

LINDBERGH BRIDGE
(County Bridge No. 72)
Marple Avenue over Darby Creek
Clifton Heights vicinity
Delaware County
Pennsylvania

HAER No. PA-195

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

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HISTORIC AMERICAN ENGINEERING RECORD

LINDBERGH BRIDGE (County Bridge No. 72) HAER No. PA-195

Location: Marple Avenue over Darby Creek, Clifton Heights vicinity, Delaware County, Pennsylvania.

UTM: 18.475180.4420192

QUAD: Landsdowne, Pennsylvania, 7.5' Series

Date of

Construction: 1928. Altered 1940, 1971, 1974, 1986

Engineer: George Wright, County Engineer

Present Owner: County of Delaware
Department of Public Works
Media, Pennsylvania 19063

Present Use: Vehicular bridge with pedestrian sidewalks.

Significance: The Lindbergh Bridge is a three span reinforced concrete bridge which was designed by the Delaware County Department of Public Works. With a main span of 259'4", it was the largest reinforced concrete arch bridge designed and built by the county. The bridge is a fine example of the twin ribbed, open spandrel, arcaded parapet structures which were being constructed during the early part of the 20th Century. The concrete lamp posts with colonial fittings were a distinctive embellishment on the bridge. The bridge was named in commemoration of Colonel Charles A. Lindbergh who, one year earlier, had completed the first solo flight of the Atlantic Ocean. At the time of construction, adulation for Colonel Lindbergh had swept across America.

Project

Information: This documentation was undertaken to satisfy stipulations contained in a Memorandum of Agreement between the Federal Highway Administration and the Pennsylvania State Historic Preservation Office. The photography for the bridge recordation was completed prior to the commencement of the rehabilitation of the superstructure on the Lindbergh Bridge. Other mitigation measures will include the replication of the concrete light standards as well as the visual appearance of the arcaded parapet.

McCormick, Taylor & Associates, Inc.
Philadelphia, Pennsylvania 19106
for the PA Department of Transportation

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The Lindbergh Bridge is located in Delaware County, Pennsylvania and carries Marple Avenue over Darby Creek and Kent Park, a publicly owned parkland. Darby Creek is the corporate boundary between Clifton Heights Borough, to the south of the creek, and Upper Darby Township to the north. The bridge is used primarily by local motorists and pedestrians accessing the residential area on the north side of the bridge from Baltimore Pike, a major traffic route in southeastern Delaware County. From Baltimore Pike, Marple Avenue extends in a northwesterly direction for approximately one-eighth mile until it intersects with Bridge Street on the north side of Darby Creek. Marple Avenue also extends southeasterly from Baltimore Pike for a distance of approximately one-fourth mile. It principally provides local access to a residential/commercial area within Clifton Heights Borough.

The bridge and its approach roadways were constructed in 1928 using plans prepared by the engineering staff of Delaware County and approved by George Wright, County Engineer. Lindbergh Bridge was constructed to replace a functionally obsolete steel beam and concrete bridge located approximately 500 feet upstream of the current crossing. This small structure carried Bridge Street across Darby Creek and took traffic from Baltimore Pike into Upper Darby Township.

Prior to the time of construction, Marple Avenue was a small street that served properties located on the south side of Darby Creek. The roadway began at the current Marple Avenue/Baltimore Pike intersection. After proceeding north for a short distance, it turned 90° to the west and ran parallel to Baltimore Pike until it intersected with Bridge Street. Marple Avenue did not cross Darby Creek prior to the construction of the Lindbergh Bridge.

The southern bridge approach roadway for the original Lindbergh Bridge began at the existing intersection of Marple and Baltimore Avenues, approximately 300 feet south of Darby Creek. From this point, the roadway turned to the west with a curve having a radius of 299.60' and a length of approximately 100'. It then proceeded to cross Darby Creek at a skew of approximately 85°. Marple Avenue then intersected with Reilly Street (since renamed) approximately 270 feet north of the creek.

