United States Department of the Interior  
National Park Service  

National Register of Historic Places  
Inventory—Nomination Form  

See instructions in How to Complete National Register Forms  
Type all entries—complete applicable sections  

1. Name  

historic

and or common  Allegheny County Owned River Bridges Thematic Group  

2. Location  

street & number  Allegheny, Monongahela, and Ohio Rivers  
   Pittsburgh, Homestead,  
   Coraopolis, Neville Twp.  

state  Pennsylvania  

3. Classification  

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4. Owner of Property  

name  County of Allegheny; Department of Engineering and Construction  

street & number  501 County Office Building, Ross Street  

5. Location of Legal Description  

courthouse, registry of deeds, etc.  Allegheny County Office Building  

street & number  Ross Street  

5. Location of Legal Description  

courthouse, registry of deeds, etc.  Allegheny County Office Building  

street & number  Ross Street  

6. Representation in Existing Surveys  

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<td>Pennsylvania Historical and Museum Commission</td>
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city, town  Harrisburg  

state  Pennsylvania
### Condition
- excellent
- deteriorated
- good
- unaltered
- fair
- ruines
- original site
- flat
- moved
- date
- 1927 (Coraopolis Bridge)

#### Describe the present and original (if known) physical appearance

This thematic nomination consists of seven roadway bridges which cross the major rivers in Allegheny County and are owned by the county. The county-owned bridges are part of a group of thirty-five roadway bridges that cross the county's three major rivers. These thirty-five bridges are the most visually prominent, functionally important, and structurally significant of the county's more than 1,700 bridges. Of the thirty-five bridges, twenty-two are owned by the Pennsylvania Department of Transportation and thirteen are owned by Allegheny County. Of the twenty-two state-owned bridges, two are listed in the National Register of Historic Places and others which are eligible for listing are currently being nominated for inclusion. 1

Of the thirteen county-owned bridges, four are ineligible because they are less than fifty years old. Two more county-owned bridges are ineligible because they are being replaced. The remaining seven county-owned bridges are eligible for nomination because they pre-date 1935, are free of major alterations, and have significance in the areas of county transportation, engineering and politics. One of the seven eligible bridges, the Sixteenth Street Bridge, is already listed on the National Register of Historic Places.

The seven bridges included in this nomination cross Allegheny County's three major rivers: four cross the Allegheny, two cross the Monongahela and one crosses the Ohio. They are important links in the tracery of bridges which tames the local topography and provides essential corridors for transportation. Five of the bridges—Sixth, Seventh, Ninth, Sixteenth, and S. Tenth Street Bridges—link dense urban areas with Pittsburgh's downtown which occupies a triangle of land at the confluence of the three rivers. The Homestead High-Level Bridge links the steel town of Homestead with Pittsburgh's residential East End. And the Coraopolis Bridge links the town of Coraopolis with heavily industrialized Neville Island by crossing a back channel of the Ohio.

Each bridge responds to both the topography and the land and water transportation requirements of its site. The bridges are all multi-span structures, and range in length from 995 to 3107 feet. The Sixth, Seventh, and Ninth Street Bridges are notable for their rather abrupt terminations at the shorelines; but the Sixteenth Street and the Homestead High-Level Bridges, in particular, cross significant distances over land and riverside railroad and industrial facilities in preparation for their actual river crossings. The majority of the bridges spring from relatively flat land, but the northern end of the Homestead High-Level Bridge springs from a high bluff.

All of the bridges are in use for automobile traffic, but they all originally carried streetcar lines as well. Six of the bridges have four lanes of traffic and sidewalks on both sides. The Coraopolis Bridge is wide enough for three lanes, but now carries two and has only a single sidewalk. All of the bridges have sufficient clearance over the rivers to allow for the passage of river traffic as required by the U.S. Army Corps of Engineers for each specific site.

Six of the bridges continue to meet the necessary requirements of their original sites. But the Coraopolis Bridge, which was originally located on the Allegheny River at Sixth Street in Pittsburgh, was moved to its present site in 1927. It has demonstrated unusual topographic versatility by its effective erection at two different sites. Its movement, however, was necessitated by its limitations in the face of changing land and water transportation requirements.

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1. The Pennsylvania Historical and Museum Commission is preparing a nomination of all state-owned highway bridges in Pennsylvania that are eligible for the National Register of Historic Places.
The bridges range in date from the 1892 Corapolis Bridge to the 1937 Homestead High-Level Bridge. The other five were all built by the County during a period of particularly extensive public improvements between 1924 and 1932.

The bridges are all essentially of steel construction, but they represent a variety of structural types. The Corapolis Bridge is a through truss bridge with two bow string trusses. The Sixteenth Street Bridge is a through arch bridge with three tied arches. Three are nearly identical self-anchored eyebar-catenary suspension bridges: the Sixth, Seventh, and Ninth Street Bridges. The S. Tenth Street Bridge is a wire-cable suspension bridge. And the Homestead High-Level Bridge is a deck truss bridge employing a Wichert continuous truss. Six of the seven bridges rest on piers faced with masonry; only the Corapolis Bridge has unadorned concrete piers.

