Unique regional technique grew out of Erie Canal construction

Cobblestone Masonry Construction

by Luke M. Snell

A unique construction technique called cobblestone masonry flourished in the United States between 1825 and 1865; several buildings still exist as testimony to the technique's durability. Approximately 800 cobblestone structures were built, most of them in the area of Rochester, New York. Others were built in Illinois, Michigan, and Wisconsin.

The cobblestone masonry era has been linked to the construction of the Erie Canal for which excavated stone was used to build canal locks and bridge abutments. The work required a large number of skilled stone masons, who were recruited to the relatively undeveloped frontier of western New York state from New England, Pennsylvania, eastern New York, and as far away as England.

When the canal was completed, western New York began to boom. For the first time, farmers could ship crops easily to the East Coast. The canal also spawned many allied businesses—restaurants, hotels, blacksmiths, stables, etc.—to support the shipping industry. Many of the masons from the Erie Canal construction stayed in the materially rich Fingerlake and Great Lakes areas as farmers and businessmen, and many of them did part-time cobblestone masonry work.

A cobblestone is defined as a stone from 2 to 10 in. (50 to 250 mm) in diameter. The early cobblestones were elongated, shaped like a loaf of bread. And they were abundant in the plowed fields and along the lakes and streams of western New York, providing a supply at no cost except for the time of gathering and sorting them.

Limes and natural cements were commonly used mortars during this time. Portland cement was patented in 1824 by the English builder Joseph Aspdin, but production techniques for it were not perfected until 1845, and even then the cost was high and availability was limited.

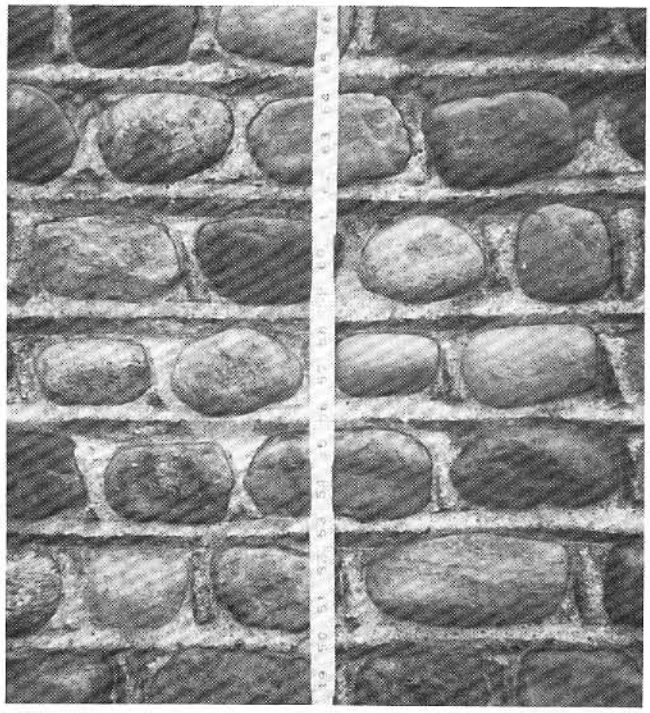
Limestone was abundant in western New York and making lime was relatively inexpensive. Lime had been locally manufactured for the Erie Canal construction and these facilities remained active, making lime available at a low cost.

The lime was produced by burning ground limestone (heating it to approximately 2000 F [3870 C]) to create quicklime. The quicklime was then converted or slaked to a usable lime product at the jobsite. The following is summarized from a cobblestone mason's notes describing the process of slaking the quicklime for use in mortar:[1]

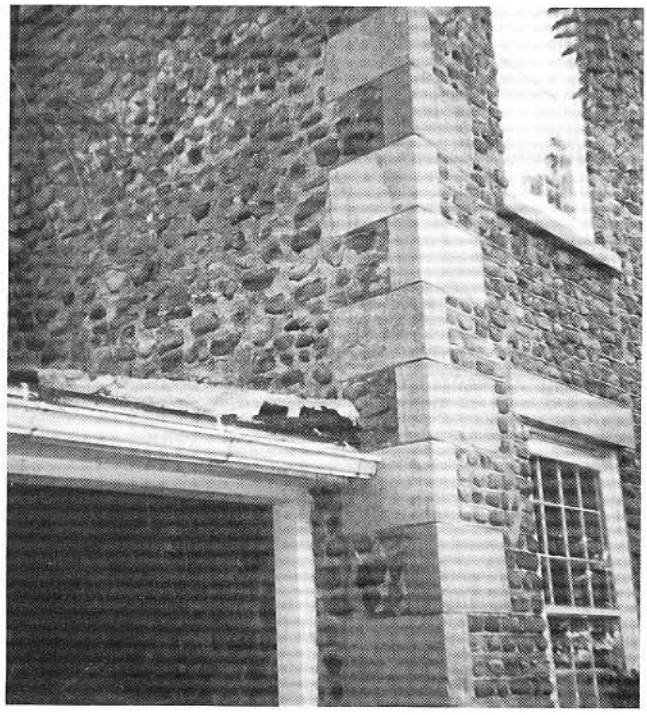
> (1) Quick lime to be slacked (is put) in a box. Then mix with equal parts of sand.
>
> (2) Pour in a pit dug in the ground and left for at least a year. Cover with at least two inches of sand.
>
> (3) Remove from pit and mix with two additional parts of sand.
>
> (4) A rule when mortar was ready for use: that mortar would not stick to a trowel when trowel was inserted into mortar, and trowel would pull out clean.

