

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM

NH

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC

Smithfield Street Bridge

AND/OR COMMON

Smithfield Street Bridge

2 LOCATION

STREET & NUMBER

Smithfield Street at the Monongahela River

CITY, TOWN

Pittsburgh

VICINITY OF

CODE

42

NOT FOR PUBLICATION

CONGRESSIONAL DISTRICT

14th

STATE

Pennsylvania

COUNTY

Allegheny

CODE

003

3 CLASSIFICATION

CATEGORY

—DISTRICT

—BUILDING(S)

☒ STRUCTURE

—SITE

—OBJECT

OWNERSHIP

☒ PUBLIC

—PRIVATE

—BOTH

PUBLIC ACQUISITION

—IN PROCESS

—BEING CONSIDERED

STATUS

☒ OCCUPIED

—UNOCCUPIED

—WORK IN PROGRESS

ACCESSIBLE

—YES: RESTRICTED

—YES: UNRESTRICTED

—NO

PRESENT USE

—AGRICULTURE

—COMMERCIAL

—EDUCATIONAL

—ENTERTAINMENT

—GOVERNMENT

—INDUSTRIAL

—MILITARY

—MUSEUM

—PARK

—PRIVATE RESIDENCE

—RELIGIOUS

—SCIENTIFIC

☒ TRANSPORTATION

—OTHER

4 OWNER OF PROPERTY

NAME

State of Pennsylvania, Department of Transportation

STREET & NUMBER

State Capitol

CITY, TOWN

Harrisburg

VICINITY OF

STATE

Pennsylvania

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC

Allegheny County Courthouse

STREET & NUMBER

414 Grant Street

CITY, TOWN

Pittsburgh

STATE

Pennsylvania

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

Historic American Engineering Record Survey

DATE

1973

☒ FEDERAL —STATE —COUNTY —LOCAL

DEPOSITORY FOR
SURVEY RECORDS

Division of Prints & Photographs, Library of Congress

CITY, TOWN

Washington, D. C.

STATE

DESCRIPTION

CONOITION

☐ EXCELLENT
☐ GOOD
☒ FAIR

☐ DETERIORATED
☐ RUINS
☐ UNEXPOSED

CHECK ONE

☐ UNALTERED
☒ ALTERED

CHECK ONE

☒ ORIGINAL SITE

☐ MOVED DATE _____

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Designed by Gustav Lindenthal and built between 1881 and 1883, the Smithfield Street Bridge is a Pauli (or lenticular) truss with two main channel spans of 360 feet. In 1890-91, the addition of a third, 2-span truss, 20 feet upstream from the original structure, doubled the bridge's width to 40 feet and allowed the separation of vehicular traffic from the street car lines. This was a modification anticipated in the original plans. In 1911, this third truss was moved another 4.5 feet to provide wider access.

The chords of the truss, the diagonal ties, the pins, and the pier-posts are all made of steel. The six plate girders in each span are wrought iron, as are the vertical web members of the truss. The original roadway consisted of preserved wood bolted to the iron floor girders. In 1934, the loading on the structure was lightened by removing the iron girders and installing an aluminum deck on the vehicular half of the bridge. In 1967, this was replaced by another new aluminum deck.

The steel trusses are supported by rusticated stone piers of a rock-faced masonry. Situated upon the two end piers are the portal archways. The original one-lane entrance was polychrome, with a bracketed cornice and a mansard roof. The towers were cast iron and the roofs were wrought iron. They encased the steel end posts of the truss but were not in any way connected to them. When the bridge was widened in 1890-1891, a set of archways similar to the originals were placed at the ends of the new roadway. However, these portals were built without mansard roofs. Soon after this, the roofs of the original portals were removed.

Between 1911 and 1915, the original wrought iron portals were removed and replaced with new ones made of cast steel. These are the portals in place today. Their architectural character is Norman Romanesque with elliptical basket-handle arches, sculptural corbeled imposts on the intradoes, and a crenelated cornice. A trifol arch band runs under the cornice and caps a series of heraldic plaques. This heraldry is echoed in larger plaques positioned at the crown of the arches. Torch-like ornaments protrude from the columns at the height even with the corbeled imposts. The columns are capped with skeletal spires supporting spiked spheres. Like many of its architectural counterparts, the portals display complex roof line silhouettes. The contrast of large and small ornamental features creates a variety of textural effects.

SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input checked="" type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION
<input type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input type="checkbox"/> INVENTION		

SPECIFIC DATES 1883-1889

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

The Smithfield Street Bridge is an important structure in the history of American engineering. One of the first steel trusses in the United States, it became a symbolic landmark for the entire American steel industry. Its relation to the surrounding environment sets a standard of urban design rarely surpassed in the 20th century. Built on a site with a great tradition of bridge building, it is a structural and aesthetic monument of national significance.

The designer of the bridge, Gustav Lindenthal, was to become one of America's foremost civil engineers of the early 20th century. Responsible for such masterpieces as the spectacular Hell Gate Bridge (1914) in New York City and the mighty Sciotoville Bridge (1917) over the Ohio, Lindenthal completed his first great work with the 1883 Smithfield Street Bridge, spanning the Monongahela. A young engineer from Germany, his genius demonstrated itself from the very beginning of his career. Following Louis Wernwag's 1818 Burr Arch Truss and John Roebling's 1846 suspension bridge (a precursor to his world famous Brooklyn Bridge), Lindenthal built a structure worthy of continuing their great tradition.

In an article written for the September 1883 Transactions of the American Society of Civil Engineers, Lindenthal emphasized that the use of steel in the main structural members was an important feature of the bridge design. The first steel bridge in America was the 1874 Eads Bridge in St. Louis (National Historic Landmark 1964), built by James B. Eads. The first steel truss bridge was built in 1879 in Glasgow, Missouri, by W. S. Smith. Shortly after this, Lindenthal introduced the steel truss bridge to the eastern United States. Utilizing steel made in Pittsburgh, a city of international stature in the steel industry, he was able to reduce construction costs by over \$20,000. Though initially chosen for economic reasons, the steel structural members have also proven to be the most enduring aspect of the design, allowing the bridge to function safely for over 93 years under the weight of ever-increasing loads. In his 1883 report, Lindenthal presented a detailed analysis of structural tests made on a variety of steel specimens. This analysis, in conjunction with a full description of the construction methods used in erecting the bridge, gave the next generation of American civil engineers a practical reference to steel truss design and construction.

It should not be thought, however, that the sole importance of the Smithfield Street Bridge is its innovative use of material. Lindenthal understood the important position the bridge would occupy in the urban landscape and, accordingly, he wanted a structure which would be pleasing to the eye. Though he had strong structural motives

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in selecting the Pauli lenticular truss for the main channel spans, he was equally attracted to the graceful, flowing quality of their design. When built, the Smithfield Street Bridge was the largest lenticular truss in America, and it retains this status today. There are approximately fifteen lenticular trusses still existing in the United States, and Lindenthal's two 360' spans remain the longest in the Nation. The distinctive portals of the bridge accentuate the aesthetic nature of the structure and distinguish it from any other American bridge.

Now the oldest steel truss in the United States, the Smithfield Street Bridge has been a source of inspiration to over three generations of Americans. In designating it a national historic civil engineering landmark, the American Society of Civil Engineers have recognized it as an invaluable part of our engineering heritage. It has attained even greater importance as a cultural symbol of technology's ability to relate to society on a vibrant, human level. Gustav Lindenthal's design is more than an exercise in the innovative use of materials; it is a powerful display of the beauty inherent within our Nation's technological capabilities.

☐ MAJOR BIBLIOGRAPHICAL REFERENCES

Lindenthal, Gustav, "Rebuilding of the Monongahela Bridge at Pittsburgh, Pa,"
Transactions of the American Society of Civil Engineers, vol. 12, no. 263 (Sept., 1883).
Condit, Carl W., American Building, Chicago: University of Chicago Press, 1968, p. 103.
The Scientific American, vol. 49, no. 12 (September 22, 1883), pp. 175-180.

☐ GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

UTM REFERENCES

A 17 584630 4476290
ZONE EASTING NORTHING
C

B
ZONE EASTING NORTHING
D

VERBAL BOUNDARY DESCRIPTION

The bridge crosses the Monongahela River, one-half mile upstream from its junction with the Allegheny River in Pittsburgh, Pennsylvania.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
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STATE	CODE	COUNTY	CODE
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☐ FORM PREPARED BY

NAME / TITLE

Donald C. Jackson, Engineer

ORGANIZATION

Historic American Engineering Record

DATE

March, 1973

STREET & NUMBER

National Park Service

TELEPHONE

523-5460

CITY OR TOWN

Washington, D. C.

STATE

☐ STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL X

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

TITLE

DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
ATILSI

DATE

KEEPER OF THE NATIONAL REGISTER