At the midpoint of the main span on the upstream parapet is a cast metal plaque that reads:

LINDBERGH BRIDGE

**SO NAMED IN COMMEMORATION OF A UNIQUE FEAT OF AMERICAN GALLANTRY
AND IN RECOGNITION OF THE INSPIRING CONTRIBUTION OF CHARLES A.
LINDBERGH TO THE PROGRESS OF CIVILIZATION AND TO THE HONOR AND
PRESTIGE OF HIS NATIVE LAND.**

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At the midpoint of the main span on the downstream parapet is a second cast metal plaque that reads:

**BUILT BY DELAWARE COUNTY
1927-1928**

**HARRY M. BIRNEY, JR.
JAMES M. HAMILTON
THOMAS F. FEELEY
COMMISSIONERS 1927**

**HARRY M. BIRNEY, JR.
CHARLES H. DREWES
JAMES F. DESMOND
COMMISSIONERS 1928**

**GEORGE WRIGHT
ENGINEER**

**CARL R. CAMP, INC.
CONTRACTORS**

A third plaque located on the upstream parapet at the south pier reads:

**LINDBERGH BRIDGE
NO. 72
ON
MARPLE AVENUE
OVER
DARBY CREEK**

DESCRIPTION OF ORIGINAL CONSTRUCTION

The Lindbergh Bridge structure consists of three (3) spans: two (2) 60'-0" approach spans flanking a single 250'-0" open-spandrel concrete arch main span. The bridge was constructed by Carl R. Camp, Inc., using design plans approved August 29, 1927, by George Wright, Delaware County Engineer. The County has owned and maintained the structure since its construction.

The main span superstructure consists of a reinforced concrete deck/stringer/floorbeam system divided into five (5) three-span continuous segments supported by the main span arch bents, and at the ends by the simple-span concrete deck/girder approach spans. The typical cartway section measures 30'-0" from curb to curb with two (2) 6'-0" wide concrete sidewalks and a 6" wide concrete parapet on each side. A 2½" thick bituminous overlay was placed atop the 7½" concrete deck slab to within 2'-0" inside of curb line.

The main span superstructure consists five (5) stringers, measuring 15" wide by 20½" deep, and spaced 7'-9¾" center to center and supported by 24" wide by 32½" deep floorbeams (except at the expansion joints where the floorbeams measure 15" wide by 32½" deep). The stringer span/floorbeam spacing measures 17'-2¾". The slab, stringers and floorbeams are cast integrally (compositely) with no cold joints visible between the individual elements. The curbside edge

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of the 4½" thick sidewalk slab is cast as part of the fascia stringers while the outside edge of the slab is supported by a smaller 15" deep edge beam spanning the floorbeams.

The approach span superstructure consists of five (5) girders measuring 24" wide by 60½" deep, with a spacing of 7'-6" center to center and having a clear span of 56'-6". The girders support a 7½" concrete deck slab with a typical section similar to the main span. The girders cantilever over the pilaster's intermediate columns a distance of 6'-0", framing into a pier cap which supports the first span of the main span superstructure. An expansion joint is provided at this interface between the approach span and main span superstructures. While an expansion joint is also provided at the abutment, fixity is provided at the main pilaster intermediate columns. The fascia beams are of "jacked-arch" construction and support the outside edge of the sidewalk slab and the parapet. The curbside edge of the sidewalk slab is supported by the first interior girder.

Concrete light standards are placed atop each parapet at the main pilaster and at the midspan of the main span. The height of the post measures 20' ± from the top of the sidewalk. The original Octagonal Reflecto Lux Lanterns supported by the steel colonial brackets have been replaced with more modern glass bulb luminaires. The power source has been rerouted from the 1½" diameter conduit originally embedded within the superstructure to an overhead power line strung from light standard to light standard. The concealed 1½" diameter conduit has been abandoned and is no longer in service. No other utilities are present on the structure.

The main span superstructure deck slab/stringer/floorbeam system is supported by reinforced concrete arch bents of varying width, height and detail. Bents 1, 2, 4, 11, 13 and 14 are 2'-0" thick and 9'-9¾" wide, of a rectangular configuration with a depressed center rectangular panel. Bents 5 and 10 are of similar dimensions but do not have the depressed center or opening. Bents 3 and 12 are of similar configuration as Bents 1, 2, 4, etc. with a depressed center rectangular panel and arched opening. These bents, located at the superstructure expansion joints, are 2'-6" thick, 9'-9¾" wide and vary in height at each location.

