

1298

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name: Bridge 9

other names/site number: _____

2. Location

street & number: Town Highway 1 (Shawville Road) not for publication N/A

city or town: Sheldon vicinity: N/A

state: Vermont code: VT county: Franklin code: 011 zip code: 05483

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this 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 meets _____ does not meet the National Register Criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

Argonne C. Daniels, National Register Specialist 11-7-07
Signature of certifying official Date

Vermont State Historic Preservation Office
State or Federal Agency or Tribal government

In my opinion, the property _____ meets _____ does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of commenting official or other official and title Date

State or Federal agency and bureau

4. 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): _____

love
 Signature of the Keeper

Edson H. Beall

 Date of Action

 12-20-07

5. Classification

Ownership of Property: (Check as many boxes as apply)

- private
- public-local
- public-state
- public-Federal

Number of Resources Within Property:

	Contributing	Noncontributing
buildings:	___	___
districts:	___	___
sites:	___	___
structures:	1	___
objects:	___	___
total:	1	___

Category of Property: (Check only one box)

- building(s)
- district
- site(s)
- structure(s)
- object(s)

Number of Contributing Resources Previously Listed in the National Register: 0

Name of Related Multiple Property Listing: Metal Truss, Masonry, and Concrete Bridges in Vermont
 (Enter "N/A" if property is not part of a multiple property listing.)

6. Function or Use

Historic Functions: (Enter categories and subcategories from instructions)

Category:	Subcategory:
<u>Transportation</u>	<u>Road-related</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Current Functions: (Enter categories and subcategories from instructions)

Category:	Subcategory:
<u>Transportation</u>	<u>Road-related</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Description

Architectural Classification: (Enter categories from instructions)

other: Parker through truss

Materials: (Enter categories from instructions)

foundation: stone and concrete abutments
roof: _____
walls: _____

other: steel structural elements

Narrative Description: (Describe the historic and current condition of the property on one or more continuation sheets.)
See continuation sheet.

8. Statement of Significance

Applicable National Register Criteria:

(Mark "X" in one or more boxes for the criteria qualifying the property for National Register listing)

- A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
 B. Property is associated with the lives of persons significant in our past.
 C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
 D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations:

(Mark "X" in all the boxes that apply.)

- A. Owned by a religious institution or used for religious purposes.
 B. Removed from its original location.
 C. A birthplace or a grave.
 D. A cemetery.
 E. A reconstructed building, object, or structure.
 F. A commemorative property.
 G. Less than 50 years of age or achieved significance with the past 50 years.

Areas of Significance: (Enter categories from instructions)

Transportation
Engineering

Period of Significance:

1928-1955

Significant Person: (Complete if Criterion B is marked above)

N/A

Significant Dates:

1928

Cultural Affiliation:

N/A

Architect / Builder:

Lackawanna Steel Construction Co.

Narrative Statement of Significance:

(Explain the significance of the property on one or more continuation sheets.) See continuation sheet.

9. Major Bibliographical References

Bibliography:

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.) 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 for the National Register.
- Designated a National Historic Landmark.
- Recorded by Historic American Buildings Survey No. _____
- Recorded by Historic American Engineering Record No. _____

Primary Location of Additional Data:

- State Historic Preservation Office.
- Other state agency: Vermont Agency of Transportation
- Federal agency.
- Local government.
- University.
- Other. Name of repository: Vermont State Library

10. Geographical Data

Acreege of Property: Less than one

UTM References (Place additional UTM references on a continuation sheet). See continuation sheet

Zone	Easting	Northing	Zone	Easting	Northing
1. <u>18</u>	<u>660032</u>	<u>4974925</u>	2. _____	_____	_____
3. _____	_____	_____	4. _____	_____	_____

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.) See continuation sheet.

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.) See continuation sheet

11. Form Prepared By

Name / Title: William J. Thrane, Intern, and Robert McCullough

Organization: Vermont Agency of Transportation, Historic Bridge Program Date: August, 2000; revised 2006

Street & Number: National Life Building, Drawer 33 Telephone: 802-828-3615

City or Town: Montpelier State: VT Zip Code: 05633-5001

12. Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

- A USGS map (7.5 or 15 minute series) indicating the property's location.
- A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

- Representative black and white photographs of the property.

Additional Items (Check with the SHPO or FPO for any additional items)

13. Property Owner

(Complete this item at the request of the SHPO or FPO.)