The Sixth, Seventh, and Ninth Street Bridges and the Sixteenth Street Bridge have decorative masonry pylons rising above the deck at the abutments. These contain lanterns at the first three bridges, and are topped with elaborate bronze winged seahorse and globe sculptures at the Sixteenth Street Bridge. The towers of the S. Tenth Street Bridge are architectonic and have a Modernistic quality. But, for the most part, the bridges rely on their structural forms for aesthetic impact. The through truss and through arch bridges display complexity and rhythm; the suspension bridges communicate grace and lightness; and the deck truss Homestead High-Level Bridge presents elegant if spare functionalism.

Aside from general maintenance and repairs, deck work, and the new work (including piers) necessary to reerect the Corapolis Bridge, the bridges are not known to have experienced any major alterations.
8. Significance

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Specific dates 1892–1937    Builder/Architect (Various)

Statement of Significance (in one paragraph)

Allegheny County, Pennsylvania is one of the country's foremost centers for bridge-building. The county's bridges meet specific topographical conditions in a terrain of hills and valleys and four rivers, and are essential elements in determining the visual character of Pittsburgh and its environs. They also meet local transportation needs, and have played a crucial functional role in regional urban development. Because of the overall significance of bridges to Allegheny County, the means whereby bridge-building has been carried out here assume importance. The County itself has been the major local bridge-building agency. Its modes of operation and the bridges which it built are important aspects and elements of American bridge-building history. But aside from their significance as the product of a political vehicle in a region that both requires and showcases bridges, the bridges themselves are significant as the work of prominent engineers and architects and, in some cases, as nationally acknowledged examples of innovative engineering.

Allegheny County is carved out of the rugged terrain of western Pennsylvania. The land is generally uneven with steep hills and deep narrow valleys. But the major topographical features are the broad river valleys, for it is in Allegheny County that the region's four rivers--the Youghiogheny, Monongahela, Allegheny, and Ohio--conjoin. Bridges played an early role in the development of this land from the simplest bridge over a narrow stream or "run," to the first river crossing of the Smithfield Street Bridge over the Monongahela in 1818. Today the county has over 1700 bridges spanning from hill to hill and shoreline to shoreline. These bridges include nearly every standard bridge type--except for ones with movable spans and very recent varieties--as well as some examples of rare types. The river bridges are the most prominent. A view along any of the county's rivers yields a rhythmic succession of crossings. There are both railroad and roadway crossings, but the roadway bridges are the more numerous and dramatic and better visually emphasize the area's topographic forms and its unique patterns of development. And they are part of a nationwide trend: after 1925, the longest and most important bridges, and the great majority of all bridges, were built for roadways.1

All of the roadway bridges included in this nomination have served notable river crossings. The Coraopolis Bridge stood from 1892-1927 as the third bridge at the Sixth Street crossing of the Allegheny River which first linked downtown Pittsburgh and its sister city of Allegheny in 1819.2 The bridge's current Coraopolis-Neville Island site on a back channel of the Ohio River is considerably less conspicuous; but its successor Sixth Street Bridge of 1928 and the contemporary Seventh and Ninth Street Bridges which also replaced
earlier bridges, are also included in this nomination. That three nearly consecutive streets required river crossings and a succession of new bridges signifies the importance of the connection between downtown Pittsburgh and Allegheny (Pittsburgh's North Side after annexation in 1907). The Sixteenth Street Bridge (1923), further up river, has served a similar purpose after replacing an earlier structure.

The S. Tenth Street Bridge of 1932 is sited at the narrowest point on the Monongahela River's course through Pittsburgh, and connects central Pittsburgh to the city's South Side. The bridge was expressly planned to improve this linkage by replacing an earlier bridge and complementing the Armstrong Tunnel, built through a bluff at the bridge's north end in the 1920s. The Homestead High-Level Bridge (1937), further up the Monongahela, replaced the 1894 Brown's Bridge which had been 1,300 feet long but only 19 feet wide, had a steep and winding northern approach, and ended in a succession of railroad grade crossings. The present bridge is slightly downstream from the former crossing, and gains its name from its much higher course which evaded the northern approach and spanned the railroads.

With rare exceptions, roadway river bridges were privately built and operated as toll crossings throughout the nineteenth century. The Coraopolis Bridge, for instance, when first erected at Sixth Street, Pittsburgh in 1892, was built by the Sixth Street Bridge Company and Fidelity Title and Trust Company. It was a toll bridge until acquired and declared free by the County in 1911. The other bridges included in this nomination, however, were all built by Allegheny County itself and never collected tolls.

