NPS Form 10-900
(Rev. 8-86)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

AUG 01 1989

NATIONAL

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name N/A

other names/site number Gilsum Stone Arch Bridge

2. Location

street & number spanning the Ashuelot River along Surry Road, just west of its intersection with NH Route 10 — n/a ☐ not for publication

city, town Gilsum — n/a ☐ vicinity

state New Hampshire code 33 county Cheshire code NH005 zip code 03448

3. Classification

Ownership of Property
- ☐ private
- ☐ public-local
- ☒ public-State
- ☐ public-Federal

Category of Property
- ☐ building(s)
- ☐ district
- ☐ site
- ☒ structure
- ☐ object

Number of Resources within Property

Contributing	Noncontributing	
		buildings
		sites
1		structures
		objects
1		Total

Name of related multiple property listing:
N/A

Number of contributing resources previously listed in the National Register 0

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, 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. ☐ See continuation sheet.

R. Stuart Wallace — July 27, 1989

Signature of certifying official — Date

NEW HAMPSHIRE

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of commenting or other official — Date

State or Federal agency and bureau

5. 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:) _____

Signature of the Keeper — 8/31/89

Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)

TRANSPORTATION/road-related (vehicular)

Current Functions (enter categories from instructions)

TRANSPORTATION/road-related (vehicular)

7. Description

Architectural Classification (enter categories from instructions)

OTHER: Dry Masonry Arch

Materials (enter categories from instructions)

foundation
walls
roof
other Granite

Describe present and historic physical appearance.

The Gilsum Stone Arch Bridge is a single semicircular vault using dry-laid granite blocks as voussoirs and random granite rubble as spandrel and abutment material. The arch has a clear span of 47'-8", a width between roadway curbs of 20'-8", and a clear height above average stream elevation of 36'-6" on the upstream side. The road surface above the crown of the arch is 43'-6" above the stream bed. The structure has undergone relatively few changes (noted below) since its construction, and retains integrity of design, setting, materials, workmanship, feeling, and association.

Of some thirty nineteenth-century stone arch bridges remaining in New Hampshire, the Gilsum span is preeminent for the dramatic height of its arch and for the rugged picturesqueness of its setting. The bridge spans the Ashuelot River at a deep natural gorge. The sides of the ravine are largely broken ledge, and form a deep and narrow cleft where the waters of the river are confined to a narrow channel known for its swift and turbulent current at times of high water. The stone arch is the fifth bridge at its location. The first was "the great bridge by Baxter's Mills," and was a timber span first thrown across the gorge in 1778 or 1779 and repaired often thereafter due to damage from spray from a nearby milldam.[1] The second and third were also timber spans, built in 1833 and 1843, respectively. the fifth was a stone arch bridge built in 1860; this collapsed within a few months due to inexpert workmanship.[2] The present bridge was built in 1862-3.

The bridge represents a mature example of a bridge-building technology which began to be seen in rural New Hampshire in the 1830s. Due to its great height and span (and undoubtedly to the fact that its immediate predecessor had collapsed), the bridge has a vault built with greater precision than is common among dry-laid arch bridges in New Hampshire. Its voussoirs are large and long stones, quarried nearby and carefully hammered to obtain straight arrises and tight joints. The voussoirs are graduated slightly in size, larger stones being used in the haunches of the vault than in its crown. Alternate voussoirs, especially on the downstream side, have their ends left rough to suggest rustication. There is a marked contrast between the hammered stones of the vault and the random rubble of the spandrels, abutments, and wing walls, and this contrast emphasizes the distinction between the functioning vault and the massive body of infill supported by it. While the voussoirs are precise in finish and coursing, the remaining exposed faces of the bridge are composed of stones with split faces, exposed drill holes, and uneven shapes, laid in increasingly irregular patterns from bottom to top and roughly wedged by stone chips.

☒ See continuation sheet

Upstream of the bridge, the northeast abutment is continued north as a wing wall composed of crudely coursed granite rubble and capped by large coping stones. This wall is connected to a massive pier, constructed of a local stratified metamorphic stone, which marks the site of a former milldam.

Downstream, the southeast abutment is strengthened by a granite buttress built of coursed ashlar and extending the full height of the bridge. This buttress was built in 1951 because of the slight movement of some stones in the original abutment, and has a core of concrete.

