

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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RECEIVED JUN 13 1978
DATE ENTERED

**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

~~Chicago and Northwestern~~ Railroad: Boone Viaduct

AND/OR COMMON

LOCATION

STREET & NUMBER

1101 Boone

NOT FOR PUBLICATION

CITY, TOWN

Boone

VICINITY OF

CONGRESSIONAL DISTRICT

Fifth

STATE

Iowa

CODE

COUNTY
Boone

CODE

15

CLASSIFICATION

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"/> MUSEUM
<input checked="" type="checkbox"/> STRUCTURE	<input type="checkbox"/> BOTH	<input type="checkbox"/> WORK IN PROGRESS	<input type="checkbox"/> COMMERCIAL
<input type="checkbox"/> SITE	PUBLIC ACQUISITION	ACCESSIBLE	<input type="checkbox"/> PARK
<input type="checkbox"/> OBJECT	<input type="checkbox"/> IN PROCESS	<input checked="" type="checkbox"/> YES: RESTRICTED	<input type="checkbox"/> EDUCATIONAL
	<input type="checkbox"/> BEING CONSIDERED	<input type="checkbox"/> YES: UNRESTRICTED	<input type="checkbox"/> ENTERTAINMENT
		<input type="checkbox"/> NO	<input type="checkbox"/> PRIVATE RESIDENCE
			<input type="checkbox"/> RELIGIOUS
			<input type="checkbox"/> GOVERNMENT
			<input type="checkbox"/> SCIENTIFIC
			<input checked="" type="checkbox"/> TRANSPORTATION
			<input type="checkbox"/> OTHER:
			<input type="checkbox"/> MILITARY

OWNER OF PROPERTY

NAME

Chicago and Northwestern Transportation Company

STREET & NUMBER

500 West Madison Street

CITY, TOWN

Chicago

VICINITY OF

STATE

Illinois 60606

LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

Chicago and Northwestern Transportation Co.

STREET & NUMBER

500 West Madison

CITY, TOWN

Chicago

STATE

Illinois 60606

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

DATE

FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR
SURVEY RECORDS

CITY, TOWN

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

The Boone Viaduct, completed in 1901, crosses the Des Moines River at a point where the bluffs on either side are about 3000 feet apart. The total length of this double-track structure is 2685 feet, and is 185 feet high at its highest point. There are 18 two-bent braced tower spans of 45 feet, 21 intermediate spans of 75 feet carried by plate girders, and a single, 300-foot river span. The end abutments are stone masonry over concrete footings. Stone piers of the towers are built on rock or hardpan, and, like the abutments, are of Mankato limestone. The river span, a subdivided Pratt truss with pin connections, is supported on A-shaped towers with foundations of concrete set in steel caissons. This 300-foot-long deck structure is carried by two trusses of five subdivided panels.

Originally, two guardhouses were located at either end of the bridge, which was patrolled during World War II and for several years thereafter. Only the east guardhouse remains, and it has been subject to recurrent vandalism. The viaduct is structurally very sound, but lack of paint has threatened some deterioration of the towers.

8 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 type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input checked="" type="checkbox"/> TRANSPORTATION
<input checked="" 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 1899-1901 BUILDER/ARCHITECT Chicago and Northwestern RR

STATEMENT OF SIGNIFICANCE

The Boone Viaduct is significant in three respects:¹

1. It combines three major types of steel bridge engineering in its construction: the Pratt deck truss of the river span; the steel girders between bents; and the bents themselves.

2. Chronologically and technologically, the Boone Viaduct is situated in a rather narrow time period (1880's-1920's) between the earlier, massive stone viaducts prominent in the eastern U.S., and earth-fill construction, with a river span of concrete, found later in the midwest and far west. As such, the Boone Viaduct is a fine example of the long steel viaduct.

3. The Boone-Ogden Cutoff, in which the structure is located, was opened in May, 1901. The original rail line was a circuitous 11.3 miles long, with steep grades that required the use of helper engines on the stretches from the bluffs down to the river valley. The new cutoff shortened the rail distance between Boone and Ogden to slightly over 7 miles, and eliminated the heavy grades. In an historical perspective, this line relocation (made possible by the new viaduct) was within a general trend at the turn of the century, which concentrated on improvements to original lines, and on the elimination of many curves and grades. This allowed more efficient use of newer, and heavier, rail equipment.

Construction on the viaduct began in the fall of 1899, and was completed early in 1901. The design was executed by the engineer's office of the Chicago and Northwestern Railroad, E.C. Carter being Chief Engineer at that time. The American Bridge Co. (Ambridge, PA), contracted to erect the structure, under the railroad's resident engineer, W.C. Armstrong. At the time of its construction, the viaduct was said to be the longest double-track viaduct of its height, and, with 5680 tons of metal in the superstructure, and 400 tons more in the foundations, the heaviest viaduct heretofore in existence.²

¹ Based upon a telephone conversation with Professor James Hippen, Department of History, Luther College (Decorah, IA), 20 February 1978.

² "The Boone Viaduct, Chicago and Northwestern Railroad," The Railway and Engineering Review, Vol 41 (May 25, 1901), p. 330.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Casey, Robert J. and W.A.S. Douglas. Pioneer Railroad. New York: Wittlesey House, 1948.
 Cleveland, Bruce (Instrument man, Engineering Division, Chicago and Northwestern RR, Boone, Iowa), interview 29 December 1977.
 Gallup, James G. History, Description, and Illustrations, of the Great Boone Viaduct. Boone: W.H. Gallup, undated.
 See Continuation Sheet

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY approx. 3 acres (only land on which foundations rest)
 UTM REFERENCES

A	1,5	4 2,0 1,5,5	4 6,5,6 6 7,0	B	1,5	4 2,0 1,6,0	4,6 5,6 6,2,0
	ZONE	EASTING	NORTHING		ZONE	EASTING	NORTHING
C	1,5	4 1,9 3,1,0	4 6,5,6 5 2,0	D	1,5	4 1,9 3,0,0	4,6 5,6 5,7,0

VERBAL BOUNDARY DESCRIPTION

Bridge is 2685 feet long, and 70 feet wide at the base; land on which foundations rest is approximately of same dimensions.

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

Martha E. Williams, Laboratory Assistant

ORGANIZATION

Archaeological Laboratory

DATE

STREET & NUMBER

Iowa State University

TELEPHONE

CITY OR TOWN

Ames

STATE

Iowa 50010

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

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

Adrian D. Anderson

TITLE

Director, Division of Historic Preservation

DATE

5/12/78

FOR NPS USE ONLY

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

Charles H. ...
 DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

DATE

11.17.78

ATTEST:

KEEPER OF THE NATIONAL REGISTER

DATE

KEEPER OF THE NATIONAL REGISTER

William H. Bradam 11.15.78

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Chicago and Northwestern Railroad: Boone Viaduct, Boone County, Iowa

CONTINUATION SHEET

ITEM NUMBER 9 PAGE 1

Hippen, James, Department of History, Luther College, Decorah, Iowa. Interview by telephone, 20 February 1978.

Patterson, Ralph E., Director of Engineering Extension and Professor of Civil Engineering, Iowa State University, Ames. Interview and technical consultation, 23 January 1978.

"The Boone Viaduct, Chicago and Northwestern Railroad," The Railway and Engineering Review, Vol 41 (May 25, 1901), p. 330.

"The Boone Viaduct, Chicago and Northwestern Railroad," The Railway and Engineering Review, Vol. 41 (July 6, 1901), pp. 462-465.