Building the “Grand Canal”

On the morning of July 4, 1817, a group of dignitaries, important people such as political leaders, gathered on a plot of marshy ground south of the village of Rome, New York. There, they dug the symbolic first shovelful of earth that began construction of the Erie Canal. Building New York’s “Grand Canal” as the Erie Canal was often called, involved excavating (digging) a ditch between the Hudson River at Albany and Lake Erie at Buffalo. The canal ditch was 363 miles long, 40 feet wide at the surface, 26 feet wide at the bottom, and 4 feet deep. Over 300 bridges were built to make sure that people and goods could move from one side of the canal to the other.

Before the contractors could begin excavation, engineering parties had to stake out (the placing of posts pointed at one end for driving into the ground) the line. Axemen cut the stakes used in marking the canal line and to remove brush, small trees, and other similar obstructions. Targetmen held targets, rodlike instruments 10 feet long, used to help surveyors measure changes in elevation in to maintain the necessary level. Engineers were responsible for making the three-dimensional measurements needed to construct the canal ditch.

Nearly all the excavation was done by men using picks and shovels and by draft animals (animals like oxen that pull heavy loads). Workers used black gunpowder to blast through rock, with the powder holes drilled by hand. Very few machines were available to supplement physical labor, but there was one machine to bring down trees and another to pull stumps.

The Erie Canal contained locks, aqueducts, and waste-weirs (designed to eliminate excess water). Builders used cut stone to make almost all of these structures, parts of which were always submerged in water. To build these structures, engineers needed hydraulic (waterproof) cement, which would harden under water to hold the stone in place. But there seemed to be no source of such cement in the United States; it would have to be imported from Europe at considerable cost. Then limestone was discovered near the community of Chittenango, New York. When burned, crushed, and mixed with sand, the limestone produced cement that hardened under water – the result was the invention of hydraulic cement in America.

When New York State built the third version of the Erie Canal – the Barge Canal – in the early 20th century, there were many machines, techniques, and equipment available that the builders of the Erie Canal did not have. These advancements reduced the need for manual labor.

Selection from “Building the “Grand Canal”” by F. Daniel Larkin

Credit: NYS Archives/ NYS Archives Partnership Trust