Form No. 10-300 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

NH

FOR NPS USE ONLY

RECEIVED

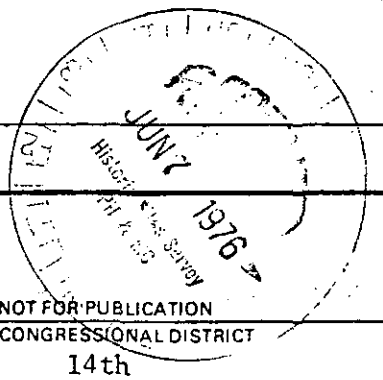
DATE ENTERED

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Smithfield Street at the Monongahela River — NOT FOR PUBLICATION

CITY, TOWN
Pittsburgh — VICINITY OF

CONGRESSIONAL DISTRICT
14th

STATE	CODE	COUNTY	CODE
Pennsylvania	42	Allegheny	003

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	X PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
__BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
X STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	__YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	X TRANSPORTATION
		__NO	__MILITARY	__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 — X FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS
Division of Prints & Photographs, Library of Congress

CITY, TOWN
Washington, D. C.

STATE

DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
_EXCELLENT	_DETERIORATED	_UNALTERED	X ORIGINAL SITE
_GOOD	_RUINS	X ALTERED	_MOVED DATE_____
X FAIR	_UNEXPOSED		

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 trifoil 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			
_ PREHISTORIC	_ARCHEOLOGY-PREHISTORIC	_COMMUNITY PLANNING	_LANDSCAPE ARCHITECTURE	_ RELIGION
_1400-1499	_ARCHEOLOGY-HISTORIC	_CONSERVATION	_LAW	_SCIENCE
_1500-1599	_AGRICULTURE	_ECONOMICS	_LITERATURE	_SCULPTURE
_1600-1699	_ARCHITECTURE	_EDUCATION	_MILITARY	_SOCIAL/HUMANITARIAN
_1700-1799	_ART	X_ENGINEERING	_MUSIC	_THEATER
X1800-1899	_COMMERCE	_EXPLORATION/SETTLEMENT	_PHILOSOPHY	_TRANSPORTATION
_1900-	_COMMUNICATIONS	_INDUSTRY	_POLITICS/GOVERNMENT	_OTHER (SPECIFY)
		_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

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.

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	17	580460	4476290
B			
C			
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
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

Donald C. Jackson, Engineer

ORGANIZATION — DATE

Historic American Engineering Record — March, 1973

STREET & NUMBER — TELEPHONE

National Park Service — 523-5460

CITY OR TOWN — STATE

Washington, D. C.

