

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY

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DATE ENTERED

FILE COPY

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

OFFICE COPY

1 NAME

HISTORIC

Hadley "Parabolic" Bridge

AND/OR COMMON

2 LOCATION

STREET & NUMBER

Corinth Road (County Route 1)

NOT FOR PUBLICATION

CONGRESSIONAL DISTRICT

CITY, TOWN

Hadley

VICINITY OF

29th

STATE

New York

CODE
36

COUNTY

Saratoga

CODE

091

3 CLASSIFICATION

CATEGORY

- ☐ DISTRICT
☐ BUILDING(S)
☒ STRUCTURE
☐ SITE
☐ OBJECT

OWNERSHIP

- ☒ PUBLIC
☐ PRIVATE
☐ BOTH
PUBLIC ACQUISITION
☐ IN PROCESS
☐ BEING CONSIDERED

STATUS

- ☒ OCCUPIED
☐ UNOCCUPIED
☐ WORK IN PROGRESS
ACCESSIBLE
☐ YES: RESTRICTED
☒ YES: UNRESTRICTED
☐ NO

PRESENT USE

- ☐ AGRICULTURE
☐ COMMERCIAL
☐ EDUCATIONAL
☐ ENTERTAINMENT
☐ GOVERNMENT
☐ INDUSTRIAL
☐ MILITARY
☐ MUSEUM
☐ PARK
☐ PRIVATE RESIDENCE
☐ RELIGIOUS
☐ SCIENTIFIC
☒ TRANSPORTATION
☐ OTHER

4 OWNER OF PROPERTY

NAME

Town of Hadley

STREET & NUMBER

Town Hall

CITY, TOWN

Hadley

VICINITY OF

STATE

New York

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

Saratoga County Courthouse

STREET & NUMBER

CITY, TOWN

Ballston Spa

STATE

New York

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

DATE

☐ FEDERAL ☐ STATE ☐ COUNTY ☐ LOCAL

DEPOSITORY FOR
SURVEY RECORDS

CITY, TOWN

STATE

7 DESCRIPTION

CONDITION

☐ EXCELLENT
☐ GOOD
☒ FAIR

☐ DETERIORATED
☐ RUINS
☐ UNEXPOSED

CHECK ONE

☐ UNALTERED
☒ ALTERED

CHECK ONE

☒ ORIGINAL SITE
☐ MOVED DATE _____

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Hadley "Parabolic" Bridge spanning the Sacandaga River was built to connect the village of Hadley on the north bank with the adjoining Town of Hadley on the south. Erected by the Town of Hadley on the site of an earlier structure, the bridge carries Corinth Road (Saratoga County Route 1) across the deep ravine separating the steep, wooded banks of the Sacandaga. The distance between the waterline of the river and the road surface of the bridge deck is approximately forty-five feet. The overall length of the bridge is 181 feet, and the width sixteen feet measured from center to center of opposite truss chords.

The two end abutments and the single pier supporting the bridge are built of rough-cut, mortared stone blocks. The superstructure of this two-span, prefabricated iron highway bridge is composed of two separate trusses of differing sizes: the smaller structure is an end-post truss forty-five feet in length, while the main span is a lenticular truss, 136 feet in length, measured from the outer ends of their respective truss bearing supports.

The smaller of the two spans is a three-panel pony truss built of cast and wrought iron elements. The upper chord is a riveted, built-up plate girder which is supported by lattice-braced, vertical structural members riveted to the flanges of the plate girder. The lower chord is constructed of double wrought iron tension bars, and the center panel of the span is cross-braced with diagonal wrought iron tie rods. All joints in this and the main truss are secured by threaded two-inch diameter iron pins capped with hexagonal nuts.

The large lenticular truss of the Hadley Bridge is more complex in its design, but was built using identical techniques and materials. A rare semi-deck truss, the large span is composed of nine panels each fifteen feet in width. From the end pins which join them, the lenticular truss chords arch above and below the bridge deck, attaining a maximum width of twenty-two and one-half feet between the chords at the center of the span. A series of flanged, built-up plate girders riveted together forms the upper chord. Top and bottom iron cap plates are bolted to the flanges of the girders. The lower chord is constructed of double 1 1/4 - by 3-inch wrought iron bars.

The same type lattice-braced vertical compression members which support the small truss also support and brace the main truss. To give the larger span greater resistance to sway, similar compression members serve as horizontal braces between the lower chords below the bridge deck. Diagonal cross-braces of 1 1/2-inch diameter iron tie rods and a horizontal tension rod linking both ends of each truss provide additional stability

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CONTINUATION SHEET Description ITEM NUMBER #7 PAGE 2

to the panels of the bridge. A set of iron expansion rollers was originally installed beneath the west end of the bridge deck, though highway salt and rust have corroded this mechanism.

The entire bridge deck and support system was originally built of timber. The present deck is composed of rough-cut transverse two-by-fours supported by seven 7-inch iron stringers which bear on the upper flanges of eight 30-by 1/4 inch transverse iron I-beams. The deck surface is covered with one inch of asphalt.

