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United States Department of the Interior
National Park Service

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OCT 28 1993

NATIONAL REGISTER

**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

=====
1. Name of Property
=====

historic name: RED BRIDGE

other name/site number: N/A

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2. Location
=====

street & number: Near Oregon Road over Quinnipiac River

city/town: Meriden

not for publication: N/A
vicinity: N/A

state: CT county: New Haven code: 009 zip code: 06450

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3. Classification
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Ownership of Property: public-local

Category of Property: structure

Number of Resources within Property:

Contributing	Noncontributing	
<u> </u>	<u> </u>	buildings
<u> </u>	<u> </u>	sites
<u> 1 </u>	<u> </u>	structures
<u> </u>	<u> </u>	objects
<u> 1 </u>	<u> 0 </u>	Total

Number of contributing resources previously listed in the National Register: 0

Name of related multiple property listing: N/A

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this X nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets does not meet the National Register Criteria. See cont. sheet.

Signature of certifying official: [Handwritten Signature] Director, Connecticut Historical Commission Date: 10/22/93

State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria. See continuation sheet.

Signature of commenting or other official Date

State or Federal agency and bureau

5. National Park Service Certification

I, hereby certify that this property is:

- entered in the National Register See continuation sheet.
determined eligible for the National Register See continuation sheet.
determined not eligible for the National Register
removed from the National Register
other (explain):

[Handwritten Signature: Betty Savage] 12-10-93

Signature of Keeper Date of Action

6. Function or Use

Historic: TRANSPORTATION Sub: road-related
Current: NOT IN USE Sub:

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CONTINUATION SHEET**

Significance Red Bridge
 Meriden, New Haven County, CT

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Summary

Red Bridge is significant as a representative example of late 19th-century bridge engineering (Criterion C) and as a product of the Berlin Iron Bridge Company, a major manufacturing concern and Connecticut's only large 19th-century bridge fabricator (Criterion A). Although the Berlin Iron Bridge Company built hundreds of bridges throughout the Northeast, relatively few have survived to the present; Red Bridge is one of only 15 remaining in the company's home state of Connecticut. Red Bridge embodies many distinctive characteristics of the early years of metal-truss design, including wrought iron as the principal material, pinned connections, and an unusual truss pattern. By 1900, all of these features had virtually disappeared from American bridge building. In their place, a standardized design emerged for small highway bridges based on the use of steel members, rivetted connections, and only two major truss patterns, the Warren and Pratt trusses. Red Bridge represents an increasingly rare survivor of the era before standardized design prevailed.

Engineering Significance

Red Bridge's lenticular truss was one of a myriad of patented designs that characterized the American bridge industry in its formative stage. In part such designs were an attempt to improve the technology of bridge building, but they also served to distinguish the products of one fabricator from another. Berlin Iron Bridge's design offered some savings of material over a comparably sized Pratt truss, though the savings must have been largely offset by the greater complexity in fabricating the curved top chord's multiple angles. Equally important, the design's unique profile provided something distinctive that Berlin agents could exploit when trying to convince local highway officials of their product's superiority. In other respects, the truss is similar to the vast majority of its contemporaries. In the early 1890s, steel was still in the process of replacing wrought iron for structural forms, so most bridges of the 1880s and early 1890s were built with wrought-iron members. Similarly, pinned connections were only beginning to give way to rivetted joints. Pinned connections were popular because they simplified the erection of the bridge, requiring only large wrenches to join prefabricated members instead of the more demanding technique of field rivetting. Many engineers also claimed that pinned joints allowed forces to be transferred less ambiguously, though all agreed that

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riveted bridges were more rigid. A final characteristic of the period evident in Red Bridge is the use of complicated details such as the tapered uprights and floor beams, both of which achieved a minor savings in material. Like the lenticular truss itself, such idiosyncratic details soon gave way to simpler, more standard forms.

Industrial History Significance: the Berlin Iron Bridge Company

Unlike most American bridge firms, which were closely tied to iron and steel makers, Connecticut's leading manufacturer of bridges began as an offshoot of the tinware industry. Roys and Wilcox, an East Berlin maker of tinner's tools and other metal-forming machines, set up a company in 1868 to market sheet-iron products made with its rolling machines. The Corrugated Metal Company, as it became known, produced roofing material and metal-clad fire doors and shutters; the company soon found itself involved in structural iron work when it began to provide roof trusses as well as the exterior material. The company was not particularly successful until a new investor in 1877, S. C. Wilcox, realized that the plant had the capacity to manufacture highway bridges. The following year, the Corrugated Metal Company purchased rights to William Douglas's patented truss and produced the first of the lenticular bridges that would soon dot the landscape of the Northeast. Douglas, educated at West Point, joined the company as Treasurer and Executive Manager and continued to refine his design; he was awarded a second patent in 1885, by which time the company had changed its name to the Berlin Iron Bridge Company.