Name / Title: Town of Sheldon

Organization: _____ Date: _____

Street & Number: P.O. Box 66 Telephone: 802-933-2524

City or Town: Sheldon State: VT Zip Code: 05483

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.). A federal agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number.

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to Keeper, National Register of Historic Places, 1849 "C" Street NW, Washington, DC 20240.

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section 7 Page 1

Bridge 9
Name of Property
Sheldon, Franklin County, Vermont
County and State

Narrative Description

Bridge 9, erected in 1928, is a Parker through truss, and it carries Town Highway 1 (Shawville Road) in Sheldon Springs across the Missisquoi River. The bridge was closed in 1992 due to the poor condition of its floor system and abutments, but the structure was successfully rehabilitated in 1996 and retains a high degree of integrity in terms of location, design, setting, materials, workmanship, feeling and association. The structure will remain in continued highway use under the Vermont Historic Bridge Program's Preservation Plan for Metal Truss Bridges, and the town has enrolled Bridge 9 in that program, conveying a preservation easement for the bridge as part of that agreement

Bridge 9 crosses the Missisquoi River in a single, 250 foot clear span (center to center of bearings), with nine panels. End panels are 27 feet, 9 3/16 inches in length, and all other panels are 27 feet 9 3/8 inches. The bridge's overall width is 18 feet 3 inches (center of truss to center of truss), establishing a 16 foot travel corridor. Truss depth at center span is 38 feet, and clearance at the end portal bracing is 14 feet 10 inches. The five center panels of each truss are reinforced by horizontal stiffeners, approximately 18 feet above the deck surface, and the center panel employs full-length diagonal and counter-diagonal web-design commonly used in the center panels of many Pratt and Parker trusses. The trusses are also reinforced laterally by a web of sway bracing, the base of which connects the horizontal stiffeners, with diagonals then crossing to connect opposite top chords. Top chords are braced, as well, by lateral and diagonal members and by portal bracing. Floor beams and stringers support a reinforced concrete deck, and the superstructure stands on abutments of concrete caps constructed over earlier masonry abutments, portions of which remain; box-beam guard railings frame the travel corridor.

Original plans for the bridge have not survived, but shop drawings dated May 1928, were prepared by the Lackawanna Steel Construction Company in Buffalo, New York. Arthur Bishop, Chief Bridge Engineer for the Vermont Agency of Transportation at the time, presumably approved the plans. Although drawings confirm the bridge was designed for a two lane travel, the original live-load capacity has not been identified. Rehabilitation plans establish that, as repaired, the bridge is currently designed to carry 36 tons of HS-20-44 live load capacity.

In its present form, Bridge 9 reveals most of its original features. Top chords are box girders with lattice undersides, and bottom chords are paired channel beams joined by stay plates located at intervals of approximately 3 feet 6 inches. In the truss webs, verticals and principal diagonals are rolled I-beams. Horizontal stiffeners, and lateral cross bracing connecting the top chords are all girders assembled with paired angle sections and lattice bars. Sway bracing extending diagonally from the top chords to the horizontal stiffeners opposite, and vertical struts rising to the intersections of that sway bracing, are all single angle sections. Portal bracing was designed with panels of crossed angles between laced, paired angles at the top and bottom of portal panels, and joined by gusset plates. During rehabilitation in 1996, the floor system was replaced, including concrete deck, pavement, curbs, floor beams, stringers, and

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section 7 Page 2

Bridge 9

Name of Property

Sheldon, Franklin County, Vermont

County and State

Narrative Description (continued)

diagonal cross-bracing; concrete backwalls and bridge seats were also replaced. Truss members were cleaned and painted, and those web segments longer than ten feet with greater than 35% section loss were replaced in kind. Some connection plates were also replaced, and all new connections were established using 7/8 inch diameter Type 1 bolts. Existing fixed bearings were cleaned, inspected, and greased, and new truss bearings and bearing assemblies were installed as needed, including shoes and sole plates. All exposed concrete surfaces were treated with a water repellent, and cold-planing bituminous pavement was added to the new deck

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section 8 Page 1

Bridge 9
Name of Property
Sheldon, Franklin County, Vermont
County and State

Statement of Significance

Bridge 9 in Sheldon Springs is being nominated pursuant to the existing multiple property submission titled "Metal Truss, Masonry, and Concrete Bridges in Vermont," under the property type, "metal truss bridges," and the crossing clearly meets the registration requirements for this property type. The crossing is significant for its period of construction following the 1927 flood and for its representative Parker truss design, a frequently-used truss type for longer-span crossings rebuilt after the flood. Although a common design, Bridge 9 is one of only a few Parker truss bridges remaining in the scenic Missisquoi River corridor, which flows across the northern tier of the state and empties into Lake Champlain. As in other important river corridors in Vermont, metal truss bridges are very visible landmarks, albeit increasingly scarce.