When the Sixteen Street Bridge was erected in 1923, the County employed a few engineers under the supervision of a County Engineer—James G. Chalfant at this time. Much of the engineering work on this bridge, however, was actually done by an outside consultant, and a New York architectural firm and sculptor also contributed to the design.

Despite isolated projects like the Sixteenth Street Bridge, there was a broad perception in the early 1920s that the community at large "due to the war and other causes had been dilatory in carrying on [its] annual normal necessary public improvements." A new Board of County Commissioners sought to rectify this situation and assume County leadership for public works projects. The commissioners undertook an extensive program of bridge and highway construction in 1924 with two pivotal acts: they issued bonds totaling $29,207,000 and established an Allegheny County Department of Public Works so that "[they] would have a responsive engineering organization to carry out the mandate of the people in an efficient and expeditious manner."
The new Department of Public Works consisted of a Bureau of Bridges, a Bureau of Highways, a Bureau of Tests and Materials, and a Department of Architecture with some responsibility for assistance in bridge design. Vernon R. Covell, a long-time county engineer, was appointed Chief Engineer of the Bureau of Bridges, and Stanley Roush, a local architect, was placed in charge of the Department of Architecture. The Department of Public Works quickly acquired a large staff of engineers and architects because of the need to meet an ambitious schedule of projects, and political patronage.

The Sixth, Seventh and Ninth Street Bridges were among the many major County projects completed between 1924 and 1928. A second bond issue was made in 1928 totaling $43,680,000. This work extended to 1932 and included the S. Tenth Street Bridge. While running for re-election in 1931, Joseph G. Armstrong was able to claim that the County public works program had made a major contribution to local employment both through construction work and the patronizing of local industries—every pound of steel used in the bridges was manufactured locally, and that more County improvements had been made during the prior eight years than during the previous 136 years of the county's existence.5

Armstrong and his fellow commissioners were not re-elected, however. A new Board of Commissioners dismissed most of the Department of Public Works staff and divided the Department's responsibilities between the County Planning Commission and a County Works Department. In 1936 bridge-building responsibility was consolidated under the County Works Department. The major projects of this period, however, were completed under the control of the Allegheny County Authority which was established to take advantage of federal Public Works Administration funds. The Authority was supervised by a board of engineers and architects, and employed outside consultants as well as a staff which included former County employees. The Homestead High-Level Bridge was built by the Allegheny County Authority as part of PWA project no. 2976.

In addition to volatile political conditions, a framework of external controls has molded Allegheny County bridge-building practice. During the 1920s, plans for each bridge over a navigable stream were approved by over a dozen official and civic organizations including such diverse authorities as the U. S. War Department and the Pittsburgh Municipal Art Commission. The impact of these two was most thoroughly felt along the Allegheny. The then existing Sixth, Seventh, and Ninth Street Bridges were condemned and ordered removed by the War Department in 1919 because they were obstructions to navigation. The replacement bridges of the 1920s met War Department requirements. But they were also a product of the Municipal Art Commission which virtually dictated their form because of a preference for suspension bridges. The Commission had also greatly influenced the design of the rather baroque Sixteenth Street Bridge.
A number of significant engineers were associated with the bridges included in this nomination. Theodore Cooper had important roles in building the Sads Bridge in St. Louis and the Brooklyn Bridge in New York, and by the turn of the century was an eminent railroad bridge engineer. The monumental Quebec Bridge of 1907, however, collapsed with 82 lives lost while being constructed under his supervision. Before this ignoble end to an illustrious career, Cooper designed the Coraopolis (formerly Sixth Street) Bridge of 1892, which is reported to be the only surviving work solely of his design. The Sixteenth Street Bridge is credited to county engineer James G. Chalfant. But H.G. Balcom of New York was a consulting engineer, and the bridge can be added to his distinguished list of engineering works which includes Grand Central Station, Rockefeller Center, and the Empire State Building.

The Sixth, Seventh, Ninth, and S. Tenth Street Bridges are generally attributed to Vernon R. Covell. Covell worked for the County from 1906 into the 1930s and was Chief Engineer after 1922. Most of the actual design work was apparently done by subordinates, but the bridges, and other works produced under Covell’s authority, are of uniformly high quality. These include the tied-arch West End Bridge which is listed on the National Register of Historic Places. One notable subordinate was George S. Richardson who largely designed the Homestead High-Level Bridge for the Allegheny County Authority. The genius of this bridge, however, was Pittsburgh engineer E. M. Wichert who developed and patented the “Automatically Adjustable Continuous Bridge.”

