Building Moore's Falls

The construction of the Moore's Falls (also known as Moor's Falls) canal took five years (1808-1813) under the Union Locks and Canal Company (bought in 1811, by The Middlesex Canal Corporation). The canal was made to provide easy travel on the Merrimack River, mainly so Concord could easily trade with the rest of the world. There were many canals on the Merrimack to make travel easier, but the Moore's Falls canal extends out into the water, with one wall out in the river while the other wall is the land on the East side of the river. The timing of the construction of the canal depended on the weather and how high the water was. Construction needed to take place during low water because when the water level got too high, the canal would almost be totally submerged underwater. The canal was constructed by digging and placing dirt where the locks were going to be, then stone was transported to the site, mainly by oxen and other large animals, to make the wall of the canal. The gaps of the wall were filled with lime mortar because, if the walls had leaks, the lock may not function correctly. This canal is different from all of the other Union Locks and Canal Company canals because it has a two lock system. This means that along with the image seen to the left, there is another gate after the top gate so that a higher point can be reached than just one lock alone. These two locks were 10 feet by 82 feet, drop-gate locks. One lock was positioned at the South end of the channel and the other placed about midway through the canal, with a total drop of about 6 feet. The Moore's Falls canal ended up costing about $15,000 in 1813, that adjusted for inflation is $220,650 in 2017. This was the most expensive canal by far of the Union Locks and Canal Company's canals; the second most expensive was Merrill's Falls, at $10,000, and all of the other canals that the company owned cost only about a third of Moore's. This canal was expensive due to all of the rock excavating required so that boats would not scrape against the rocks during low water, and the fact that this was the only double lock out of all of the Union Locks and Canal Company's canals. Below is an aerial view of Moore's Falls, the South (right) lock is covered in growth, while the North lock (left) is partially destroyed. Because the locks were originally on the Litchfield side, Litchfield was a large town compared to Nashua and Merrimack, but this changed when the railroad was later put in, and people wanted to be near the railroad system more than the canals.

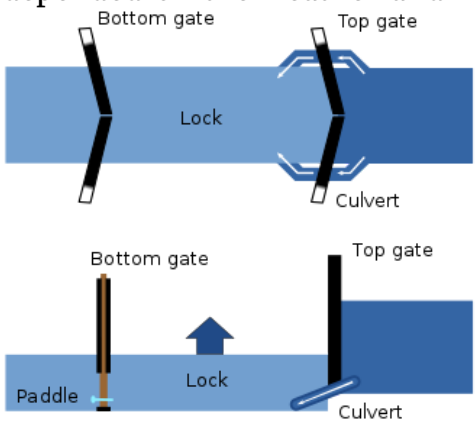


Image Credit- Wikipedia


Image Credit - Nolan Jones

(All information on this plaque was gathered from The Middlesex Canal Association)
William Parker's Eagle Scout Project: Moore's Falls historical plaques; Troop 11
2017

The Middlesex Canal System

Moore's Falls was built as part of the Middlesex Canal System. The canal system was one of the first engineering marvels in US history, which was later studied for the construction of other canals, including the Erie Canal. During the canal systems' time in operation, the people boating on the canal could go from Concord to Nashua, and out to the Atlantic Ocean. People on the canal brought all types of materials up and down the river. Goods brought up to Concord were typically natural resources like wood and clay. The people of Concord used the raw materials from the other local towns and sent things like glass and steel back down the canal to the rest of the world. Each of the canals in the canal system was needed because of a rise or fall in elevation. Moore's Falls has a fall of 6 vertical feet in about 650 feet of length, large rocks that could scrape boats that passed by, and various waterfalls, all making Moore's Falls impassable without the canal during most conditions.