The road surface of bituminous macadam is supported on each side by concrete curbs which provide level retaining walls extending a few feet above the bridge's stonework. Added in the 1920s, these concrete curbs support steel posts which carry two strands of steel cable.

Original appearance: Photographs taken shortly after the completion of the bridge in 1863 reveal that the structure essentially retains its original appearance. The changes that have taken place since construction of the bridge are: 1) the removal in the 1920s of two courses of granite coping on each side of the roadway, and their replacement by concrete curbing with steel posts and guard cables; 2) the paving of the roadway (originally gravel) with bituminous macadam; and 3) the construction in 1951 of the concrete and granite buttress against the southeast face of the bridge.

Footnotes:

[1]Silvanus Hayward, History of the Town of Gilsum, New Hampshire, from 1752 to 1879 (Manchester, N.H.: for the author, 1881), p. 58.

[2]Ibid., p. 49.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

☐ nationally ☒ statewide ☐ locally

Applicable National Register Criteria ☐ A ☐ B ☒ C ☐ D

Criteria Considerations (Exceptions) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

Areas of Significance (enter categories from instructions)
Engineering

Period of Significance
1863

Significant Dates

Cultural Affiliation
N/A

Significant Person
N/A

Architect/Builder
N/A

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

The Gilsum Stone Arch Bridge is significant as one of the most ambitious of some thirty dry-laid and vaulted granite highway bridges surviving in New Hampshire from the nineteenth century. New Hampshire attained importance during the nineteenth century as a granite quarrying region, and the skill of local stonecutters and masons resulted in a proliferation of arched stone bridges, especially in the southern and southwestern counties of the state. Built in 1862-3 under the supervision of local official William Leonard Kingsbury (1820-1890), the Gilsum bridge was erected at a flourishing period of such construction. It represents one of the state's most daring uses of dry-laid vaulting in a location where such construction offered great advantages. The bridge thus embodies the distinctive characteristics of its type, period, and method of construction while attaining a high aesthetic value and while also representing the work of a master. The structure is important as an example of engineering and thereby achieves significance under National Register Criterion C.

Prior to the 1830s, all major highway bridges in New Hampshire were constructed of wood; the only stone bridges in the region were short-span culverts constructed with stone slabs laid upon piers. While wooden bridges served well for most uses, certain locations revealed the disadvantages of wood. These locations included rivers where springtime flooding tended to carry away light wooden structures, and streams where turbulence and spray tended to keep wooden bridges wet and subject to rapid decay.

The use of native stone to overcome these problems had a await the development of quarries close to sites where split stone was needed for bridges. Stone bridges also required the presence of civil engineers and stonemasons with skill in constructing large-span stone vaults. Both conditions were met by the 1830s, when granite quarrying was a mature and thriving business across much of southern New Hampshire. At the same period, experienced practical engineers began to arrive in the state to build the canals, foundations, and tailraces associated with large textile factories and, a few years later, to design the heavy stonework often needed by the newly-developing railroads.

☒ See continuation sheet

9. Major Bibliographical References

[XX] 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:

[ ] State historic preservation office
[XX] Other State agency
[ ] Federal agency
[ ] Local government
[ ] University
[ ] Other

Specify repository: N.H. Department of Transportation

10. Geographical Data

Acreage of property Less than one acre

UTM References

	Zone	Easting	Northing
A	18	722350	4768525
B			
C			
D			

[ ] See continuation sheet

Verbal Boundary Description

The property being nominated consists solely of the stone arch bridge at the junction of NH Route 10 and the Route 12A crossover. The State Bridge Location No. is 088/117. Boundaries of the nominated property are shaded on the attached sketch map.

[ ] See continuation sheet

Boundary Justification

The nominated property, being only the bridge itself, makes the boundaries consistent with those originally associated with the bridge at the time of its construction.

[ ] See continuation sheet

11. Form Prepared By

name/title Harriet H. Commoss, President; James L. Garvin, Editor, NH Div. of Hist. Resources
organization Gilsum Historical Society date March 2, 1989
street & number H C 32; Box 83 telephone 603-352-4676
city or town Gilsum state New Hampshire zip code 03448

