NPS Form 10-900
(3-82)

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United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only
received APR 2 4 1987
date entered MAY 2 1 1987

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic N/A

and or common Main Street Bridge

2. Location

street & number Main Street and the Rippowam River ___ not for publication N/A

city, town Stamford ___ vicinity of N/A

state CT code 09 county Fairfield code 01

3. Classification

Category	Ownership	Status	Present Use	
___ district	_x_ public	___ occupied	___ agriculture	___ museum
___ building(s)	___ private	N/A unoccupied	___ commercial	___ park
_x_ structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	_x_ yes: unrestricted	___ industrial	_x_ transportation
	N/A	___ no	___ military	___ other:

4. Owner of Property

name City of Stamford

street & number 429 Atlantic Street

city, town Stamford ___ vicinity of N/A state CT 06901

5. Location of Legal Description

courthouse, registry of deeds, etc. Old Town Hall

street & number 175 Atlantic Street

city, town Stamford state CT

6. Representation in Existing Surveys

title State Register of Historic Places has this property been determined eligible? ___ yes _x_ no

date 1986 ___ federal _x_ state ___ county ___ local

depository for survey records Connecticut Historical Commission - 59 S. Prospect Street

city, town Hartford state CT

7. Description

Condition		Check one	Check one
___ excellent	___ deteriorated	___ unaltered	_X_ original site
_X_ good	___ ruins	_x_ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Main Street Bridge, erected in 1888, is a double span, pin-connected lenticular pony truss. Wrought and cast iron comprise the various members that make up the trusses, while the abutments and piers are stone and concrete. The deck is poured concrete. Running roughly east-west, the bridge is approximately 0.4 miles east of old Town Hall, carrying Main Street, a major thoroughfare, over the Rippowam River (see map).

Each span of the bridge is ostensibly 60 feet, but piers added at each of the panel points have reduced the actual load-bearing span to 12 feet. The bridge carries a 36-foot-wide roadway and two six-foot sidewalks; the bottom of the bridge is 8 feet above the river. Each side of each span of the bridge consists of 5 panels, the end panels being triangle-shaped (photograph 1). Top and bottom chords are segmental in profile, each angling upward and downward respectively toward the middle of each span. The top chord and vertical end-posts are made up of three rolled plates riveted together using angle-sections on the sides and diagonal lacing bars on the bottom (photograph 2). The sloping bottom chord is composed of a chain of paired pin-connected eyebars with stamped holes. Tapering vertical members, made up of riveted back-to-back angles and lacing bars, separate the top and bottom chords and are pin-connected to each chord (photographs 2,3). Diagonal tension stiffeners are located in the central panels and are connected to the same pins. They are round in section and have threaded turnbuckle tighteners. The top and bottom chords meet in a pin connection at the top of the endposts (photograph 3). Despite evidence of repair due to various car collisions, all but the northwest post have retained their original ball finials.

The floor beams are connected to the trusses by means of bolted hanger bars at each pin joint (photograph 4). These I-section beams are builtup from plates and riveted angles and taper to provide cantilever support for the flanking wooden-decked sidewalks. Web stiffeners occur at the stringer and pin bearing points. Corrosion damage has been repaired using welded steel angles in a Pratt truss configuration to repair the corroded web. The wrought-iron stringers are built-up I-sections. The deck is stiffened by diagonal bracing consisting of small diameter rods bolted to stem plates riveted to the deck beams (photograph 5). The deck itself consists of a concrete slab topped by a sand cushion, and brick and asphalt pavement. A railing composed of iron straps connected in square and diagonal patterns with stamped rosettes at their junctures runs along the outside of both sidewalks.

The two abutments consist of large granite and other igneous stone blocks laid in a random pattern and have been faced with concrete. The center pier is also concrete-faced stone on the upstream side, while the intermediate piers (constructed c.1900) are solid concrete, intended to provide support for the original trolley line. On the southern side of the bridge a water main runs alongside the bridge railing, and additional support has been added for it at the center abutment (photograph 6).

Main Street Bridge has retained its historic appearance and its original members continue to function in their original locations. The only alterations have been the addition of several piers, a water main, and the construction of a new deck c.1900.

Title: Connecticut HAER Survey.

