

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

FOR NPS USE ONLY	
RECEIVED	AUG 6 1977
DATE ENTERED	01 3

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

1 NAME

HISTORIC Dock Bridge *HAER*
AND/OR COMMON Railroad Lift Bridge over the Passaic River

2 LOCATION

STREET & NUMBER Passaic River
CITY, TOWN Newark
STATE New Jersey
VICINITY OF CODE 34
CONGRESSIONAL DISTRICT 10th
COUNTY CODE Essex 013

3 CLASSIFICATION

(also in Hudson County)

CATEGORY	OWNERSHIP	STATUS	PRESENT USE
<input type="checkbox"/> DISTRICT	<input type="checkbox"/> PUBLIC	<input checked="" type="checkbox"/> OCCUPIED	<input type="checkbox"/> AGRICULTURE
<input type="checkbox"/> BUILDING(S)	<input checked="" type="checkbox"/> PRIVATE	<input type="checkbox"/> UNOCCUPIED	<input type="checkbox"/> COMMERCIAL
<input checked="" type="checkbox"/> STRUCTURE	<input type="checkbox"/> BOTH	<input type="checkbox"/> WORK IN PROGRESS	<input type="checkbox"/> EDUCATIONAL
<input type="checkbox"/> SITE	PUBLIC ACQUISITION	ACCESSIBLE	<input type="checkbox"/> ENTERTAINMENT
<input type="checkbox"/> OBJECT	<input type="checkbox"/> IN PROCESS	<input checked="" type="checkbox"/> YES: RESTRICTED	<input type="checkbox"/> GOVERNMENT
	<input type="checkbox"/> BEING CONSIDERED	<input type="checkbox"/> YES: UNRESTRICTED	<input type="checkbox"/> INDUSTRIAL
		<input type="checkbox"/> NO	<input type="checkbox"/> MILITARY
			<input type="checkbox"/> MUSEUM
			<input type="checkbox"/> PARK
			<input type="checkbox"/> PRIVATE RESIDENCE
			<input type="checkbox"/> RELIGIOUS
			<input type="checkbox"/> SCIENTIFIC
			<input checked="" type="checkbox"/> TRANSPORTATION
			<input type="checkbox"/> OTHER:

4 OWNER OF PROPERTY

NAME Northeast Corridor Operations, National Railroad Passenger Corporation/Amtrak
STREET & NUMBER 1617 John F. Kennedy Building, Room 603
CITY, TOWN Philadelphia
STATE Pa. 19103

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

STREET & NUMBER

CITY, TOWN

STATE

6 REPRESENTATION IN EXISTING SURVEYS

TITLE Northeast Corridor Aerial Reconnaissance of Historic Structures

DATE

13-15 April 1977

FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR SURVEY RECORDS Federal Railroad Administration, DOT/HAER, National Park Service

CITY, TOWN

Washington

D.C.

STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input checked="" type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED DATE _____
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Dock Bridge over the Passaic River in Newark, New Jersey, a through-truss lift bridge, was constructed in 1935 by Waddell & Hardesty, Consulting Engineers, after the patent of Dr. J.A.L. Waddell. It was constructed for the Pennsylvania Railroad with T.W. Pinard, Chief Engineer of the railroad.

The structure consists of two deck girder approach spans 94 feet and 64 feet long, respectively; a through Warren truss, with verticals, lift span 230 feet long and two deck girder approach spans 64 and 68 feet long, respectively. Bridge A8.50 carries three tracks and C8.50 carries one track. PATH trains are carried on a separate span. The bridges are side by side and operate independently. This bridge has two sets of lift towers supporting three lift towers. The south towers support two bridge structures. Each span has the moving machinery located at the center of the span on the top chord of the trusses.

The substructure is 24 feet above mean high water and the abutments and piers are concrete with stone facings. There are timber fenders on both sides of the channel at the rest piers.

The main drive motors are 260-horsepower DC series wound electric motors. There are electro-hydraulic trustor brakes on each motor. The motors are geared through common spur reduction gears on shafts which transmit power to the cable drums. Cables run over the cable drums to the end of the span where they pass over an idler sheave to the bridge sheave. The bridges are raised and lowered by uphaul and downhaul cables. The counterweight cables are attached to the top chord of the trusses and run over sheaves. There is a 150 horsepower gasoline engine in the machinery house of each span. This engine serves as an emergency power source. There are compressors in the operator's house basement for bridge floor and rail locks. There are AC motor DC generator sets in the operator's house at the north shore. The bridge operator occupies the fifth floor of this house. The operator's level contains the signal interlock box, track model board, reversing drum controllers, and navigation light control. There is a cable tunnel below the river for cables carrying single-phase and 3-phase 4150-volt AC.

The operator's level is the top floor of the five-level house on the north shore. The other floors contain railroad electrical equipment. The house has steam heating which was installed in 1974.