The bridge was erected in 1928 during the aftermath of the 1927 flood, an event that destroyed more than 1200 bridges of all types throughout the state. This devastation resulted in a dramatic public rebuilding campaign, marking one of Vermont's most important periods of bridge and highway construction, and metal truss bridges played a key role in that rebuilding drive. Bonds authorized by the state legislature generated funding for this enormous undertaking, but federal assistance had also become available by then. The state's bridge department expanded in size, and engineers emphasized standard building methods for different types of bridges to reduce costs and speed the process. Efforts to develop standard designs had begun in Vermont after World War I, part of a broader, national trend that emerged as state highway departments sought federal funding, contingent on approval of plans or written specifications. Although a process for developing standard plans had already begun to take shape in Vermont, the flood nevertheless furnished a powerful, added incentive to produce standard designs, and the practice became a principal component of all bridge-building programs in Vermont soon after the flood. This reliance on standard designs also forced increasing dependence on review by state and federal engineers, once a matter left to the complete discretion of towns.

During the flood reconstruction, engineers assigned specific types of bridges uniformly according to each crossing's length. Steel truss bridges became available in increments of 10 feet for spans shorter than 100 feet; 20 feet for longer bridges. Pratt through trusses became standard for structures between 100 and 160 feet, and Parker trusses were typically specified for greater lengths. The polygonal upper chords of the Parker design increased the depth (and strength) of the trusses at mid-span, the area of greatest stress, allowing a corresponding increase in span length. Most structures were 21 feet wide, and only a few bridges were individually designed for specific sites. The appearance of truss bridges also changed, becoming more stout. Rolled I-beams requiring no assembly often were used as verticals and diagonals in truss webs, and the size of these steel components distinguished bridges erected after 1927 from earlier, lightly-built spans. Improvements in rolling mills and steel alloys made production of these larger, stronger I-beams economical.

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section 8 Page 2

Bridge 9

Name of Property

Sheldon, Franklin County, Vermont

County and State

Statement of Significance (continued)

Bridge 9 reveals several of these advances in steel manufacturing, notably the rolled beams used as verticals and diagonals in the truss webs. Its rivet-assembled girders also reveal greater breadth than those of earlier truss types. In addition, by enrolling the bridge in Vermont's Historic Bridge Program, the town of Sheldon is participating in an effort to demonstrate the feasibility of using metal truss bridges for continued highway use, as well as the fiscal wisdom of rehabilitating and maintaining these structures.

In addition to its significance as representative of the types of truss bridges built in Vermont after the 1927 flood, Bridge 9 replaced one of the state's two iron suspension bridges erected by the Berlin Iron Bridge Company of East Berlin, Connecticut in 1888; the other stood across the Connecticut River between Brattleboro, Vermont and Chesterfield, New Hampshire and was erected a year later. The location of the Sheldon suspension bridge, Bancroft Falls, also marked the origins of a lengthy legal battle between the Connecticut firm and Vermont's only fabricator of metal truss bridges, the Vermont Construction Company based in St. Albans. Collapse of a truss bridge erected by the Connecticut concern at Bancroft Falls in 1887, supported by a substructure built by the Vermont company, led to construction of the suspension bridge, as well as efforts by the Connecticut firm to recover damages from its Vermont subcontractor. After a lengthy trial in Franklin County Court at St. Albans, a jury awarded the East Berlin company damages for the poor workmanship of the Vermont firm, specifically its stone masons who built the faulty center pier.

