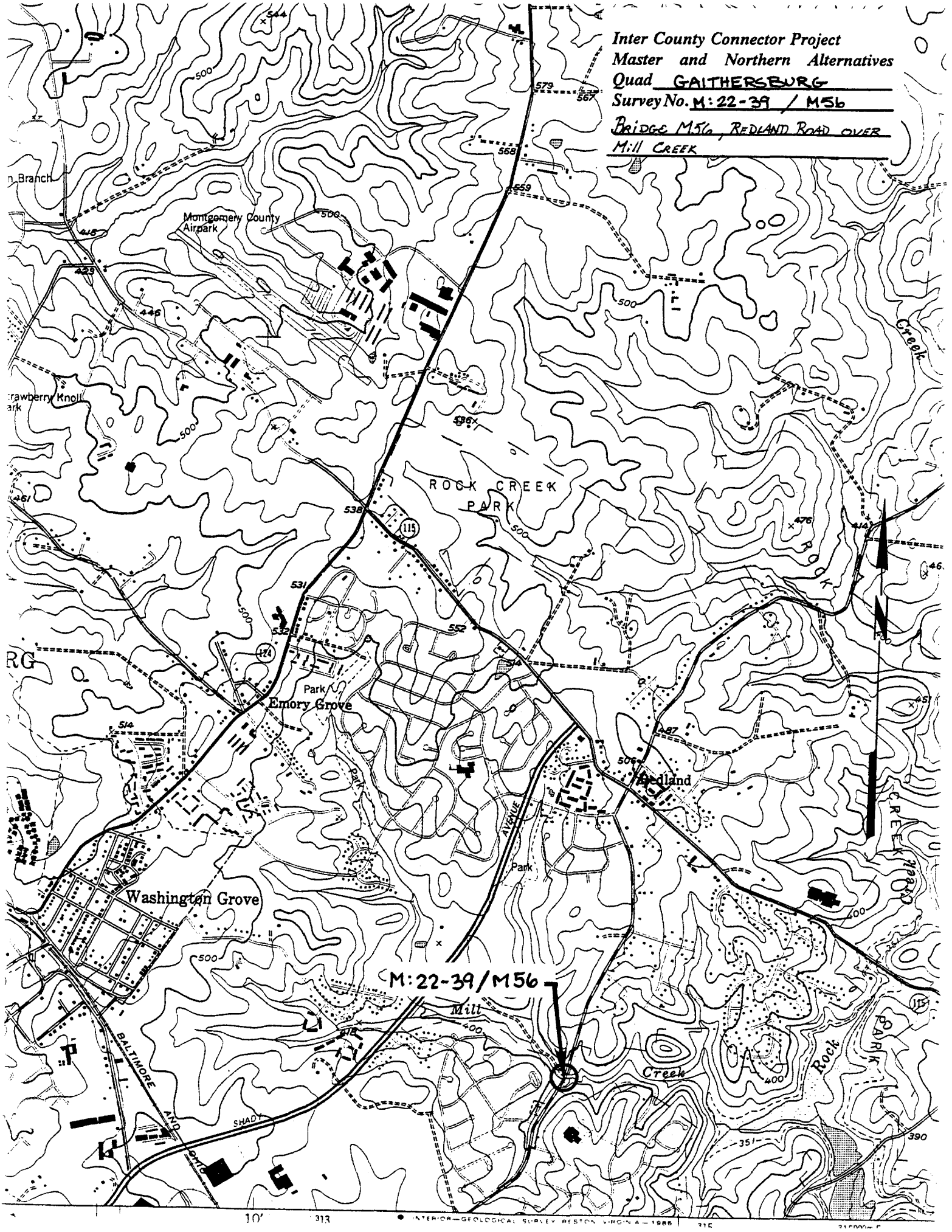
Preparer:
P.A.C. Spero & Company
December 1996/revised February 1998


Inter County Connector Project
Master and Northern Alternatives
Quad GAITHERSBURG
Survey No. M:22-39 / M56
BRIDGE M56, REDLAND ROAD OVER
Mill CREEK
Montgomery County Airpark
ROCK CREEK PARK
Emory Grove
Park
Redland
Washington Grove
M:22-39/M56
Mill
Creek
Rock
Creek
BALTIMORE AND OHIO
SHADY
AVENUE
INTERIOR—GEOLOGICAL SURVEY RESTON, VIRGINIA—1986

1. M 22.39
2. Redland Road over Mill Creek
3. Montgomery County, Maryland
4. Tim Tamburrino
5. October 1996
6. PAC Opens & Company
   40 W Chesapeake Avenue, Suite 412
   Baltimore MD 21204
7. Redland Road, view North
8. 1 of 4

1. MD 22 [illegible]
2. Red and Road over Mill Creek
3. Montgomery County, Maryland
4. [illegible] Tamburrino
5. October 1996
6. PLC Spence & Company
   40 W. Chesapeake Avenue Suite 412
   Baltimore, MD 21204
7. East Parapet, View East
8. 2 of 4

1. M-22-39

2. Redland Road over Mill Creek

3. Montgomery County, Maryland

4. Tim Tomburino

5. October 1996

6. PAC Spero & Company
   40 W Chesapeake Avenue, Suite 42
   Baltimore MD 21204

7. View of West Side Looking East

8. 3 of 4

1. M 22-39

2. Redland Road over Mill Creek

3. Montgomery County, Maryland

4. Tim Tamburrino

5. October 1996

6. PAC Tipero & Company
40 W. Chesapeake Avenue, Suite 412
Baltimore, MD 21204

7. View of East Side, Looking West

8. 4 of 4