Date: 1981 X Federal
Depository for survey records: Connecticut Historical Commission
59 S. Prospect Street

City, Town: Hartford State: CT

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture
___ 1600–1699	___ architecture	___ education	___ military	___ social/ humanitarian
___ 1700–1799	___ art	x engineering	___ music	___ theater
x 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	x transportation
___ 1900–	___ communications	___ industry	x politics/government	___ other (specify)
		___ invention		

Specific dates 1888 **Builder/Architect** Berlin Iron Bridge Company

Statement of Significance (in one paragraph)

The Main Street Bridge is a well-preserved, rare example of what was once a common bridge type in Connecticut (criterion C). This bridge is Connecticut's only wrought-iron lenticular truss remaining on a major artery in an urban center.[1] Patented by William O. Douglas in 1878, the lens-shaped form of the truss is an economical and visually exciting solution to the problem of weight reduction in metal truss bridges. This lenticular pony truss is typical of the hundreds that were built throughout the Northeast by the Berlin Iron Bridge Company between 1878 and 1900, yet is one of only approximately 20 lenticular pony trusses remaining in Connecticut and is the widest Berlin lenticular in the state. Built to accommodate the increased traffic resulting from the growth of Stamford, the bridge is also significant in that it illuminates the governmental process and attitudes toward public works in a developing town.

Historical Significance

In the post-Civil War period, decisions on the location and construction of highways and bridges occupied the bulk of the business sessions of the annual town meetings of Stamford: In fact, the Town of Stamford, during the last third of the 19th century, improved only two facilities other than roads. The approach to this civic duty by the town selectmen was casual and ad hoc, responding to individual petitions for improvements by the affected landowners. By the late 1880s this method of road repair had left Stamford highways in deplorable condition, an inappropriate state for a developing community. During this time the local population grew from 9700 to 15700, with residential density increasing by 16% in congested areas and by 30% in rural areas. 2 Fueled by the success of the Yale and Towne Company and the ancillary services that developed around the town, the rate of commercial and home building expanded at the end of the 1880s. As the number of summer residents increased, the ankle-deep mud and various fords became a hindrance to trade and a source of civic embarassment. In an effort to remedy the situation, in late 1886, the Stamford Advocate and the News launched campaigns for road improvement. Even industrialist Henry R. Towne wrote letters to urge road improvement. 3 Finally, the town selectmen did move to improve these conditions by reconstructing various river crossings. The first improvements were predictably in the congested center of the town. The Main Street Bridge was the second river crossing to be improved. This was an old and important crossing of the Connecticut Turnpike that had been previously spanned by wooden bridges.

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1. Roth, Clouette, Darnell, Connecticut, An Inventory of Historic Engineering and Industrial sites. Washington, D.C.; SIR, 1981, pp.27,69.

2. Feinstein, Estelle, Stamford in the Gilded Age. Stamford, CT: Stamford Historical Society, 1973. p.238.

3. Feinstein, op. cit. pp.145-7.

9. Major Bibliographical References

See continuation sheet

10. Geographical Data

Acreage of nominated property less than 1 acre

Quadrangle name Stamford **Quadrangle scale** 1:24000

UTM References

	Zone	Easting	Northing
A	18	622220	4551550
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification The nominated property includes only the bridge and embankments that were part of this right-of-way as constructed in the 1880s. Thus all the material relating to this crossing will be encompassed. (See Figure 1)

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 Steven Bedford, edited by John Herzan, National Register Coordinator

organization HNPP **date** Sept.2, 1986

street & number 78 Webb's Hill Road **telephone** (203) 322-6671

city or town Stamford **state** CT

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.

State Historic Preservation Officer signature

title Director, Connecticut Historical Commission **date** April 16, 1987

For NPS use only

I hereby certify that this property is included in the National Register

Entered in the National Register **date** 5-21-87

Keeper of the National Register

Attest: **date**

Chief of Registration

Since the Main Street Bridge was one of the first structures built in this public works campaign, there was some debate over its shape and the materials for its construction. The first motion for its erection, on the petition of Selectman Joseph Selleck, was passed on October 3, 1887, and the selectmen were ordered to obtain estimates for stone, iron, and wooden bridges. At the next meeting, on April 28, 1888, the selectmen presented their findings. The lowest estimate for a stone bridge came from C.V. Pendleton of Yantic. This bid, at a total price of almost $30,000 was frought with difficulties because the arches would greatly obstruct the waterway, subjecting the bridge to loss at the slightest freshet. The lowest bid for an iron bridge came from the Berlin Iron Bridge Company at $13,000, while the lowest bid for a wooden bridge was almost $9,000. A resolution was passed directing the selectmen to contract for the immediate erection of an iron bridge. 4 Construction on the bridge was begun immediately and the bridge was in service before the end of the year. The bridge continued in constant service until 1900, when the city's trolley system expanded across the river. The bridge could not support the heavy weight of the trolley and so a new deck and concrete intermediate piers were added. Although scheduled for replacement as early as 1924, the bridge has continued to serve as an important element along Route 1. In sum, Main Street Bridge provided physical evidence of the growth of Stamford during the late 19th century, the public works needed to support this growth, and the decision-making process that enabled its construction.

