

The Bethel Bridge lighthouse was one of about a half-dozen beacons situated at various points along the Chesapeake and Delaware Canal. Its purpose was to warn ships of the numerous locks and bridges that distinguished the different water levels along the 14 mile channel. The 30 foot wooden tower possessed an oil lamp with a red signal.

The C&D canal's history extends far back into the colonial days of the New World. It was a Dutch cartographer and envoy, Augustine Herman, who first proposed the waterway in the mid 1600's. He noticed that two important bodies of water, the Chesapeake Bay and the Delaware River, could be joined by digging across a slender piece of land. The economic implications of the canal were apparent early on, for it could cut the travel distance from Philadelphia to Baltimore by almost 300 miles.

This grand idea was slow to become a reality, however, and the land in question was explored by surveys a number of times over the next century and a half. In 1788 a number of prominent business leaders got behind the plan, and these included the influential Philadelphia figures Benjamin Franklin and Benjamin Rush. In 1802 decrees by the Pennsylvania, Maryland and Delaware state houses led to the incorporation of the C&D Canal Company. The new firm undertook more surveys, and began construction in 1804. The first version of the canal was

complex, involving 14 locks that would connect the Elk River in Maryland with the Christina River in Delaware. C&D clearly underestimated the resources needed to complete the project, however, and had to stop construction in 1806 as they were out of money.

It wasn't until 1822 that a second incarnation of the C&D company was formed, and it was quickly determined that \$2 million would be required to finish the job. This sum was raised by stock purchases from Pennsylvania, Maryland and Delaware, as well as the federal government. These state pledges totaled \$625,000, and the rest was produced by a public offering.

The old canal route was scrapped, and between 1823-24 the U.S. Army Corps of Engineers put two senior engineering officers at the disposal of C&D. They, along with two civilian professionals, determined that a new four-lock route between Delaware City and Maryland's Elk River was the best way to go. Work began in April of 1824, and involved 2,600 laborers. These men worked with simple pick and shovel for only 75 cents a day, and were often plagued with mudslides due to the swampy consistency of the land. They finished their task in 1829, at a cost of nearly \$2.5 million. The canal was 14 miles in length and ten feet deep, a stretched for 66 feet across at its top. Four wooden bridges traversed the canal, including a covered one

at Summit, Delaware, and three swing bridges. One of these was the Bethel Bridge, the site of the lighthouse. The waterway had two locks in Delaware, at Delaware City and St. Georges, and two in Maryland, both at Chesapeake City. All of these locks were marked with lighthouses similar to the Bethel Bridge beacon. All four locks were originally 100 feet long and 22 feet in width.

C&D's venture proved very profitable at first, as all manner of items including lumber, cotton, coal and grain were pulled along the channel by teams of horses and mules. Passenger barges, sloops and schooners constituted some of the other 'customers' of the canal. 1872 saw a peak in cargo tonnage; that year, over 1.3 million tons of goods were brought through the waterway.

Inevitably there were problems with such a complex transportation arrangement; from the beginning the use of locks caused water to be lost from the canal's higher portion to its lower. Various measures were taken to combat this issue, such as a steam pump in 1837 intended to bring up water from the Back Creek. Between 1852-54 two steam engines and a wooden waterwheel were placed at the Chesapeake City pumphouse (now home to the Canal Museum). This wheel had 12 troughs to scoop up water and deposit it higher up, and measured 39 feet in diameter and ten feet across. The steam engines were 150

horsepower, and burned through eight tons of coal each day. They were capable of driving the water wheel to elevate 170 tons of water per minute.

Another persistent difficulty with the canal was the ever-increasing size of ships. Steam technology made possible boats that possessed a deeper draft, and these could not transit the shallow locks. For this reason the C&D company missed out on a lot of ship traffic; this and the substantial operating and repair cost cut into their bottom line.

It would seem natural to solve this problem by simply deepening and widening the existing waterway, but instead there were concerted efforts to find an entirely new route. Though numerous companies and committees were formed to study the alternate paths, they could not agree on a solution. In 1906 Teddy Roosevelt decided to take a fresh look at the C&D, and he established a committee to change the lock-laden canal to a "free and open waterway."

Roosevelt's suggestion ultimately led to the federal government buying the canal in 1919 for \$2.5 million. One of the first things the fed did was convert the six existing bridges and a railroad span to four vertical lift stretches and a new bridge for rail traffic. Initially, the Army Corps of Engineers at Wilmington, Delaware was charged with operating and upgrading the canal. By 1927 they had succeeded in moving the canal

entrance from Delaware City a few miles south to Reedy Point, Delaware. They also did away with the locks and made the channel a completely sea-level affair. The new canal was 12 feet deep and 90 feet wide, and cost upwards of \$10 million.

In 1933 the canal was reassigned to the Philadelphia Army Engineers, and they undertook the improvements that have given the C&D its modern dimensions. From 1935-38 the Philadelphia Corps spent \$13 million on expanding the channel to 27 feet deep and 250 feet wide. Throughout the 1960's and 70's the waterway was further extended to 450 feet wide and 35 feet deep. This change was enacted partially in response to a number of ship to bridge collisions; there were 8 such incidents between 1938 and 1950. New bridges were constructed as the canal dimensions were increased, including tall highway spans for car and truck traffic at St. Georges and Chesapeake City. In 1966 the Army Corps completed a railroad lift bridge, which they deeded to the Pennsylvania Railroad. A number of these bridges were lauded by the American Institute of Steel Construction as being extremely attractive examples of their category.

The canal today is a busy, electronically monitored conduit that is responsible for ferrying 40% of the sea traffic into and out of Baltimore. The hodgepodge of vessels are dispatched via fiber optics, microwave and radio systems, and closed circuit television. Tankers, barges, tugboats and cargo ships join

numerous private recreational boats in this thriving waterway.

The C&D canal has produced a strong job market for U.S. Coast Guard certified pilots; these are required for any vessel involved in foreign trade. A ship entering the canal from the east will usually have a Delaware River pilot board and guide it through the Delaware Bay. At Chesapeake City, a Maryland pilot skilled in the nuances of the Chesapeake Bay will relieve him or her. The two pilots have an interesting way of embarking and disembarking at Chesapeake City: a small skiff comes alongside a ship, and the pilots enter and exit via the gangway or Jacob's ladder while the cargo vessel continues to plow along.

Besides being one of only two U.S. sea-level canals of commercial importance, the C&D is also on the National Register of Historic Places. It is a Mechanical Engineering Landmark, and as such a Canal Museum is operated by the Army Corps at the old pumphouse in Chesapeake City. This is a free museum, and it contains the original waterwheel and pumping engines installed in the 1800's. Also included are interactive videos on the history of the canal, as well as a closed-circuit TV link from which visitors can ascertain the precise position of ships traversing the channel.

Near the museum there is a 30 foot wooden replica of the original Bethel Bridge Lighthouse. Rendered unnecessary when the C&D was changed over to sea level status in 1927, the

reconstruction was donated by the Chesapeake City Lions Club in October, 1996.

Resources

- "Bethel Bridge Light." 2004. Chesapeake Bay Lighthouse Project. Retrieved April 24, 2004 from:
<http://www.cblights.com/lights/replicabethelbridge.asp>.
- "The Chesapeake and Delaware Canal." N.d. US Army Corps of Engineers, Philadelphia District. Retrieved April 24, 2007 from: <http://www.nap.usace.army.mil/sb/c&d.htm>.