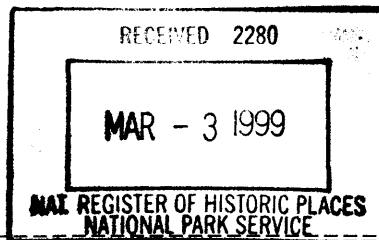


United States Department of the Interior
National Park Service



**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

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1. Name of Property

=====

historic name: GLEN FALLS BRIDGE

other name/site number: Brunswick Avenue Bridge, Bridge No. 4402

=====

2. Location

=====

street & number: Brunswick Avenue over Moosup River

city/town: Plainfield not for publication: N/A
vicinity: N/A

state: CT county: Windham code: 015 zip code: 06374

=====

3. Classification

=====

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

9. Major Bibliographical References

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:

- X State historic preservation office Connecticut Historical Commission
- X Other state agency 59 South Prospect Street
- _ Federal agency Hartford, Connecticut 06106
- _ Local government
- _ University Connecticut Dept. of Transportation
- Newington, Connecticut 06111
- _ Other -- Specify Repository: _____

10. Geographical Data

Acreage of Property: less than one acre

UTM References: Zone Easting Northing Zone Easting Northing

A	19	261910	4622090	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 bidge itself.

11. Form Prepared By

Name/Title: Bruce Clouette and Hoang Tinh, reviewed by John Herzan,
 Conn. Hist. Commission

Organization: Historic Resource Consultants Date: April 8, 1998

Street & Number: 55 Van Dyke Avenue Telephone: 860-547-0268

City or Town: Hartford State: CT Zip: 06106

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**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Description	Glen Falls Bridge (Brunswick Avenue Bridge, Bridge No. 4402) Plainfield, Windham County, CT	7-1
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Glen Falls Bridge (Photographs 1-4) is a single-span wrought-iron lenticular through truss fabricated in 1886 by the Berlin Iron Bridge Company for the Town of Plainfield, Connecticut. It crosses the Moosup River immediately adjacent to the former Glen Falls woolen mill, a now-vacant complex of stone and brick industrial buildings and waterpower features, dating from about 1881, that lies at the eastern end of the part of Plainfield called Almyville. The road carried by the bridge, now known as Brunswick Avenue, was once part of the main road between Connecticut and Rhode Island, but it was bypassed by the current alignment of State Route 14 in 1940. The bridge has been closed for more than ten years.

The bridge is divided into 8 panels and has an overall length of 124 feet. It provides a roadway width of 18 feet (incorrectly listed as 24 feet in the official state bridge log). The depth of the truss at its greatest point is 18 feet, and typically the bridge crosses at a level about 10 or 12 feet above the surface of the water in the river below. The original stone abutments have been replaced by reinforced concrete abutments (Photograph 5).

The connections between the bridge's components are made with large pins threaded at each end and secured by nuts (Photographs 6 and 7). The upper chord and end posts take the form of a box girder, built up of plates, angles, and a double set of lacing bars, that measures 7" by 14" in section. The lower chord is a chain of paired 3" eyebars. Vertical members are all 4" by 8" lattice girders; a similar member is used as a diagonal stiffener running from the bottom of the end post to the first lower joint. Each panel has cross-bracing of 1 1/4" rods tensioned with turnbuckles; in addition, there is a longitudinal 5/8"-rod brace, running at a level midway up the truss and anchored at the second top joints. The two sides of the bridge are connected across the top with lattice-girder struts and tension-rod top cross-bracing, and there are diagonal angle-iron knee braces at each panel to provide sway bracing. The present raised-up plate-girder portal struts are c.1920 replacements of the original struts, which simply ran between the second upper joints, providing much less overhead clearance.

The wood-plank deck, broken through in several places, is supported on timber stringers which in turn rest on tapered plate-girder floor beams, varying in depth from 12" at the ends to 24" at the center. The beams are hung from the lower joints by U-shaped pins, known as "hairpins"

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**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Description

**Glen Falls Bridge
(Brunswick Avenue Bridge, Bridge No. 4402)
Plainfield, Windham County, CT**

7-2

formed from 1" bars; the pins are secured by plates and nuts below the lower flange of the floor beams (Photograph 8). Longitudinal tension-rod bracing runs the length of the bridge from the end posts through the ends of all the floor beams, and there is crossbracing between the beams beneath the roadway (Photographs 5 and 8).