Unlike portland cement, lime mortar hardens by reacting with carbon dioxide in the air. The lime is protected from the air while it is in the pit, allowing ample time for the slaking process (changing the fresh quicklime to slaked lime) to be completed.

Cobblestone masonry construction emerged about 1825 when western New York was prosperous and growing. At the same time, a large number of part-time masons were available, cobblestones and lime were accessible, and homeowners and builders apparently were willing to try new construction techniques.



Sometimes the mortar was troweled to a "V" between the rows of cobblestones so that they would stand out distinctly.



Often, the side of a house that was visible from the road was cobblestone masonry, while the sides not seen were typical fieldstone construction.

Cobblestone masonry basically consists of uniform sized cobblestones placed in horizontal rows. Sometimes the mortar was troweled to a "V" between rows so that the cobblestones would stand out distinctly. These details were for visible exterior walls only. In some cases, the side of a house that was visible from the road was cobblestone masonry, while the back of the house was typical fieldstone construction.

Cobblestone walls were approximately 15 to 24 in. (380 to 610 mm) thick, with fieldstone being the majority of the wall. The cobblestone was placed as a facing veneer for the structure's exterior; the interior walls were plain fieldstone. The elongated cobblestones extended into the fieldstone (the fieldstone and the facing veneer were constructed at the same time) so that the elongated stone functioned as its own tie.

With this technique, a mason could lay about three courses of cobblestone (10 to 12 in. [250 to 305 mm] high) on a 40 ft (12 m) wall in a 12 hour work day. Obviously, the technique was extremely slow and would be cost effective only when skilled masons were available at a low cost and the cobblestones and fieldstone were plentiful.

As cobblestone masonry became more popular, methods were developed to improve the speed of construction. One procedure was to build the fieldstone wall first, then to add rounded cobblestone as a veneer afterward. Unlike the early construction, these cobblestones were not tied into the fieldstone walls, making these walls less durable.

Only a few masons built more than three cobblestone houses, so there were few improvements in the process. Several masons worked together on homes and learned the techniques from each other, but work would stop when there were visitors on the jobsite. The masons apparently did not want to share their trade secrets and risk competition for masonry work.

Little has been written about cobblestone construction.[2-6] Most of what we know is what a few owners wrote. One of their accounts is given in the following letter to the editor of "Cultivator" magazine:

> Messrs Editors:
>
> In 1835 I built me a house of cobblestone, of the following description: front 45 x 83 feet, 2 stories, forming an "L" in rear of 65 x 23 feet, single story for kitchen, washroom and wood shed. My plan for thickness of wall was: the cellar wall 20 inches thick to first floor, drop off two inches to second floor, then drop off two inches, and extend out to top. Sort your stones so as to have the outside course three or four inches, with straight lines for cement. Take the coarsest of sand for the stone, and a fine sand for brick. I used the common stone lime, one bushel of lime to seven of sand for stone, and the same kind of lime, one bushel to two of sand for brick. Furnished all materials on the ground, and paid my masons $3.75 per hundred feet. He furnished his own tenders and made his own mortar, built his own scaffolds and tended themselves. I boarded them. I think I have as good a house as can be made of the same materials. There is not a crack in the walls that you can stick a pin in as yet. The stone, I do not consider any expense as it frees the land of them. There is no painting to be done to it, as is required of brick or wood, it makes the strongest of walls, and I think the neatest and cheapest building that can be made. You may calculate the expense of the building at so much a perch, according to the size you wish to build. I did not keep an exact account of my building, as

Cobblestones
continued

the stone, sand, and lime were bought at leisure spells.

P. P. Bonesteel
Victor-Ontario County
New York
March 1842

The homeowner considered the cobblestones and the time to gather and sort them to be free. But if this cost were considered realistically, it would be considerably higher than most other materials.

The cobblestone masonry buildings in other parts of the United States appear to have been built by masons who learned the techniques in western New York and moved on. In most cases, only a few homes were built in any one area. The unique conditions that sustained its use in western New York and along the Erie Canal did not exist in other parts of the country, where cobblestone masonry was more of a novelty.

The era of cobblestone masonry construction ended about 1865, or after a single generation of masons. The technique was just too slow, and thus too expensive, to continue.

The durability and beauty of this type of construction is evident in the cobblestone structures that still stand, many of which are preserved as homes and stores, and as monuments to a unique era and to yesterday's craftsmen.

References

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Selected for reader interest by the editors.

ACI Fellow **Luke M. Snell** is a professor and department chairman of the construction program at Southern Illinois University at Edwardsville. He also is an engineering consultant specializing in construction materials problems. He is active on several ACI committees including 214, Evaluation of Results of Tests Used to Determine the Strength of Concrete; 308, Curing Concrete; and 517, Accelerated Curing of Concrete.