With these conditions met, local communities began to debate the value of bridging some of their more difficult streams with vaulted stone spans. The pioneering example of a vaulted stone masonry bridge in New Hampshire was probably the "High Bridge" adjacent to a textile factory at New Ipswich, built (after the failure of a predecessor) by Jesse Patten in 1817.[1] In 1832 (the same year that a Gilsum committee recommended construction of an arched bridge over the Ashuelot River), the selectmen of Henniker, some thirty miles away, decided to hire a professional civil engineer to report on the feasibility of building a two-span vaulted stone bridge over the Contoocook River. They employed James Haywood of Lowell, Massachusetts, as a consultant. Apparently on the basis of his recommendation, they contracted in 1835 to build such a bridge under the direction of Isaac Colby Flanders (1805-1882), a native of Warner, New Hampshire, who was then working in Lowell as an engineer.[2]

Soon thereafter, Keene, New Hampshire, eight miles from Gilsum, became a center of stone bridge engineering. In 1839 a four-arched bridge was built to connect the south end of Keene's main street with the Fitzwilliam Turnpike, and the following year a two-arched bridge was built north of the town on the Third New Hampshire Turnpike.[3] During this period, Keene newspapers made several references to the advantages of vaulted granite highway bridges. Also in 1839, the town of Hillsborough voted to span the Contoocook River at Hillsborough Bridge with a granite arch built, according to the 1841 town history, by "Messrs. Reed and Thompson of Keene."[4]

These successful spans of the 1830s paved the way for a proliferation of vaulted stone bridges throughout New Hampshire's Hillsborough and Cheshire Counties. The town of Hillsborough alone once had eleven such bridges, built under the influence of local official Hiram Monroe. Monroe "was an earnest advocate of this style of bridges, and did more than any other man towards their construction, claiming they were cheaper in the end than the wooden structure ..."[5]

Originally built under the supervision of civil engineers from the larger textile manufacturing cities and towns, vaulted stone bridges eventually became sufficiently understood to be erected by intelligent stonemasons in many towns. By the 1860s when the Gilsum bridge was constructed, southern New Hampshire had many contractors with sufficient experience to build such spans. One such builders was Reuben E. Loveren of Hillsborough, who was the chief builders of several of these spans in his town between 1859 and 1867.[6]

The Gilsum Stone Arch Bridge has several claims to significance within this context. First, it has the highest vault of any of the nineteenth-century dry-laid arched bridges of New Hampshire. Second, it was built in a deep gorge which demanded special skill of the builders and required a massive amount of stonework. Third, it is a striking example of the mature phase (reached during the 1860s) of vaulted stone highway bridge construction in the state. Fourth, the bridge has

extraordinary aesthetic power due to its picturesque site, its unusually massive construction, its great height and span, and the fineness of its workmanship. The contractors who constructed the bridge under Kingsbury's direction remain unknown due to the destruction of Gilsum's town records in a fire, but the bridge is clearly one of the most ambitious of its type in New England and the work of experienced workmen.

Unlike several other surviving stone bridges, the Gilsum structure was not part of the turnpike system which linked Vermont, New Hampshire, and Massachusetts in the early nineteenth century. The bridge served only local traffic, yet it remains important. Silvanus Hayward, Gilsum's nineteenth-century historian, noted that "both the Ashuelot river and the many mountain brooks that flow into it become so violent in the Spring freshets, that Gilsum has almost needed a 'pontifex,' like ancient Rome."[7] Such a town, easily isolated from its neighbors by spring floods, relied on its local roads and gained great benefit from the security provided by such a bridge over one of the steepest gorges within its territory.

Footnotes:

[1]Kidder, Frederic and Augustus Addison W. D. Gould [anon.], The History of New Ipswich, from its First Grant in MDCCXXXVI to the Present Time. (Boston: Gould and Lincoln, 1852), p. 128.

[2]Cogswell, Leander W., History of the Town of Henniker, Merrimack County, New Hampshire, facsimile of the 1880 edition. (Somersworth, N.H.: New Hampshire Publishing Company, 1973), pp. 248-53.

[3]The Repertory (Keene, N.H.) I (November 1925), p. 587; Ibid., II (1927), p. 125; Keene History Committee, "Upper Ashuelot:" A History of Keene, New Hampshire (Keene, N.H.: 1968), pp. 288-89, 309.

[4]Smith, Charles James, Annals of Hillsborough, Hillsborough County, N.H. (Sanbornton, N.H.: by the author, 1841), p. 24.

[5]Browne, George Waldo, The History of Hillsborough, New Hampshire, 1735-1921 (Manchester, N.H.: for the town, 1921), p. 302.

[6]Hillsborough, N.H., Town Reports, 1859-67; see especially reports for 1859 and 1866.