The story of the Bancroft Falls suspension bridge is noteworthy because it reveals a common practice among nineteenth century bridge manufacturing companies, namely the sale and exchange of bridges and bridge parts from town to town. The ill-fated truss bridge that the East Berlin firm initially built for Sheldon in 1887 had originally been fabricated by the King Iron Bridge Company of Cleveland, Ohio, for use in Massina, New York. However, that community opted to trade their newly-acquired bridge for a better bridge manufactured by the Connecticut concern, whose engineers accepted the King bridge in trade. Seeking a willing buyer for its second-hand bridge, the East Berlin firm then turned to Sheldon, Vermont. When the ill-fated truss bridge collapsed soon after it arrived in Sheldon, the East Berlin firm accepted responsibility for the loss and replaced it with the suspension span. Remarkably, cables for the suspension bridge had been salvaged by the Connecticut firm from a suspension bridge in Williamsport, Pennsylvania built in 1865 but replaced in 1885, also by a bridge fabricated by the East Berlin company. The suspension bridge worked well enough until the 1927 flood, and Vermont's engineers considered repairing the bridge in 1928, even preparing plans capable of carrying a 15-ton truck. However, those plans were ultimately rejected in favor of the single-span Parker truss, Bridge 9. By the time Bridge 9 was erected, too, a divide between the engineering profession and bridge fabricating companies had been firmly established, and communities such as Sheldon could rely on licensed engineers to design and inspect bridges.

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section 8 Page 3

Bridge 9
Name of Property
Sheldon, Franklin County, Vermont
County and State

Statement of Significance (continued)

Nor were the Berlin Iron Bridge Company's bridges the first to stand at Bancroft Falls, and the crossing has a long period of significance dating to the late eighteenth century when Smith Olmsted established a saw mill near the site, giving his name to the emergent village, Olmsted Falls. Spring waters, first called Kimball Springs, were discovered near the village during the early 19th century, and water was pumped via a windmill to a large bottling house, which stood until 1908. Spas soon followed this discovery, and a briefly thriving industry emerged. Many of the village's visitors stayed at Congress Hall, a four-story hotel built in 1869, and soon began arriving by rail following completion of the Missisquoi Railroad in 1872. The Beers Atlas of 1871 shows the railroad's route, as well as a highway bridge across the river at Missisquoi Falls, later called Bancroft Falls. And, by 1884 the village had been renamed Sheldon Springs. By the close of the 19th century, however, paper manufacturing had replaced spring waters as the community's principal industry. And, as Sheldon Springs became a company town, the bridges at Bancroft Falls began serving more mill workers than spa visitors.

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section 9 Page 1

Bridge 9

Name of Property

Sheldon, Franklin County, Vermont

County and State

Major Bibliographic References

Ashton, Dorothy Hemenway. Sheldon, Vermont. The People Who Lived and Worked There. St. Albans, Vermont: Regal Art Press, 1979.

Beers, F.W. Atlas of Lamoille and Orleans Counties, Vermont. 1871. New York: F. W. Beers & Co., 1871.

Jones, Robert. Railroads of Vermont. Shelburne, Vermont: New England Press, 1993.

Lackawanna Steel Construction Company. "Bridge No. 7, Sheldon Springs." Shop drawings and erection plan dated June, 1928, available at the Vermont Agency of Transportation, Project Development Division.

Roth, Matt and Bruce Clouette, "Vermont Historic Bridge Survey," FR-03. Typewritten survey available at the Vermont Division for Historic Preservation, Montpelier, Vt.

Vermont Agency of Transportation, "Proposed Improvement Bridge Project, Town of Sheldon, County of Franklin" Project Number BHO BTN 2008(1), dated June 8, 1995. Montpelier: Vermont Agency of Transportation, Project Development Division.

Vermont Highway Department, "Plan of Superstructure Railroad St. Bridge over Lamoille River Johnson, Vt.," dated January 27, 1928. Montpelier: Vermont Agency of Transportation, Project Development Division.

**United States Department of the Interior
National Park Service**

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Sections 10 & 12 Page 1

Bridge 9

Name of Property

Sheldon, Franklin County, Vermont

County and State

Section 10: Geographical Data

Verbal Boundary Description

The boundary of the property is the bridge and its abutments. The bridge carries Town Highway 1 (Shawville Road) in Sheldon Springs across the Missisquoi River.

Boundary Justification

The boundary includes all the land historically associated with the bridge.

Section 12: Photograph Labels

The following information is the same for all photographs:

Name of Property: Bridge 9
Location: Sheldon, Franklin County, Vermont
Credit: Robert McCullough
Date: June, 2007
Negatives: Filed at the Vermont Division for Historic Preservation

Photograph No. 1: View toward Southeast
Photograph No. 2: View toward West
Photograph No. 3: View toward Southwest