12 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

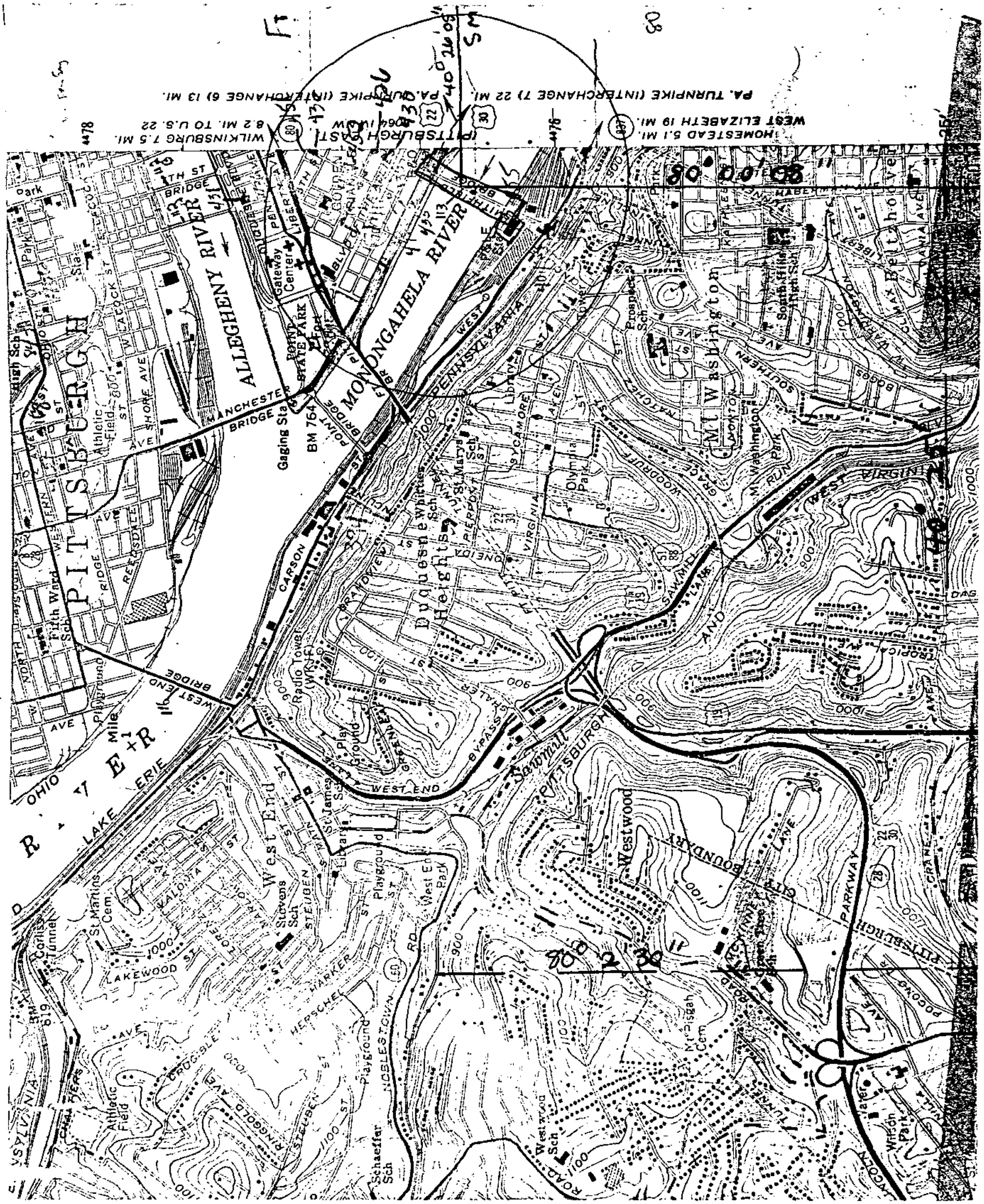
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST DATE

KEEPER OF THE NATIONAL REGISTER


PA. TURNPIKE (INTERCHANGE 6) 13 MI.
PA. TURNPIKE (INTERCHANGE 7) 22 MI.
WILKINSBURG 7.5 MI.
8.2 MI. TO U.S. 22
PITTSBURGH EAST
WEST ELIZABETH 19 MI.
HOMESTEAD 5.1 MI.
PITTSBURGH
ALLEGHENY RIVER
MONONGAHELA RIVER
OHIO RIVER
MANCHESTER BRIDGE
WEST END BRIDGE
POINT BRIDGE
POINT STATE PARK
Gateway Center
Gaging Sta
BM 764
CARSON
Duquesne Heights
Mt Washington
West End
Westwood
Sawmill
SAWMILL RUN
WEST VIRGINIA
LAKE ERIE
PENNSYLVANIA
PITTSBURGH CITY BOUNDARY
PARKWAY
Radio Tower (WRYT)
St Marys Sch
Olympia Park
Prospect Sch
South Hills High Sch
Fifth Ward Sch
Athletic Field
St Martins Cem
Stevens Sch
West End Park
Playground
Schaeffer Sch
Westwood Sch
Mt Pisgah Cem
Corliss Tunnel
Library
BYPASS