Bents 6 and 9, also located at superstructure expansion joints, are 2'-6" thick and 9'-9¾" wide with a flat non-depressed rectangular shape.

Bents 7 and 8 are actually the superstructure floorbeams since the rise of the arch has diminished the height of the bents at this location to zero. These floorbeams are doveled into the arch upon leveled pad areas.

The main pilasters are also constructed of reinforced concrete and serve three basic purposes: end support of approach span, end support of superstructure of main span, and support of light standards. The pilasters are supported by and doveled into the arch rib abutments.

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The term pilaster includes the actual pilasters, i.e., the concrete walls that support the light standard (and join the concrete columns) as well as the intermediate concrete columns and pier cap supporting the approach span and the dual-column pier cap supporting the main span.

The North and South Abutments are "short" stub abutments bearing on soil embankment. The abutments are of reinforced concrete "gravity type" construction with typical rear face batter of 4" horizontal : 12" vertical and no backwalls. The abutments are composed of three (3) distinct sections: one (1) each supporting the "deeper" fascia girders and one (1) main section supporting the interior girders. The total height of the abutments from bottom of footing to top of bridge seat measures 10'-0" at the fascia girder sections and 15'-10" at the interior girder section.

The abutment wingwalls (or approach walls) are also of reinforced concrete construction. The approach walls are supported on spread footings with an integral "shear key" (to resist sliding) and measure approximately 19'-9" from bottom of footing to top of sidewalk parapet. The footing elevations are placed approximately 5'-0" above the abutment footing elevations. The negative grade of the bridge from south to north and the constant height of each abutment results in different footing elevations for each abutment.

The arch ribs are of reinforced concrete construction with a varying cross-sectional depth: 4'-0" deep at midspan to 6'-0" deep at end support at the arch abutments. The width is a constant 10'-0" along the entire length.

The north approach is on a sharp horizontal curve with fairly steep negative grade to the south. Two side streets intersect the main approach roadway at varying skews. Horizontal and vertical sight distances are poor. The pavement at the immediate approach is bituminous while at a further distance concrete pavement is utilized.

The south approach is on a very slight horizontal curve with a nearly flat grade to the north. Horizontal and vertical sight distances are excellent. Pavement consists of bituminous overlay from the bridge joint to the Marple Avenue/Baltimore Pike intersection.

Guiderail is present at three of the four corners of the approaches. Sidewalks are also present at each approach on both sides.

CONSTRUCTION HISTORY

On December 13, 1927, the Delaware County Commissioners opened bids for the construction of the proposed bridge. Nineteen bids were received. They varied from the low bid of \$126,400 submitted by Carl R. Camp, Inc. of 10 South 18th Street, Philadelphia, to \$219,000 submitted by Edward Fry and Sons.

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After the bids were opened, the commissioners deferred the awarding of the contract until the necessary releases were procured from the owners of the three properties from whom right-of-way acquisition would take place.

At their next meeting, on December 27, 1927, the Commissioners released the following payments for right-of-way acquisition:

Kent Manufacturing Company	\$2,000.00
Edwin Bowden	6,000.00
Sun Oil Company	750.00

They also authorized the awarding of the bridge contract to the Carl R. Camp, Inc. Company.

Ground was broken for the project on December 29, 1927. During a brief ceremony held in the downpouring rain, Commissioner Harry M. Birney, Jr., chairman of the commissioners, dug up a spadeful of earth. Attending the ceremony along with other municipal and county officials were George Wright, County Engineer, A.F. Damon, Jr., Chief of the Upper Darby Department of Public Works and Carl R. Camp, the contractor. Following the formal groundbreaking, laborers immediately went to work on minor excavation. The major excavation for the piers and abutments began a few days later. According to a newspaper article of the day: "To build the new structure will require the use of ninety car loads of stone, forty five car loads of sand, and thirty cars of cement, in addition to many tons of other materials including 188 tons of reinforcing steel." The article went on to say; "When completed, the bridge will weigh 8,500 tons." It is interpreted that the term "car" refers to a railroad hopper car.