During 1972 the Hadley "Parabolic" Bridge was reinforced against developing structural decay and instability. The cross braces were supplemented with a system of steel cable braces tightened with turnbuckles. To reduce stresses on the bridge, the width of the deck was reduced from the original sixteen feet to fourteen and one half feet by the addition of a timber curb secured by wood support blocks, thereby reducing traffic to a unidirectional flow at a given time. Closed during the time these alterations were made, the bridge is presently open to vehicular traffic of three tons or less.

8 SIGNIFICANCE

AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW

PERIOD				
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 0-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input checked="" type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input checked="" type="checkbox"/> TRANSPORTATION
<input type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input checked="" type="checkbox"/> INVENTION		

SPECIFIC DATES 1895

BUILDER/ARCHITECT

Berlin Iron Bridge Co.

STATEMENT OF SIGNIFICANCE

Erected to span the Sagandaga River in 1895, the Hadley "Parabolic" Bridge is the only known semi-deck lenticular iron truss bridge surviving in New York State. This two-span structure having an overall length of 181 feet incorporates design elements patented by engineer William O. Douglas of Binghamton in 1878 and 1885. Now believed unique in the state, the Hadley Bridge was once typical of the iron highway bridges manufactured by the Berlin Iron Bridge Company during the last quarter of the nineteenth century. Repaired in 1972, the Hadley "Parabolic" Bridge remains open to light vehicular traffic.

During the second half of the nineteenth century, a highly innovative period in American bridge-building technology, iron was the principal structural material employed. Hundreds of patents for iron bridges and their components were granted, and most of the iron vehicular bridges that have survived were built according to several basic patents controlled by a group of large dominant manufacturers. The Hadley Bridge is such a structure. The larger of its two spans embodies the lenticular or "parabolic" truss patented by engineer William O. Douglas of Binghamton, New York in 1878 and 1885. Douglas' lenticular truss, designed to include cast iron upper chords and posts, wrought iron lower chords, and a system of lateral and cross-braces, was built in through, deck, and semi-deck versions during the last quarter of the nineteenth century.¹ Douglas assigned his patents to the Berlin Iron Bridge Company, East Berlin, Connecticut during the 1880's and became an agent for this leading iron bridge manufacturing firm. Between 1880 and 1900 the Berlin Iron Bridge Company manufactured hundreds of prefabricated iron vehicular bridges, erecting them throughout New York State and New England.²

¹Carl W. Condit, American Building Art, Vol. I: The Nineteenth Century (New York, 1960), 127.

²Catalogue of the Berlin Iron Bridge Company (East Berlin, Connecticut, ca. 1900).

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CONTINUATION SHEET Significance ITEM NUMBER #8 PAGE 2

The semi-deck lenticular bridge over the Sacandaga River at Hadley was built in 1895. At the meeting of the Hadley Town Board held on April 20 of that year, Highway Commissioner James D. Mulrenan was authorized "to confer with the several bridge companies and get their figures and places to build said bridge and to lay the name before the Town Board for their inspection." A contract with the Berlin Company was approved on June 29, and construction began during the summer. By September 23, 1895, the Hadley "Parabolic" Bridge and a new road leading to the east and west banks of the Sacandaga was completed at a cost of \$6000.³ The bridge is a typical example of the short iron truss bridges erected throughout New York State during the late nineteenth century, and its construction contributed to the social and economic development of the region.

The significance of the Hadley "Parabolic" Bridge lies in its survival despite the disappearance of all other known examples of the Douglas semi-deck truss from the roads of New York State. Historian Carl Condit has noted that "in spite of its lateral bracing, the Douglas truss proved to be of inadequate stiffness," and because of its high rate of failure, ceased to be manufactured and erected after a brief period of popularity lasting only fifteen years.⁴ Strengthened against inherent structural weaknesses in 1972, the Hadley "Parabolic" Bridge continues in use as a vehicular bridge, and remains an important landmark structure in the development of American transportation and bridge-building technology.

³ Minutes of the Town Board, 5 March-23 September, 1895, Hadley Town Records, Town Clerk's Office, Hadley, N.Y. (Typescript on deposit, N.Y.S. Division for Historic Preservation, Albany, N.Y.)

⁴ Condit, I, 127.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

See continuation sheet.

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than 1 acre

UTM REFERENCES

A

1	8
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5	9	3	6	3	0
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4	7	9	6	1	0	0
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D

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LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
		Saratoga	091
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

Raymond W. Smith, Historic Preservation Program Assistant

ORGANIZATION NYS Office of Parks & Recreation
Division for Historic Preservation

DATE

June, 1976

STREET & NUMBER

TELEPHONE

518-474-0479

CITY OR TOWN

STATE

New York

Albany,

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL

STATE XXX

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 Deputy Commissioner for Historic Preservation

DATE

8/24/76

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

DATE

KEEPER OF THE NATIONAL REGISTER

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Hadley "Parabolic" Bridge, Hadley, Saratoga County

