

# THE (DRY STONE) BRIDGES OF HILLSBOROUGH COUNTY (NH)



This bridge is noteworthy because of its rise to span ratio: one to four. Most of the others are approximately one to two.



photos: T L

Wooden bridges, vulnerable as they are to wear, tear, rot and streams in flood, have short life spans. Stone bridges were a logical alternative in New Hampshire, aka the Granite State, and their longevity justified the expense of construction. The productivity of its many quarries had increased in the 1830's with the introduction of the plug-and-feathers method of splitting so there was abundant material to hand. Granite was already being used for the piers and abutments of the state's many wooden bridges, and stone-arched bridges were inevitable given the examples of arches successfully employed in bridges downstream in the lower Merrimac Valley.

The first stone-arch bridge in New Hampshire was built in 1834 in Henniker just down river from Hillsborough.

In Hillsborough there was a bridge that had been constructed in 1824 with dry-stone abutments and a timber structure spanning the distance—40 feet—between them. In 1839 this was converted by replacing the timber structure with a stone arch and the result provided the impetus for 11 more stone-arched bridges to be built across the Contoocook River and its tributaries in Hillsborough County. Of these, five have survived. Two are out of service—the by-passed bridge in downtown Hillsborough (photo, top left) and the one under the waters of Lake Franklin Pierce (sorry, no photo)—but the others are still in use.

Local stonemasons soon learned the principles and techniques of arch construction and more than 40 stone bridges were built in New Hampshire before the 1900's. These were all dry-stone structures because the lime mortar available then would deteriorate due to damp caused by rain or flooding and leach out, leaving voids, and leading to failure. Bridges constructed of mortarless stonemasonry had advantages: if inundated during a flood, contact between the stones was unaffected and the masonry would drain and dry out readily when the water level dropped.

Note that the arches or, more correctly, the vaults in these photos are carefully constructed of a single curving 'course' of well fitted and bonded split granite *voussoirs* (individual arch elements); while the *spandrels* (the space between two arches or between an arch and an abutment) are composed of loosely fitted rubble walling. These slender shell-like arch/vault units are bearing the combined weight of the spandrels, the kerb wall containing the roadway, the mass of the roadway itself and the vehicles that pass over it—and doing it gracefully.

T L

Primary resource: James L. Garvin. *Notes on the Origins of Arched Stone Bridges in the Contoocook River Valley of New Hampshire*. New Hampshire Division of Historical Resources. photos, upper left: Sawyer Bridge, Hillsborough town left, far left and below: Gleason Falls Road bridges, pages 69-70: Gleason Falls Bridge bottom left: The old Carr Bridge carries Jones Road across Beard Brook.