[7]Hayward, Silvanus, History of the Town of Gilsum, New Hampshire, from 1752 to 1879 (Manchester, N.H.: for the author, 1881), pp. 58-59.

BIBLIOGRAPHY:

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Rawson, Marion Nicholl, "The Old Arch Bridge," The New Hampshire Troubadour 11 (August 1941), pp. 3-4.

The Repertory (Keene, N.H.).

Smith, Charles James, Annals of Hillsborough, Hillsborough County, N.H. (Sanbornton, N.H.: for the author, 1841).

Upton, Richard F., "Stone Arch Bridges," Granite State Architect 2 (January-February 1966), pp. 24-31.

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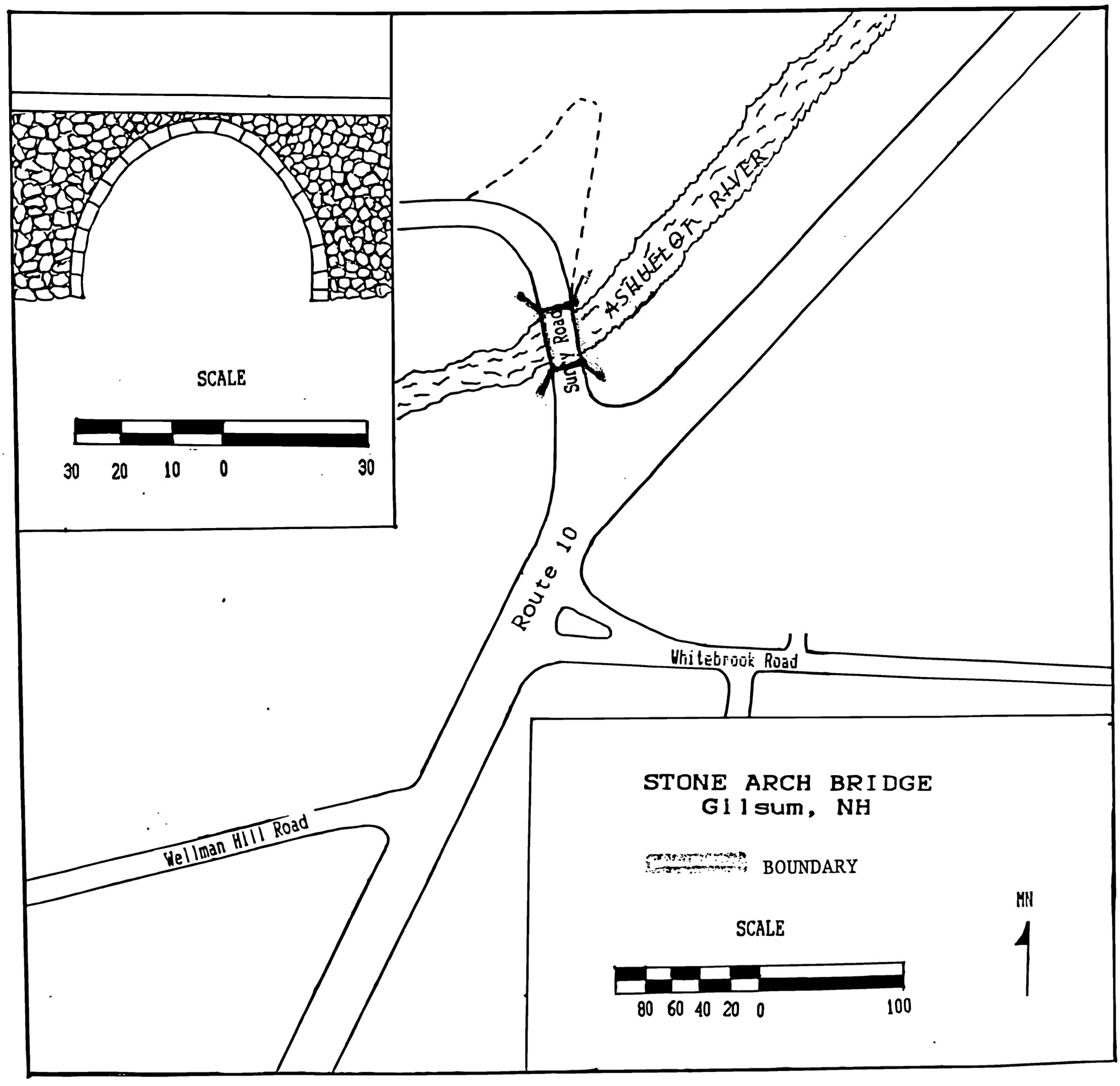
GILSUM STONE ARCH BRIDGE, GILSUM
SKETCH MAP