The bridge is in generally good condition with some minor deterioration of some structural elements and need for repair in the mechanical and electrical equipment.

8 SIGNIFICANCE

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

1935

BUILDER/ARCHITECT

Waddell and Hardesty

STATEMENT OF SIGNIFICANCE

Dock Bridge is the only vertical lift bridge on the Northeast Corridor railroad route, and is the newest of the movable bridges on the Corridor. The structure is unique because of the operation of six tracks on three bridges with two lift spans.

Dr. J.A.L. Waddell was one of the first to patent a simplified and improved design of vertical lift bridge in the United States. Vertical lift bridges of small spans and low lifts were constructed in Europe at a fairly early date, but no vertical lifts of any size were constructed until the late 19th century. The consulting engineering firm for the construction of this structure, Waddell & Hardesty, used the patent of Dr. Waddell in the design of the bridge.

Vertical lift bridges were more widespread in the U.S. after 1908. This type is economical in construction and operation and has proven efficient in heavily trafficked areas because the span can be opened in less time than is required for a swing bridge. In addition, the span can be partially raised when height requirements are low. Heavy railroad traffic between New York City and Newark and the frequent openings necessary on the Passaic River make this structure critical to the operation of the Northeast Corridor railroad system.

The machinery and electrical systems which were specifically designed for this bridge have not been significantly altered since their installation. Earle Gear and Machine Company of Philadelphia was the contractor for the machinery and the electrification was done by Gibbs & Hill.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

- Hool, George A. and W.S. Kinne, eds. Movable and Long-Span Steel Bridges
 New York, McGraw-Hill Book Co., Inc. 1923.
- Hovey, Otis Ellis, Movable Bridges New York: John Wiley & Sons, Inc. 1926
- Plowden, David. Bridges, the Spans of North America. New York: The Viking Press
- U.S. DOT. Northeast Corridor High Speed Rail Passenger Service Improvement Project,
 Tasks 15.1, 15.2, Vol. VI, Jan. 1977.

10 GEOGRAPHICAL DATA 1

ACREAGE OF NOMINATED PROPERTY _____

QUADRANGLE NAME Elizabeth

QUADRANGLE SCALE 1:24,000

UTM REFERENCES

A 18 570770 4509570
 ZONE EASTING NORTHING

B
 ZONE EASTING NORTHING

C

D

E

F

G

H

VERBAL BOUNDARY DESCRIPTION

Dock Bridge crosses the Passaic River from Newark, N.J. to Harrison, N.J. on the former Penn Central railroad line.

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

STATE	CODE	COUNTY	CODE
<u>New Jersey</u>		<u>Essex</u>	
<u>New Jersey</u>		<u>Hudson</u>	

11 FORM PREPARED BY

NAME/TITLE Janice Artemel, Cultural Resources Coordinator, October 24, 1977

ORGANIZATION _____ DATE _____

STREET & NUMBER Delow, Cather/Parsons & Associates, Northeast Corridor Project TELEPHONE _____

CITY OR TOWN 1201 Connecticut Avenue, Room 1005 STATE _____

Washington D.C.

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL STATE X 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.

Deputy [Signature]
 STATE HISTORIC PRESERVATION OFFICER SIGNATURE

7-21-79

TITLE Deputy DATE _____
Commissioner, Department of Environmental Protection

FOR NPS USE ONLY	
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER	
DATE <u>10-3-80</u>	
KEEPER OF THE NATIONAL REGISTER	
ATTEST: <u>[Signature]</u>	DATE <u>November 1, 1979</u>
CHIEF OF REGISTRATION	

FHR-8-300A
(11/78)

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UNITED STATES DEPARTMENT OF THE INTERIOR
HERITAGE CONSERVATION AND RECREATION SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

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RECEIVED	OCT 3 1979
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CONTINUATION SHEET

ITEM NUMBER

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Dock Bridge
Newark
Essex County
New Jersey

Although the Dock Bridge is an integral part of the Newark Railroad Station Terminal, the New Jersey Office of Historic Preservation is unable to document any exceptional engineering significance associated with this vertical lift bridge save for its massiveness (total bulk, not length).

T. Karschner
12/1979

**United States Department of the Interior
Heritage Conservation and Recreation Service
National Register of Historic Places
Inventory—Nomination Form**



Continuation sheet

Item number

Page

Dock Bridge
Newark
Essex County
New Jersey

ADDENDA

Dock Bridge is an exceptionally important Pennsylvania Railroad engineering accomplishment. This lift bridge is an unusual engineering design in terms of its massiveness and double bridge lifts which operate independently. There are no other comparable railroad bridges in New Jersey, and it is one of the few double level/double lift bridges in the country.

In addition, Dock Bridge is an integral part of the Pennsylvania Railroad network in Newark as developed in the 1930's. The bridge functions both as a precisely engineered transportation facility and as a symbol of the ascension of Newark as one of the most important cities on the east coast in the early 20th century.

8/1980