The late 19th century was a good time to be in the bridge business. As the industry developed, the price of iron trusses steadily dropped until they were competitive with wooden spans, especially when their superior durability was figured in (wooden bridges had an average lifetime of about 25 years). The only other alternative, for shorter spans only, was building in stone, which remained very expensive. Throughout America, local highway officials opted to replace their wooden bridges with iron, and firms such as the Berlin Iron Bridge Company were happy to oblige.

At its height, the Berlin Iron Bridge Company was probably the largest structural fabricator in New England. Some 400 workers were employed at its East Berlin plant (no longer extant), with an equal number in the field during the erection season. There is no definitive count of the company's bridges, though at least 600 are known to have been completed

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during its first ten years. Most were in the Northeast, though even today Berlin trusses survive as far away as Texas. A few bridges were of tremendous size, such as the 1000'-long five-span bridge built in 1885 in Williamsport, Pennsylvania. Most, however, were single-span bridges, with through-trusses for lengths over 100 feet and pony trusses, such as Red Bridge, for shorter spans. The lenticular design accounted for the bulk of the company's output, though it is known to have produced several other truss types, sometimes to designs furnished by railroad or city engineers, as well as suspension bridges. Many towns brought the company repeated business; Waterbury, Connecticut, for example, bought more than a dozen Berlin bridges. The company also furnished structural iron for buildings, though bridges remained its mainstay.

The Berlin Iron Bridge Company was absorbed in 1900 by the American Bridge Company, a largely successful attempt by J. P. Morgan to monopolize the country's structural fabricating industry. The American Bridge Company made only marginal use of the East Berlin plant, preferring to concentrate production at other sites, and in 1917 it demolished the East Berlin shops entirely. By that time, however, a firm started by former Berlin Iron Bridge employees, the Berlin Construction Company, had regained much of its predecessor's influence in the New England bridge market; it remains in business today as Berlin Steel.

Of the hundreds of bridges known to have been built in Connecticut by the Berlin Iron Bridge Company, no more than 15 lenticular trusses survive. Red Bridge is thus one of a dwindling number of heritage resources left to illustrate this important chapter in Connecticut industrial history.

Historical Background of Red Bridge

Like most Berlin bridges, Red Bridge was commissioned by local highway officials to replace a wooden bridge on a town road. At that time, Oregon Road was the principal route between the densely built-up area of Meriden, which had been set off under a separate city charter in 1879, and the Town of Cheshire, which lies to the southwest. The Town of Meriden paid \$6,515 to the Berlin Iron Bridge Company in 1891, a figure that suggests that more than one bridge was purchased. The name "Red Bridge" is a traditional name for the crossing that was also applied to the present Red Bridge's wooden-truss predecessor.

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9. Major Bibliographical References

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X See continuation sheet.

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested.
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

Primary Location of Additional Data:

- State historic preservation office
- Other state agency Connecticut Dept. of Transportation
- Federal agency 24 Wolcott Hill Road
- Local government Wethersfield, CT 06109
- University
- Other -- Specify Repository: _____

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10. Geographical Data

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Acreage of Property: less than one

UTM References: Zone Easting Northing Zone Easting Northing

A	<u>18</u>	<u>680310</u>	<u>4598790</u>	B	_____	_____	_____
C	_____	_____	_____	D	_____	_____	_____

____ See continuation sheet.

Verbal Boundary Description: ____ See continuation sheet.

The nominated property includes the bridge, abutments, and roadway

Boundary Justification: ____ See continuation sheet.

The boundary includes only the components of the bridge itself.

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11. Form Prepared By - Reviewed by John Herzan, National Register Coordinator

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Name/Title: Bruce Clouette and Maura Cronin

Organization: Historic Resource Consultants Date: April 1, 1993

Street & Number: 55 Van Dyke Avenue Telephone: 203-547-0268

City or Town: Hartford State: CT Zip: 06106

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Bibliography Red Bridge 9-1
 Meriden, New Haven County, CT

Berlin Iron Bridge Co., Catalog, 1889 and c.1894, courtesy Victor Darnell.

Connecticut Department of Transportation. Historic Bridge Inventory. 1991.

Darnell, Victor. "Lenticular Bridges from East Berlin, Connecticut," Industrial Archeology 5 (1979): 19-32.

Town of Meriden, Annual Report, 1892, p. 37.

"The Plant of the Berlin Iron Bridge Co.," Engineering News (October 3, 1891): 87-91.

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Photographs Red Bridge Photos-1
 Meriden, New Haven County, CT

All photographs:

1. Red Bridge
2. Meriden, New Haven County, CT
3. Photo Credit: HRC, Hartford, CT
4. April, 1993
5. Negative filed with Connecticut Historical Commission
 Hartford, CT

Captions:

South side elevation of bridge, camera facing north
Photograph 1 of 6

North side elevation of bridge, camera facing southeast
Photograph 2 of 6

Roadway, camera facing northeast
Photograph 3 of 6

Detail of upper joint, camera facing southwest
Photograph 4 of 6

Detail of lower joint, camera facing northeast
Photograph 5 of 6

Detail of southwest end post, camera facing north
Photograph 6 of 6