Construction on the bridge was completed in September of 1928, approximately nine months after the initial groundbreaking.

BRIDGE DEDICATION

The formal dedication ceremony was held on October 1, 1928. Although the weather was similar to that which had also occurred on the day of the groundbreaking, a newspaper reported that: "The cold rain that fell continually throughout the day failed to dampen the enthusiasm of the several thousands of residents from all sections of Delaware County who stood beneath umbrellas for hours Saturday afternoon to view the semi-military parade and demonstration that marked the dedication of the Lindbergh Bridge."

Grand Marshall of the parade was Major General William G. Price, Jr. who led the procession across the bridge. Following General Price were several companies of infantry, the Philadelphia Navy Yard Band, detachments of the 108th Field Artillery with several pieces of ordinance, and a troop of the National Guard's 103rd Cavalry. After dismounting from his horse, General Price stepped to the speaker's stand to review detachments of the Pennsylvania National Guard, representatives of American Legion Posts, delegations of Delaware County firemen, numerous

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bands, boy scouts, and a delegation of veterans of the Spanish-American War. The parade ended with 200 automobiles carrying businessmen and residents of Upper Darby and Clifton Heights.

At the close of the parade, a fireworks display preceded the beginning of the addresses. Numerous officials spoke of the bridge and Charles Lindbergh. The keynote speaker was Fletcher Stites, a former State Senator from Bucks County. In his remarks, Mr. Stites stated: "Today America honors him (Colonel Lindbergh) not only because he accomplished the wonderful feat of crossing unaccompanied the Atlantic Ocean from New York to Paris, but because he conducted himself in foreign lands and in America as a real American man. That is why we love him. Delaware County could do nothing greater or finer than to perpetuate his name with this magnificent and useful structure."

Since its opening in 1928, the Lindbergh Bridge has undergone numerous maintenance and rehabilitation efforts.

PRIOR REPAIR AND REHABILITATION EFFORTS

Prior bridge repair and rehabilitation efforts have occurred as follows:

In 1940, a complete overhaul of the sidewalk and curb were performed at an estimated cost of \$4,500.00. This overhaul consisted of removing the existing curbing and installing a taller concrete curb (12") as well as providing a 2" concrete overlay atop the sidewalk.

Subsequently, in 1971 additional sidewalk and curb repairs were performed. In this case the concrete curbing placed in 1940 was repaired and a new 1" bituminous overlay was placed atop the sidewalk. In addition, the existing bituminous overlay across the bridge was removed, the concrete deck waterproofed, and a new 3" bituminous overlay placed. The estimated cost was \$7,200.00.

During 1986, the reinforced concrete superstructure members were repaired through the chipping of concrete and patching with gunite. These repairs are estimated to cost \$4,000.00.

Since 1986, no other documented repairs have been performed on the structure.

SOURCES OF INFORMATION

A. Engineering Drawings:

On file at the Delaware County Department of Public Works.

B. Early Views:

Views on file at the Delaware County Historical Society.

C. Interviews:

No interviews were conducted.

D. Bibliography:

Delaware Valley Regional Planning Commission, Project Location Map.

Delaware Valley Regional Planning Commission, Regional Location Map.

"Ground Broken for New Span at Clifton Heights" Chester Times (Chester, PA) 29 December 1927, Page 1.

Havercamp, C. Fred (photographer), LINDBERGH BRIDGE, In *Delaware County Historical Society Photos of Bridges Album*, Broomall, PA, 1928.

Minutes of the Delaware County Commissioners - June 21, 1927 through September 30, 1930, Minute Book No. 18.