CONTINUATION SHEET Bibliography ITEM NUMBER #9 PAGE 1

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the Sacandaga River." Unpublished engineering
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Condit, Carl W. American Building Art. Vol. I: The Nineteenth
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TYPE ALL ENTRIES -- ENCLOSE WITH MAP

1 NAME

HISTORIC

AND/OR COMMON

Hadley "Parabolic" Bridge

2 LOCATION

CITY, TOWN

Hadley

____ VICINITY OF

COUNTY

Saratoga

STATE

New York

3 MAP REFERENCE

SOURCE

U.S. Geological Survey, 7.5 Minute Series (Lake Luzerne Quad)

SCALE

1:24,000

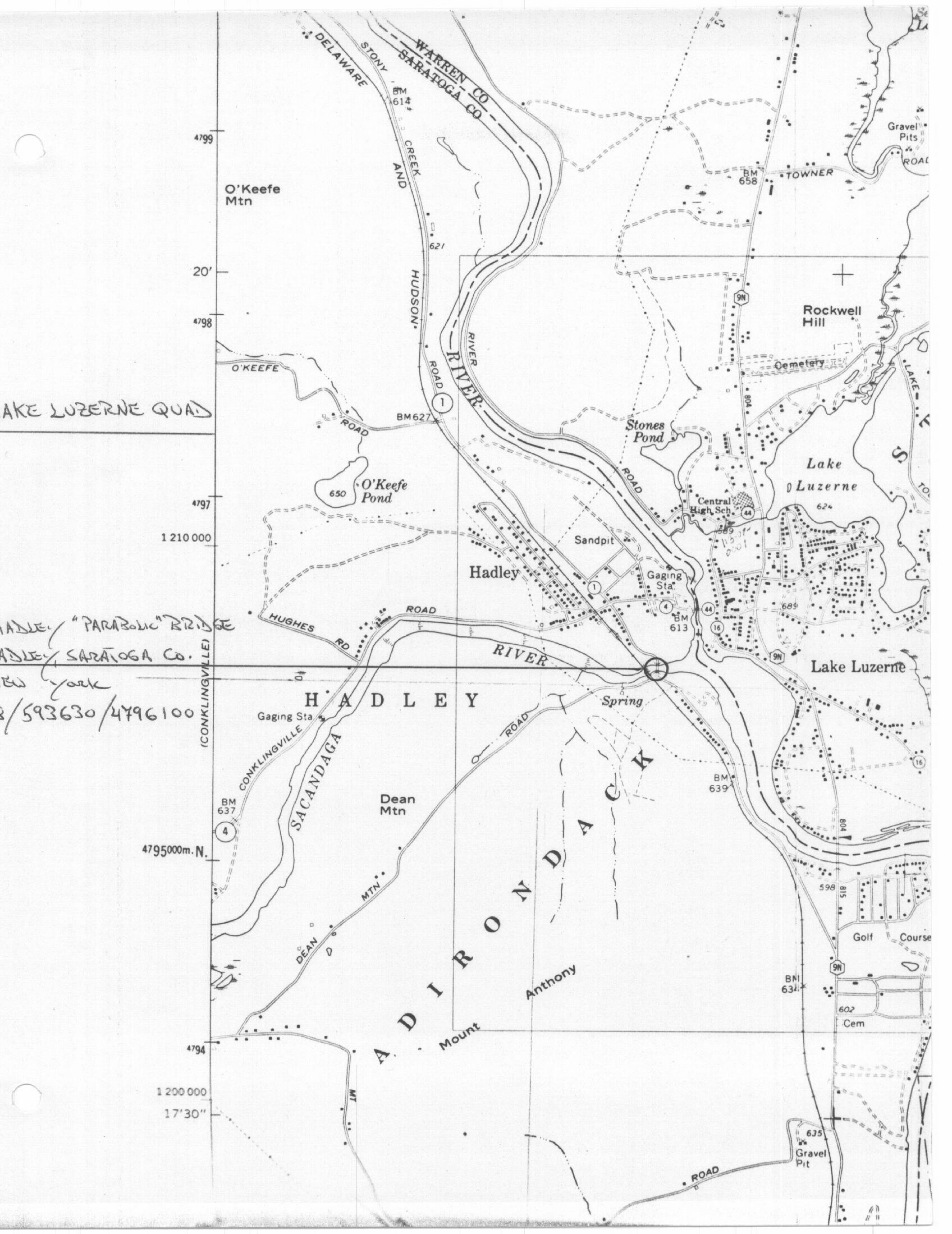
DATE

1968

4 REQUIREMENTS

TO BE INCLUDED ON ALL MAPS

1. PROPERTY BOUNDARIES
2. NORTH ARROW
3. UTM REFERENCES



LAKE LUZERNE QUAD

HADLEY, "PARABOLIC" BRIDGE

HADLEY, SARATOGA CO.

NEW YORK

3/593630/4796100

(CONKLINGVILLE)

4795000m. N.

1200000

17'30"



Hadley "Parabolic" Bridge
Hadley, Saratoga County, NY

Photo credit: Donald Recette-1976
Neg. filed at: Town Clerk's Office,
Hadley, NY
West elevation-view looking southeast