A few of the bridges reflect the work of notable architects. Warren and Wetmore of New York, architects for the Sixteenth Street Bridge, had a nationwide private practice and did design work for Grand Central Station and an extensive collection of railroad stations and hotels. Stanley Roush's work, on the other hand, was almost solely local and public. He was Pittsburgh City Architect from 1914-21 and County Architect from 1921-32. He made necessary alterations to H.H. Richardson's Allegheny County Courthouse after street-lowering operations, designed new portals for Gustav Lindenthal's Smithfield Street Bridge after it was widened, designed the Allegheny County Office Building, and contributed to the design of many of the county's tunnels, bridges, and other public works. His projects include the Sixth, Seventh, Ninth, and S. Tenth Street Bridges.

These men designed bridges which reflected national trends in bridge-building. By the turn of the century, steel had become the choice structural material. It enabled engineers to design bridges that, for all practical purposes, would not need to be replaced. This advantage was accompanied by a steady increase in the quality and decrease in the cost of steel. All of the bridges included in this nomination are products of this new age of steel. The Coraopolis and Sixteenth Street Bridges reflect the early large-scale applications of steel
in heavy truss and arch bridges which reached their peak of development in the early twentieth century. The Sixth, Seventh, Ninth, and S. Tenth Street Bridges represent the popularity of the leaner steel suspension bridge in the 1930s. The Homestead High-Level Bridge represents a stage in experimentation with the ideal continuous steel truss.

In addition to (or in spite of) their participation in national trends, four of the nominated bridges are widely acknowledged examples of innovative engineering. The Sixth, Seventh, and Ninth Street Bridges have three claims to national significance: they were the United States' first self-anchored suspension bridges; are the only important surviving examples of the eyebar-catenary suspension bridge in this country; and are the nation's only trio of virtually identical spans.6 (The Sixth Street Bridge, completed in 1928, also received the first annual most beautiful bridge of the year award from the American Institute of Steel Construction).

The three self-anchored suspension bridges were a creative solution to the conflicting demands of official bodies and the bridge sites. The Allegheny River shorelines were not suitable for the anchorages of typical suspension bridges, as desired by the Municipal Arts Commission. With the self-anchored suspension bridge, the anchorages are eliminated by using the stiffening girder which carries the deck as a compression member to resist the horizontal pull of the suspension system. Eyebars were chosen for the suspension system because they could better connect with the stiffening girder. The bridges were actually erected as cantilever structures until the catenaries were completed.7

The Homestead High-Level Bridge was the first major span of Wichert trusses ever built. The Wichert truss was a solution to the problems posed by the continuous truss: a truss which passes over multiple points of support but functions as a single structural member along its entire length. The key to the Wichert truss was a Y-shaped member, rising from each pier, to which the lower chord of each span was hinged. The result was that each span could act independently, but the load was distributed over the length of the bridge.8 The Wichert truss was a major advance, but received limited use because alternate means of continuous trusses design were soon developed. The Homestead High-Level Bridge is just short of fifty years old, but its significance as a rare and prominent example of an innovative engineering technique, and its role in the history of Allegheny County bridge-building, qualify it as a part of this thematic nomination.

2. The second Sixth Street Bridge was an early (1859) suspension bridge designed by John A. Roebling.


7. Plowden, p. 238. Only seven large eyebar suspension bridges were built in North America; five were in Pittsburgh.

9. Major Bibliographical References

Armstrong, Joseph G. "8 Eventful Years" (pamphlet). 1931.


10. Geographical Data

Acreage of nominated property (see attached survey forms)

Quadrangle name: Ambridge, Pittsburgh East

UTM References: Pittsburgh West quadrangles

A Zone [ ] Easting [ ] Northing [ ]

B Zone [ ] Easting [ ] Northing [ ]

C Zone [ ] Easting [ ] Northing [ ]

D Zone [ ] Easting [ ] Northing [ ]

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F Zone [ ] Easting [ ] Northing [ ]

G Zone [ ] Easting [ ] Northing [ ]

Verbal boundary description and justification

See Individual Survey forms

List all states and counties for properties overlapping state or county boundaries

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11. Form Prepared By

name/title: Martin Aurand; Director, Preservation Research

organization: Pittsburgh History and Landmarks Foundation

date: July 1985

street & number: 450 The Landmarks Building

telephone: (412) 471-5808

city or town: Pittsburgh

state: Pennsylvania

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

X national  [ ] state  [ ] local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

[Signature]

date: [11/19/85]

title: Dr. Larry E. Tise, State Historic Preservation Officer

For NPS use only

I hereby certify that this property is included in the National Register

Keeper of the National Register

Attest:

Chief of Registration


Proceedings of the Engineer's Society of Western Pennsylvania. Various years.

Richardson, George S. History of Allegheny County Bridges (Manuscript). 1979.

United States Department of the Interior  
National Park Service  
National Register of Historic Places  
Inventory—Nomination Form

Name: Allegheny County Owned River Bridges Thematic Resources  
State: Allegheny County, PENNSYLVANIA  

Nomination/Type of Review

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