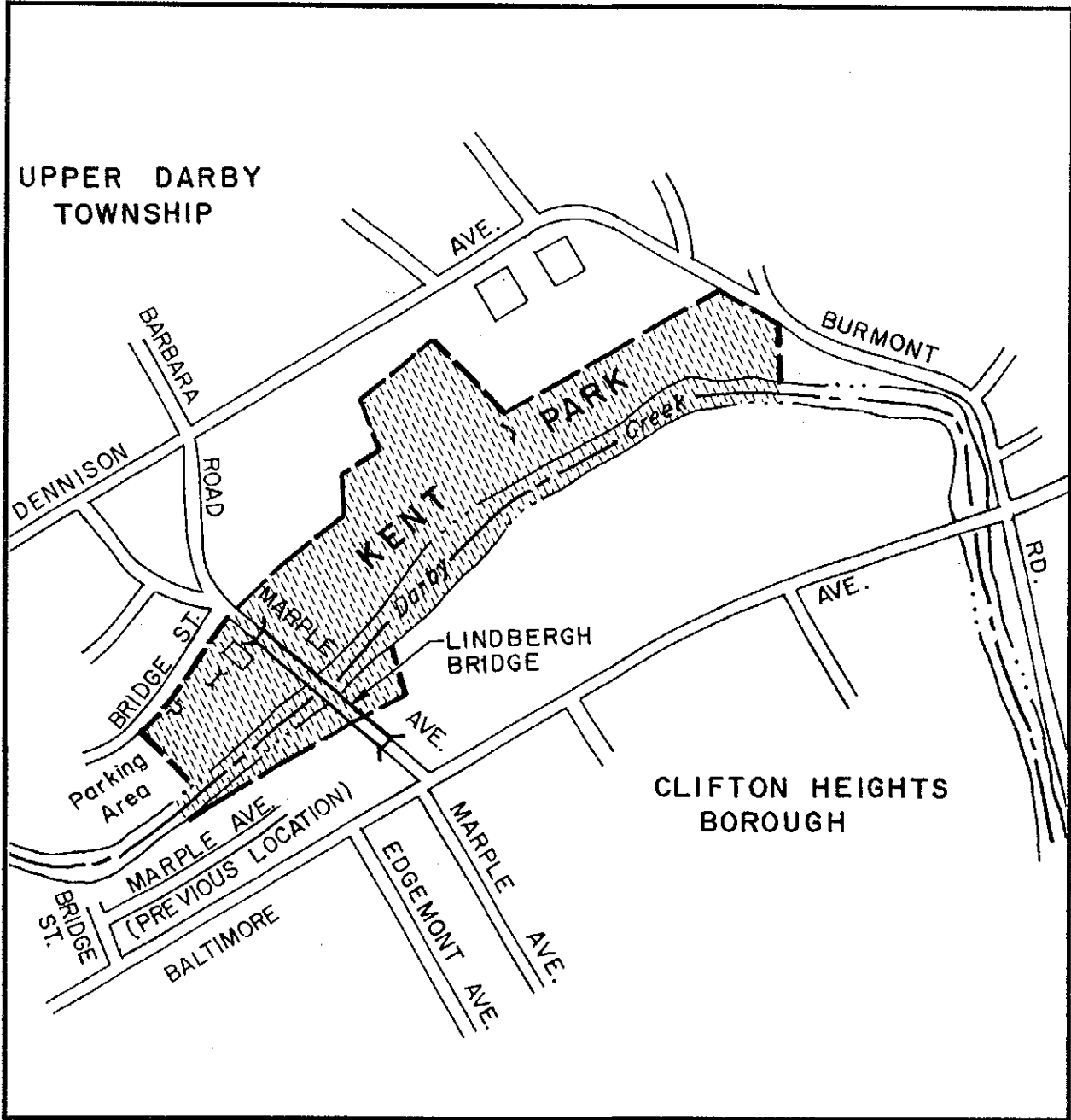
"Open Bids for New Bridge at Clifton Heights" Chester Times (Chester, PA) 13 December 1927, Pages 1, 2.

"Thousand See Dedication of Lindbergh Span" Chester Times (Chester, PA) 1 October 1928, Pages 1, 11.

West, Huston (photographer), LINDBERGH BRIDGE, In *Delaware County Historical Society Photo Files*, Broomall, PA, 1939.

E. Likely Sources Not Yet Investigated:

There are no likely sources yet to be investigated.



Site Plan



SCALE: 1" = 400