Engineering significance

After the Civil War, the greater availability of wrought iron encouraged inventors to develop new bridge truss forms. Few of these patented ideas were practical. However, the lenticular truss patented by William O. Douglas in 1878 led to the erection of hundreds of lenticular truss bridges throughout the United States from 1878 to the turn of the century. Built by the Berlin Iron Bridge Company, which had acquired Douglas' patent in 1878 or 1879, the Main Street Bridge is a rare survivor of what was once a common bridge type in New England. By 1880, 600 of these bridges had been built all over the country and by 1900 hundreds more were built and the firm became the largest structural fabricator in New England. This design was so aggressively marketed by the company that every crossing in some towns was spanned by a lenticular. 5 Stamford was no exception. By 1900 every crossing of the Rippowam River was spanned by a lenticular truss and 3/4 of these crossings remain.

The major advantage of this form of truss was that it used approximately 10% less iron than a comparably sized conventional truss, reducing raw material costs and

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4. Town Meeting Records, book 4, pp.432-433.

5. Darnell, Victor, "Lenticular Bridges from East Berlin, Connecticut," IA vol.5, no.1 (1979) passim.

making it a very competitive design economically during a period when labor costs were low. Its disadvantages lay in its fabrication, which required that the end of each chord segment be machined to a different angle, and the truss lacked lateral stability. The design was modified in 1885 by a second Douglas patent, but this was not used on shorter span trusses such as the Main Street bridge. In this case, lateral forces were resisted by the floor system with its plate-girder deck beam, diagonal rods and wrought-iron I-section stringers, which formed a truss.

The lenticular truss is distinct from all others in its profile. Several truss designs use curved top chords, but the lenticular is the only truss whose bottom chord forms a mirror image of the top, creating a graceful symetrical form. Once erected, the metallurgical structure of wrought iron made it particularly resistive to corrosion in comparison to later steel designs. Thus the design was not only an economical but also an elegant solution to the problem of bridge design.

For the most part, the design of the Main Street Bridge could be considered a standard design for a bridge of its length, and typical of similar span bridges constructed by the Berlin Iron Bridge Comany. However, one design feature distinguishes it from other lenticulars of the same span. It is extremely wide (42 feet) in relation to the length of each span (60 feet). Consequently, to increase its lateral stability at the endposts, the bottom chord members are pinned, rather than bolted through a casting. This design occurs on only three other Berlin truss bridges in the state. Given the fact that the bridge is on a major artery in downtown Stamford, its state of preservation, with its still-intact cast orb finials at the endposts, is quite remarkable.

Of the lenticular truss bridges built in Connecticut, less than 10% survive. In fact, only 17 pony trusses of this type remain, making the Main Street Bridge significant as a rare and well-preserved survivor of what was once a common, yet elegant feature of the New England landscape. 6 (criterion C).

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6. See note 1.

This bridge has state-level significance because it is one of a dwindling number of lenticular trusses made by the Berlin Iron Bridge Co., Connecticut's most important structural fabricator and, in the late 19th century, the largest such firm in New England. The company used the distinctive profile of the lenticular truss as a selling point to town officials contemplating a bridge purchase. Berlin Iron Bridge made nearly a thousand of these bridges in the last two decades of the 19th century, and sold more than 100 in Connecticut. Only some two dozen survive today.

Bibliography
Advocate, 1888-93

Darnell, Victor, "Lenticular Bridges from East Berlin, Connecticut," IA, vol.5, no.1 (1979)

Feinstein, Estelle, Stamford in the Gilded Age. Stamford Historical Society, 1973.

Interview with Victor Darnell, January 1986.

Stamford Town Meeting Records, Book 5

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9/28/90

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number _____ **Page** _____

Main Street Bridge Fairfield County, CT

ADDITIONAL DOCUMENTATION APPROVAL for Keeper

10/11/90

FIGURE 1, PLAN OF MAIN ST. BRIDGE 1" = 30'-0"
STAMFORD CT.