NPS Form 10-900
(Rev. Aug. 2002)

OMB No. 1024-0018
(Expires Jan. 2005)

AUG 15 2007

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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 19

other names/site number: Brookline-Newfane Bridge

2. Location

street & number: Grassy Brook Road (Town Highway 1-Brookline; Town Highway 4-Newfane) not for publication N/A

city or town: Brookline and Newfane vicinity: N/A

state: Vermont code: VT county: Windham code: 025 zip code: 05345

3. State/Federal Agency Certification

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

Suzanne C Jamele National Register Specialist 8-10-07
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:

	Signature of the Keeper	Date of Action
✓ entered in the National Register		
___ See continuation sheet.		
___ determined eligible for the National Register	Patrick Andrus	9/28/2007
___ See continuation sheet.		
___ determined not eligible for the National Register		
___ removed from the National Register		
___ other (explain): _____		

5. Classification

Ownership of Property: (Check as many boxes as apply)
- ___ private
- _x_ public-local
- ___ public-state
- ___ public-Federal

Category of Property: (Check only one box)
- ___ building(s)
- ___ district
- ___ site(s)
- _x_ structure(s)
- ___ object(s)

Number of Resources Within Property:

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

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:
Transportation	Road-related

Current Functions: (Enter categories and subcategories from instructions)

Category:	Subcategory:
Transportation	Road-related

7. Description

Architectural Classification: (Enter categories from instructions)

other: Camelback through truss

Materials: (Enter categories from instructions)

foundation: 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)

__x__ 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.
__x__ 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)	**Period of Significance:**
Transportation	1928-1955
Engineering	

Significant Person: (Complete if Criterion B is marked above)	**Significant Dates:**
N/A	1928

Cultural Affiliation:
N/A

Architect / Builder:
Berlin Construction Company

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.
__x__ Other state agency: Vermont Agency of Transportation
_____ Federal agency.
__x__ Local government.
__x__ University.
_____ Other. Name of repository: Vermont State Library

10. Geographical Data

Acreage 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.	18	692560	4762996	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: Towns of Brookline and Newfane

Organization: _____ Date: _____

Street & Number: P.O. Box 403 Telephone: 802-365-4648

City or Town: Newfane (Brookline) State: VT Zip Code: 05345

Street & Number: P.O. 36 Telephone: 802-365-7772

City or Town: Newfane State: VT Zip Code: 05676

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.

Narrative Description

Bridge 19, fabricated and erected in 1928 by the Berlin Construction Company, is a Camelback through truss, and it carries Grassy Brook Road (Town Highway 1) in Brookline across the West River, the boundary between the towns of Brookline and Newfane. On the Newfane side of the crossing, the road becomes Town Highway 4, which then continues westerly to its intersection with Vermont Route 30 a short distance northerly of Newfane village. Bridge 19 provides the principal means of access to the small community of Brookline from Route 30. The bridge was rehabilitated in 2003/2004 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 two towns have jointly enrolled Bridge 19 in that program, conveying a preservation easement for the bridge as part of that agreement. A plate attached to the structure confirms the bridge's date and builder, the Berlin Construction Company.

Bridge 19 crosses the West River in two spans. The principal span is 160 feet (center to center of bearings), with eight panels, each panel 20 feet, and an overall width of 20 feet 9 inches (center of truss to center of truss); truss depth at center span is 22 feet 6 inches. The two center panels of each truss are reinforced by horizontal stiffeners, and full-length diagonals in the two center panels are braced by counter-diagonal struts. Diagonals, stiffeners and counter-diagonal struts replace the full-height, diagonal and counter-diagonal web-design commonly used in the center panels of many Pratt and Parker trusses. Top chords are braced by lateral and diagonal members and by portal bracing, and T-section knee braces reinforce the lateral members. Floor beams and stringers support a reinforced concrete deck, and the superstructure stands on abutments of reinforced concrete with remnants of earlier stone abutments at both ends. Box-beam guard railings frame the travel corridor. A small, steel I-beam approach span, thirty feet in length, connects the principal span to the Brookline side of the crossing, and the downstream face of that span is curved to accommodate the sharply angled approach alignment. Approach-span guard railings also use box-beams, but roadway approaches employ standard w-beam galvanized guardrails.