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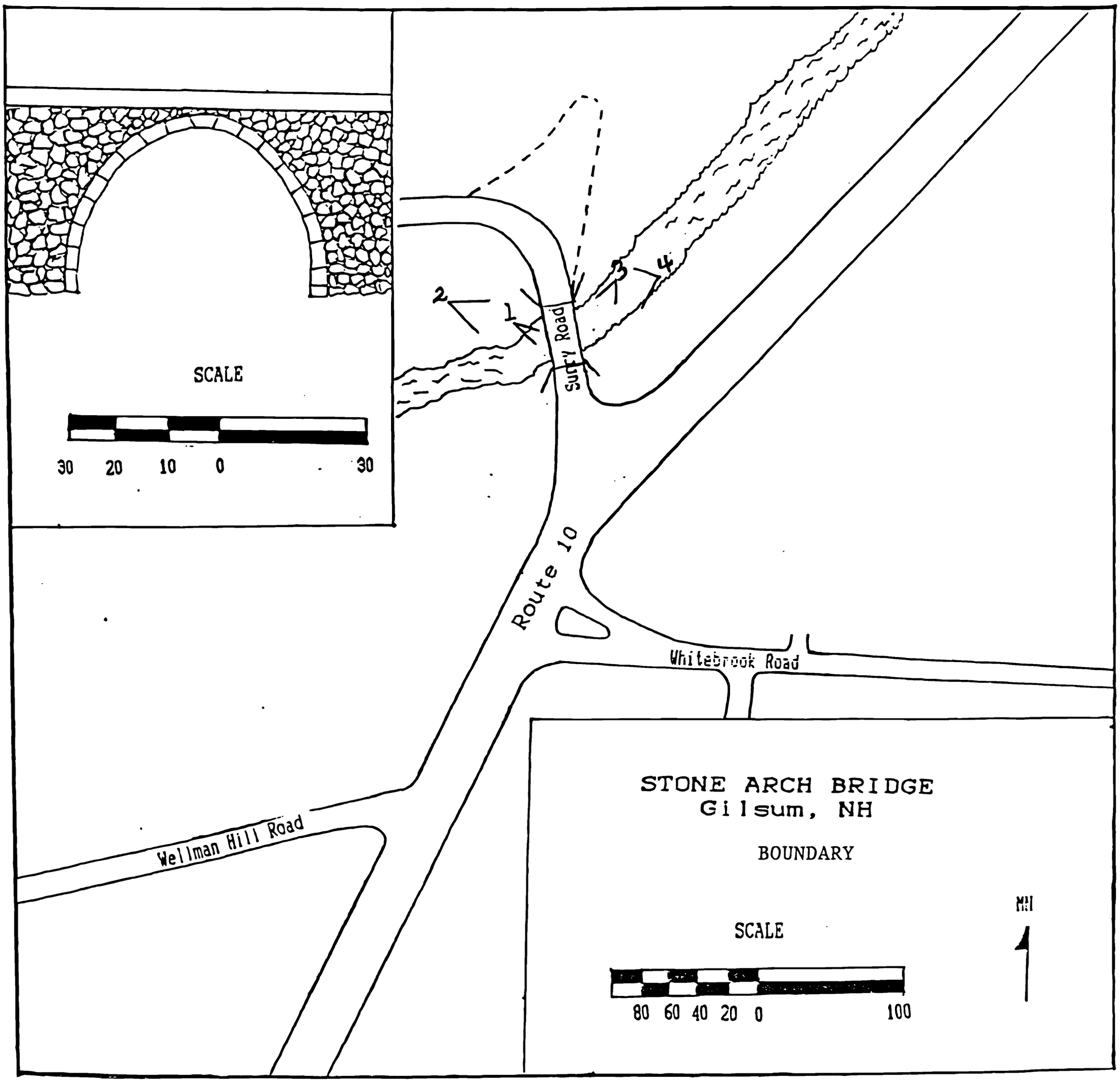
GILSUM STONE ARCH BRIDGE, GILSUM
PHOTO KEY



PROPERTY OWNER AND ADDRESS:

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