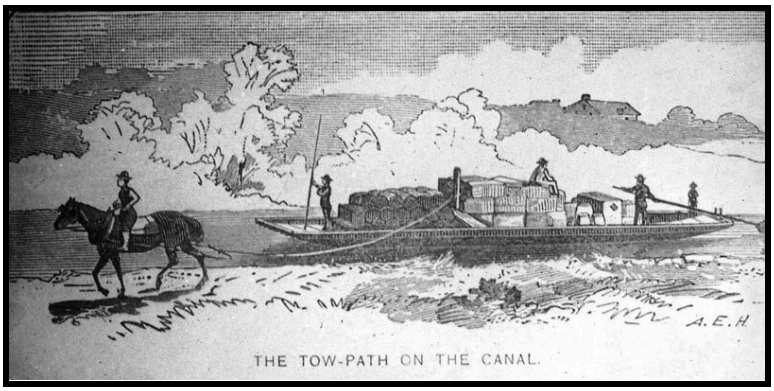


Image Credit- Bill Warner

James Sullivan and Loammi Baldwin were the original owners of the Middlesex Canal Corporation. Before they began the company, Baldwin was a Major during the Battle of Lexington and Concord and commanded the Woburn militia in 1775. James Sullivan was the 2nd Massachusetts Attorney General from 1790, up until 1807, holding his position while working on the Middlesex Canal. Sullivan worked as the president of the company, overseeing operations, while Baldwin was in charge of civil engineering. Baldwin also frequently talked to the shareholders and showed them the progress they made while the canal system was under construction. This was necessary because the shareholders were the only source of income the company had during the nine years the canal system was being built. Sullivan went on to become the 7th Governor of Massachusetts after the completion of the canal system, and Baldwin became known as the Father of American Civil Engineering.

Loammi Baldwin

Image Credit- Sharon Hall

(All information on this plaque was gathered from The Middlesex Canal Association)

Expanding the Canal System

After the Middlesex Canal connected Chelmsford Massachusetts by water out to the Atlantic Ocean in 1803, people wanted to see the canal system continue growing and extend up to Concord using the Merrimack River. This started the project that led to the creation of Moore's Falls and many other canals on the Merrimack River. The canals on this river would make Concord and small towns like Litchfield able to trade much easier with the rest of the states and the world. When the canal system opened, the Middlesex Canal Corporation owned most of the canals from Chelmsford to the Atlantic, having bought the land and built the canals by themselves. When the construction of these canals became more well known, smaller companies started popping up and bought some of the falls on the Merrimack that the Middlesex Canal Corporation did not already own. These companies built canals on the falls and took some of the profit of the canal system for themselves. The Middlesex Canal Corporation could not do anything about other people owning other falls and boats needed to use the canals no matter who owned them. Because of this, construction of Moore's Falls was taken up by the Union Locks and Canal Company. In December of 1808, Jonathan Eastman, Ebenezer Eastman, Isaac Chandler, and Winthrop Fifield began the Union Locks and Canal Company and were given permission by the NH Legislature to clear the river, and to build canals where necessary, from Reed's Ferry to Amoskeag Falls, which was about nine miles of the river. The company needed to build six canals over the nine mile length, and created those canals almost identical to one another, only varying because of the geography of the area. The Union Locks and Canal Company suffered serious technical and financial difficulties over the years, to the point that lotteries were authorized by NH and Mass to help raise funds. But, still the company suffered, and, by 1811, the Middlesex Canal Corporation bought 73 of the 83 shares of stock and took control of the company.

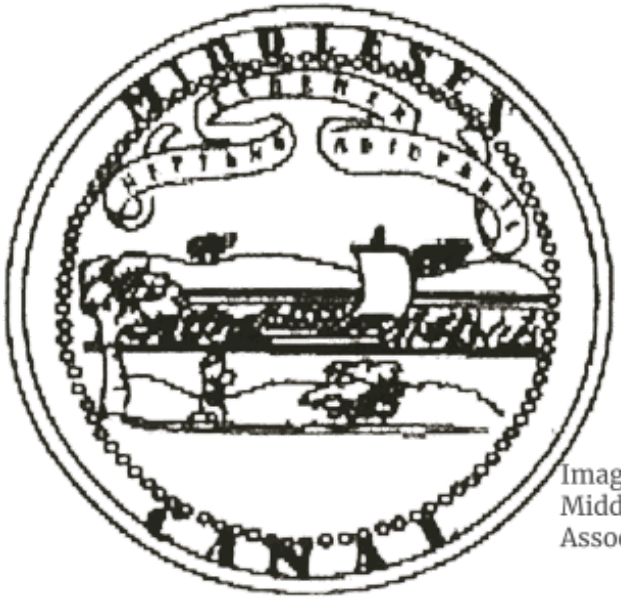


Image Credit- The Middlesex Canal Association

This is the Middlesex canal seal, the seal was put on the stock certificate to insure that it was authentic. The banner bears the latin phrase CEREREM NEPTUNO ADJUVANTE, which translates to "Neptune, The God of the Sea, helping Ceres, the Goddess of Grain."