The present guardrail is a simple three-rail wooden fence bolted to the inside of the trusses (Photograph 9); this is the same railing (though not likely the same wood) which appears in an 1895 photograph of the structure.

The lower chord-end post connection on the northeast corner is covered on the top surface by a cast-iron plate with the date of construction, 1886 (Photograph 10); the casting originally extended down the front of the end post, where now the ends of the lower-chord eyebars are visible. Similar castings originally covered each portal joint.

In addition to the raised portal struts and other modifications already cited, alterations to the bridge include I-beam replacements for some of the upper struts, added welded plate to reinforce some of the north-side verticals, and replacement of the northwest end post. Metal bars have been welded across the end posts at each end, and chain-link fencing further restricts access to the bridge by both vehicles and pedestrians.

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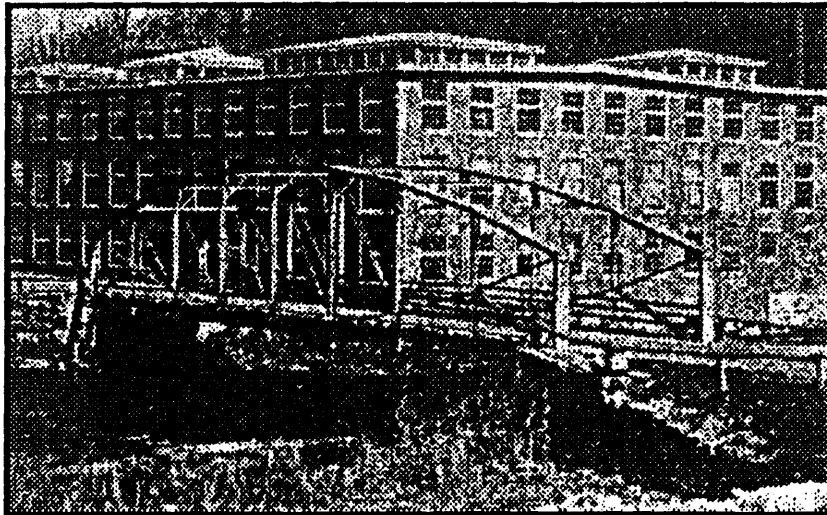
Description

Glen Falls Bridge

7-3

(Brunswick Avenue Bridge, Bridge No. 4402)

Plainfield, Windham County, CT



View of bridge and mill, from Burgess (1895), p. 65.

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**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Significance

**Glen Falls Bridge
(Brunswick Avenue Bridge, Bridge No. 4402)
Plainfield, Windham County, CT**

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

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 became 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 "parabolic" truss and produced the first of the lenticular bridges that would soon dot the landscape of the Northeast. Douglas, educated as an engineer 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 (for the end-panel struts seen in this bridge), 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.

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**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Significance

**Glen Falls Bridge
(Brunswick Avenue Bridge, Bridge No. 4402)
Plainfield, Windham County, CT**

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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 many additional workers in the field during the construction season. There is no definitive count of the company's bridges; at least 600 are known to have been completed during its first ten years, and the company calculated their ten-year total at over 1,000. Most were in the Northeast (where the company claimed to have built 90 percent of the region's iron highway bridges), but some were sent as far away as Texas and Hawaii. Many towns brought the company repeated business; Plainfield, for example, bought three large Berlin bridges for its major Moosup River crossings.

The company built multiple-span bridges as long as 1,000 feet; most were more modest, with through-trusses such as the Glen Falls Bridge for lengths over 100 feet and pony trusses 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. The company also furnished ironwork for buildings and specialized industrial structures.

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 its East Berlin plant, preferring to concentrate production at other sites. At the same time, a firm started by former Berlin Iron Bridge employees, the Berlin Construction Company, resumed the fabrication of bridges and recaptured much of its predecessor's influence in the Northeast market; the latter remains in business today under the name Berlin Steel.

Of the hundreds of bridges known to have been built in Connecticut by the Berlin Iron Bridge Company, no more than 20 trusses of all types survive, and only four of the large, through-truss lenticular spans. The four bridges differ in details, each preserving a unique set of the characteristic practices of the Berlin Iron Bridge Company. For example, this bridge and a similar span (soon to be removed) just downstream on River Street in Moosup are the only ones in Connecticut with the struts from Douglas's 1885 patent and the only ones with wooden railings (which the company illustrated in its catalog but did not recommend, instead promoting pipe rails as a low-cost alternative to its ornamental lattice railings). The bridge is also the only one

