# 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:**

### 2. Location

**Street & Number:**

<table>
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<tr>
<th>CITY, TOWN</th>
<th>VICINITY OF</th>
<th>CONGRESSIONAL DISTRICT</th>
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<tr>
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**State:**

Iowa

### 3. Classification

**Category:**

- Building(s)
- Structure
- Site
- Object

**Ownership:**

- Public
- Private
- Both

**Status:**

- Occupied
- Unoccupied
- Work in Progress
- Accessible
  - Yes: Restricted
  - Yes: Unrestricted
  - No

**Present Use:**

- Agriculture
- Commercial
- Park
- Educational
- Entertainment
- Religious
- Government
- Scientific
- Industrial
- Transportation
- Military
- Other:

### 4. Owner of Property

**Name:**

Chicago and Northwestern Transportation Company

**Street & Number:**

500 West Madison Street

**City, Town:**

Chicago

**State:**

Illinois

### 5. Location of Legal Description

**COURTHOUSE, REGISTRY OF DEEDS, ETC.:**

Chicago and Northwestern Transportation Co.

**Street & Number:**

500 West Madison

**City, Town:**

Chicago

**State:**

Illinois

### 6. Representation in Existing Surveys

**Title:**

**Date:**

**Depository for Survey Records:**

**City, Town:**

**State:**
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.
**STATEMENT OF SIGNIFICANCE**

The Boone Viaduct is significant in three respects:  

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.

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

MAJOR BIBLIOGRAPHICAL REFERENCES


Cleveland, Bruce (Instrument man, Engineering Division, Chicago and Northwestern RR, Boone, Iowa), interview 29 December 1977.


See Continuation Sheet

GEOPHYSICAL DATA

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

UTM REFERENCES

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NORTHING

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

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

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.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

DATE 5/10/78

TITLE Director, Division of Historic Preservation

FOR NPS USE ONLY

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

DIRECTION, OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION

DATE 11/12/78

ATTEST:

KEEPER OF THE NATIONAL REGISTER

DATE 11/15/78

GPO 892-453
Chicago and Northwestern Railroad: Boone Viaduct, Boone County, Iowa

CONTINUATION SHEET

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.