(All information on this plaque was gathered from The Middlesex Canal Association)

Moore's Falls in the 1800s

After the completion of all the canals on the Merrimack River, including Moore's Falls, boats started using the canals to go to and from Concord. Although it is unlikely that the number of boats using the canal system were clearly tracked at the time, there was probably not too long of a wait time for any canal. Even though canals on the Merrimack could only take a single boat at a time, a boat could pay its fees and get through the canal within three minutes, if done efficiently. How much the boaters needed to pay to go through the canals was determined by the weight of the items on the boat. A boat could hold up to about 30 tons of freight, and was on average about 75 feet long, 9 feet wide in the middle and narrowed towards the ends. The whole boat was flat-bottomed, but the bottom sloped up from the corners, towards both the bow and stern. The crew of one of these boats consisted of a skipper and two bowmen. Each bowman had their own scull oar to row the boat, while the skipper steered the boat, but also had his own scull oar when steering was not required. Boats on the Merrimack could be privately owned, part of a small group of boats under the same company, or one of the Middlesex Canal Company's boats. The boats could be identified from the symbols on them or small differences in the way the boats looked. Boats were made to almost perfectly fit into the locks of the canals, with as little extra space as possible. Sometimes the boats did not use the canals during certain conditions. When the water was high enough, boats could skip the canals and not have to pay the fees. Almost all of the boats did this, because even though there was a risk that the boat could capsize or break, it meant higher profits for the boaters. People boating on the river looked at a tell tale sign at Moore's Falls to determine if it was safe to skip the small locks: Old Hildreth. Old Hildreth is the huge rock seen in the middle of the river. Even noticeable from aerial views, this rock determined whether crews thought it was safe enough to skip parts of the canal system. When the rock was almost completely submerged underwater, most agreed it was reasonable to bypass the small canals. The cellar hole here was part of the basement of the lockkeeper's house. The lockkeeper would regulate the locks at this canal. When boaters wanted to sleep for the night, the lockkeeper turned his house into a hotel. The boaters got a bed and food for the night, paid the lockkeeper for their expenses, went through the lock in the morning and continued on for the day.

(All information on this plaque was gathered from The Middlesex Canal Association and the book *The Incredible Ditch: A Bicentennial History of the Middlesex Canal*)

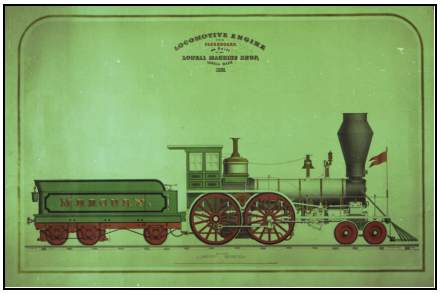
Special Thanks to Chuck Mower for helping with the idea for making this plaque

Closing the Canal System

In 1830, railroads started appearing around the world. People wanted a rail track that serviced the same areas that the Middlesex Canal system connected. Originally the Middlesex Canal System Company liked the idea of a railroad. They thought that the railroad would build up cities and towns along the Merrimack and that those cities would continue to use the canal system, leading to increased canal business as cities continued to grow. The railroad could run during the winter months while the river would be frozen over and impede water travel, and the canal systems grant did not limit land use to canal purposes. Thus, a project to build railroads was taken on and engineered by James and George Baldwin, sons of Loammi Baldwin, one of the founders of the Middlesex Canal company.

Although originally liking the idea of the railroad, the Middlesex Canal quickly realized what it would do to their company once they got permission to start constructing it. Once cities grew along the canal system, the people of those cities needed faster communication and transportation year round. This led to a petition for a charter for a railroad between Lowell and Boston that was made to the Massachusetts Legislature in 1829. The Middlesex Canal Company beseeched the Legislature to not grant the charter, citing that the company had about one and a half million dollars invested in the canal, and the first thing that the company intended was to pay back everyone they owed through continued canal toll collection. However, this plea was to no avail, in a decision strongly influenced by Daniel Webster, the charter was granted on June 5, 1830, with no compensation awarded to the Middlesex Canal Company. The railroad's conditions for the charter stated that "no other railroad should be built parallel with it for 30 years and provided for a 75¢ fare from Lowell to Boston."

Many parts of the Boston & Lowell Railroad were transported by boat on the Middlesex Canal and, in 1835, the railroad was completed. Even though the track only connected Lowell to Boston, the canal system lost most of its money by losing the traffic between the two major cities. The canals between those two locations was their main source of income, and without it could not sustain its losses. By the 1850's there was no way for the canal system to compete with the railroad. In November 1851, the last boat passed through the canal and the charter to operate was surrendered. In 1852, and 1853, the canal was sold by sections, usually to the owners of the adjoining land, for a total of $130,000. The Massachusetts Supreme Judicial Court in 1859 dissolved the Middlesex Canal Company corporation. The Boston & Lowell Railroad became one of the first railroads in North America and the first major one in Massachusetts, and still runs to this day.



A sign for the train "Mercury."
A train that was on the
Boston & Lowell Railroad.

Image Credit- Lowell Historical Society

(All information on this plaque was gathered from The Middlesex Canal Association)