

SPANNING THE ORIGINAL CAPE COD CANAL

The original Cape Cod Canal was constructed as a private waterway between the years of 1909-1914. The Canal made Cape Cod an island. As such, construction of two vehicle and one railroad bridge were required to reconnect Cape Cod to the rest of Massachusetts.

The railroad bridge that spanned the private Canal was constructed in 1909-1910. It was a 2,200 ton Strauss trunnion Bascule Bridge.



The 160-foot span pivoted on the north side of the Canal utilizing a single counterweight. The bridge in the raised position had an opening of 140 feet for vessels passing through. Two tracks crossed the bridge, one heading towards Provincetown and the other towards Woods Hole.



SPANNING TODAY'S CAPE COD CANAL

When the US Government purchased the private Canal in 1928, the US Army Corps of Engineers was tasked with improving it. This included widening the waterway to nearly 500 feet. The Corps would need to construct new highway bridges and one new railroad bridge to span the larger waterway.

The Corps contracted the engineering firm Parsons, Klapp, Brinckeroff and Douglas of New York to design and supervise construction of a new vertical lift railroad bridge. The firm of McKim, Mead and White of New York were also hired to handle the architectural appearance of the bridge.

Construction began in December of 1933. Funding for all three bridges was authorized under the National Industrial Recovery Act of 1933 as part the Federal Government's efforts to put Americans back to work during the Great Depression.



The railroad bridge was sited within 60 feet of the original in order to minimize the amount of track realignment.

The bridge's 16-panel moveable span was assembled in the lowered position in three sections. First the sections on each side, then the center section were constructed. The only time the Canal was closed to traffic during the reconstruction was during the 5 days it took to complete the six center panels.

The Canal reopened on Friday, September 20, 1935 when the bridge was raised for the first time ever. The first train crossed the bridge on December 29, 1935.

Today, the bridge is used primarily by trains hauling trash from Cape Cod to a waste-to-energy facility in Rochester, MA. Trash trains utilize the bridge every day except Sundays. In recent years a dinner train, operated seasonally, also crosses the bridge on weekend evenings.

FAST FACTS

- ❖ The vertical clearance above mean high water: 135 feet
- ❖ Total height above mean sea level: 271 feet
- ❖ Number of Tracks: 1
- ❖ The bridge is kept in the raised position until a train needs to cross
- ❖ Time to Lower: 2.5 minutes
- ❖ Length of Center Span: 544 feet
- ❖ Center Span Weight: 2,200 tons
- ❖ Original Cost: \$1.56 million
- ❖ When constructed, it was the longest vertical lift railroad bridge in the world
- ❖ The bridge underwent a massive rehabilitation from 2001-2003. Work included new paint, new counterweight cables, new operating and electrical system and rehabilitated sheaves.

HOW DOES IT WORK?

The Railroad Bridge is a vertical lift bridge. This means that the center span lifts up and down. After ensuring the Canal is clear of large commercial traffic, the bridge span will be lowered for a train to cross.

Counterweights are the secret to how it moves. The 2,200-ton center span is counter-weighted by two 1,100-ton concrete filled steel-plated boxes that hang in each tower. The span is connected to the counterweights by 40 steel cables that hang in each tower.



Housed in the top of each tower are four sheaves (as seen in photo above). Each one is 16 feet in diameter and weighs 34 tons! With the help of four 150-horsepower electric motors the sheaves turn, moving the cables that lower the span and raise the counterweights.

The sheaves will revolve $2\frac{1}{2}$ times during a full movement of the span. It takes about $2\frac{1}{2}$ minutes for the center span to raise or lower into position.



To learn more about the Cape Cod Canal, its bridges, recreational opportunities and more please visit the Cape Cod Canal Visitor Center. Open seasonally, it offers exhibits, films and programs on the Cape Cod Canal's rich history, unique features and vigilant operation. It's great for all ages. Admission is free. Call for hours and directions.

The Cape Cod Canal Visitor Center is located at 60 Ed Moffitt Drive in Sandwich, MA.
508-833-9678

Or visit the Cape Cod Canal's official website at:

www.nae.usace.army.mil/recreati/cc/ccchome.htm

THE CAPE COD CANAL'S VERTICAL LIFT RAILROAD BRIDGE