Original plans for the bridge show that top chords of the trusses are box girders with lattice undersides, and bottom chords are paired sets of angle sections with stay plates placed at roughly four-foot intervals. Verticals and diagonals are I-beams, revealing the shift from built-up girders to rolled beams that had begun to occur among bridge manufacturers by the time Bridge 19 was constructed. Horizontal stiffeners and counter-diagonal struts are paired angle-sections with stay plates placed three feet apart. Girders assembled from paired angles joined by lattice are used for both lateral and diagonal bracing of the top chords, and portal bracing consists of paired angle bars joined by a lattice of angles and plates; knee braces are T-section bars. The floor system consists of rolled I-section floor beams, sets of four stringers per panel, angle cross-bracing, and a reinforced concrete deck topped by a paved surface. The structure was designed to a one-lane, H-15 live load rating, according to the standard specifications for

Narrative Description (continued)

steel highway bridges contained in U.S.D.A. Bulletin No. 1259. At the time of its design, work and materials conformed to Standard Road and Bridge Specifications of the Vermont Department of Highways, 1926. The structure received a single shop coat of red lead paint, a second identical coat in the field, and a final coat of Suydam Black Graphite paint.

Bridge 19 was rehabilitated in 2003 and 2004, and today, apart from its new coat of green paint, the crossing appears much as it did in 1928. The trusses contain most of their original materials, and nearly all of the new materials introduced during the rehabilitation matched original materials in kind. Work included partial replacement of truss members (mostly segments of the bottom chords); replacement of the truss floor system including new stringers, floor beams, connections, and deck, which is now bare concrete; and cleaning and painting of all steel. All field connections were made using galvanized high-strength steel bolts. Work also included complete replacement of the approach span's structural steel; rehabilitation of abutment No. 1 (westerly abutment); replacement of abutment No. 2; replacement of truss bearings and shoes at abutment No. 1; repair of truss bearings at the pier; and replacement of approach span bearings and shoes at both the pier and at abutment No. 2.

Statement of Significance

Bridge 19 in Brookline and Newfane 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 Camelback truss design, a modification to the common Parker trusses, which were frequently-used truss types for longer-span crossings rebuilt after the flood. In addition, the structure is the work of a small but important manufacturer in New England, the Berlin Construction Company, Inc., successor to the much older Berlin Iron Bridge Company, absorbed by J.P. Morgan's American Bridge Company conglomerate in 1900. Despite its fairly common design, Bridge 19 is one of only seven surviving Camelback truss bridges remaining on Vermont's network of roads, and the structure establishes a very visible crossing along the principal road leading into the small community of Brookline, located in the state's southeasterly corner. The West River separates that town from its more prominent neighbor, Newfane, which shares the ownership of Bridge 19. As along other important river corridors in Vermont, metal truss bridges are distinct landmarks, albeit increasingly scarce. By enrolling Bridge 19 in Vermont's Historic Bridge Program, the towns of Brookline and Newfane are 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.

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

Statement of Significance (continued)

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. Although the polygonal upper chord of the Parker truss proved efficient in a structural sense, standardized production of this design became cumbersome due to the varied lengths and angles of joints for upper chord segments. To address that shortcoming, engineers developed a modified version of this design, confining the upper chords to five sides, thus limiting the number of angles required for production and thereby reducing labor and costs.

Most bridges built after the flood were 21 feet wide, and only a few structures 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, more lightly-built spans. Improvements in rolling mills and steel alloys made production of these larger, stronger I-beams economical. Bridge 19 shows several of these advances in steel manufacturing, notably the rolled beams used as verticals and diagonals in the truss webs. Its rivet-assembled girders contain greater breadth than those of earlier truss types, as well.

The awkward approach alignment of Bridge 19 also reveals the tendency by Vermont's bridge engineers, hurriedly rebuilding overland transportation after the flood, to retain existing alignments and, when possible, abutments. In the process, that practice helped to preserve important remnants of Vermont's 19th century network of roads, and partial evidence of those roads survives today, visibly so at locations where bridges built after the flood survive. However, and in at least partial recognition of changing circumstances, the designers of Bridge 19 elevated the abutments' bearing pads to a point only two inches below the high water mark of the 1927 flood, roughly seven feet above normal high water. Emphasis on increasing bridge elevation would continue to occur during the following decade, one of several factors that contributed to the growing scale of bridges during that period.

The road linking Newfane and Brookline precedes the charter of Brookline, which was formed with segments from surrounding towns, and the road may have been surveyed as early as 1782. A succession of timber-framed structures have served that crossing, one of which appears on the Beers atlas of 1869. This structure, or one of its replacements, is also mentioned in the 1876 centennial history of Newfane. The 1927 flood destroyed a Town lattice truss, and thaws in January of 1928 washed away two temporary timber, king-post-type, open bridges supported by timber-crib piers, hastily erected to alleviate hardships to Brookline residents caused by a lengthy and difficult detour. Bridge 19 was opened to traffic during the spring of 1928.

Contract 7839 for fabricating Bridge 19 was awarded to the Berlin Construction Company, Inc., established by former employees of the Berlin Iron Bridge Company, which had been acquired by Morgan's American Bridge firm. The new company established its shop in Berlin, Connecticut, and

Statement of Significance (continued)

continued to build bridges in New England, capturing a small share of a market increasingly influenced by the beneficial economies of scale achieved by American Bridge and its parent concern, U.S. Steel Corporation. Shop drawings for Bridge 19 were completed by March, 1928, and are signed by Werd and Hooser for the company, with the initials E.W.S. also appearing on several pages. These shop drawings are based on plans prepared by Vermont Highway Department staff engineers or draftsmen and approved by Arthur Bishop, Bridge Engineer, and Hubert Sargent, Chief Engineer in January, 1928.

Major Bibliographic References

Berlin Construction Company, Inc., "Newfane Brookline Bridge over West River, Brookline, Vt." Shop drawings for Contract No. 7839, dated March, 1928. Montpelier: Vermont Agency of Transportation, Project Development Division.

Newfane Bicentennial Committee, A New Fane in the Second Century. 1774-1974. Newfane, Vermont: Bicentennial Committee, 1974.

Newfane Centennial Committee, Green, J. J., Rev. Charles Burnham, and J. H. Merritfield, eds., Centennial Proceedings and other Historical Facts and Incidents relating to Newfane, Vermont. Brattleboro, Vermont: D. Leonard, Steam Job Printer, 1877.

Rink, Marie and Anna, Historical Sketch of Brookline, Vermont. Wardsboro, Vermont: Green Mountain Press, 1941.

Roth, Matt, and Bruce Clouette, "Vermont Historic Bridge Survey," WH-22. Montpelier: Vermont Historic Bridge Program, Vermont Agency of Transportation.

Vermont Agency of Transportation, "Proposed Improvement Bridge Project, Towns of Brookline and Newfane, County of Windham," Project Number BHO 1442 (25), dated June 25, 2003. Montpelier: Vermont Agency of Transportation, Project Development Division.

Vermont Highway Department, "Plan of Newfane Brookline Bridge over West River, Brookline, Vt," dated January 27, 1928. Montpelier: Vermont Agency of Transportation, Project Development Division.

Section 10: Geographical Data

Verbal Boundary Description

The boundary of the property is the bridge and its abutments. The bridge carries Grassy Brook Road (Town Highway 1) in Brookline across the West River, the boundary between the towns of Brookline and Newfane. On the Newfane side of the crossing, the road becomes Town Highway 4, which continues westerly to its intersection with Vermont Route 30.

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 19
Location:	Brookline and Newfane, Windham County, Vermont
Credit:	Robert McCullough
Date:	June, 2006
Negatives:	Filed at the Vermont Division for Historic Preservation

Photograph No. 1:	View from Newfane side, looking northerly
Photograph No. 2:	View from Newfane side, looking northeasterly
Photograph No. 3:	View from Brookline side, looking westerly