Creative Bridge Building
In Early 20th Century Chicago

Presented By:
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Bridges That Move

Chicago is known for its historic bascule bridges. The history of many of these bridges reveals some creative design and construction stories.
Movable Bridges: Swing

Swing bridges rotate on a pier to clear a channel for boats. They may have the swing pier in the center of the swing bridge, or may be “bobtail” spans, shorter at one end (with a counterweight).
Bascule literally means “seesaw.” With one of two leaves, a bascule bridge operates by rotating up to open the channel. Counterweights provide the balance to make this motion possible.
At the turn of the 20th Century, bascule bridges were chosen by the City of Chicago as the movable bridge of choice. A consulting board including famous bridge engineer Ralph Modjeski aided in this decision, under the direction of city engineer John Ericson.
In the first few decades of the 20th Century, city bridge engineers Alexander F. L. von Babo, Thomas Pihlfeldt, and Hugh E. Young did major design work on bascule bridges in the city.
Chicago bascule bridge designs were improved and changed over the years.
Rolling lift bascule bridges were invented and patented by William Scherzer and promoted by his brother Albert Scherzer through the Scherzer Rolling Lift Bridge Company.
Bridge Engineers

Strauss trunnion and his special heel-trunnion bascule bridges were invented, patented, and promoted by Joseph Baermann Strauss and his Strauss Bascule Bridge Company.
8 Track Bridge

Crossing the Sanitary and Ship Canal, this very unusual bridge was built to serve eight railroad tracks. It consists of four parallel superstructures. It began its life in 1901 as an unusual structure that looked like a through truss and functioned as an arch bridge.
Anticipating future navigation clearance needs, the Scherzer Rolling Lift Bridge Company produced this unusual fixed bridge design so it could later be converted to a double leaf bascule.
When the need arrived for a movable bridge only a few years later in 1909, Scherzer Rolling Lift Bridge Company instead built four new rolling lift bascule spans, using the argument that new spans built to the latest standards would be a better investment. The original deck truss approach spans remained in place.
• The unusual bridge is four parallel single leaf bascule bridges.

• The location of the machinery alternates between spans to accommodate the limited available footprint.

• Only some of the tracks remain in use today, and some of the 1901 deck truss spans were replaced.
In 1879, a swing bridge, one of the first two all steel railroad bridges erected in the country (the other being Glasgow Bridge in Missouri), was built over the North Branch Chicago River. In 1898, a replacement lattice truss center pier swing bridge was built.
To keep the previous bridge functioning during construction, while not blocking construction of the bascule bridge on parallel alignment, the swing bridge was turned into a bobtail swing bridge by cutting part of the truss out and adding a counterweight.

Rapidly changing needs led to the replacement of the 1898 swing bridge with a bascule bridge in 1907.
Today, the bascule bridge no longer operates, but it remains standing in the raised position as a designated Chicago Landmark. Completed in 1907, it is one of the earliest surviving examples of a bascule bridge designed by famous engineer Joseph Strauss.
Built in 1916, the Deering Bridge is a good example of a heel-trunnion bascule bridge designed by Joseph Strauss. It was built to replace an 1887 swing bridge with minimum disruption of rail traffic.

Swing Bridge: Carried 200 trains per day and opened 30-100 times per month.
Bascule bridge erected in open position, with trains continuing to cross the swing bridge. Absolutely everything that could be completed with the old bridge open to traffic was completed.
The old bridge was shut down July 30, 1916, starting at 12:23 AM, beginning a minute-by-minute orchestrated shutdown of 16 hours to complete the bascule bridge and open it to traffic. Crews failed to meet the reopening time of 4:07 PM by less than two hours, so by 6:00 after under 18 hours, the new bridge was opened to traffic.
Deering Bridge

Work completed during 18 hour closure:

- Remove timber approaches and install girder spans.
- Open swing span, demolish center panels to allow bascule leaf to lower.
- Install the final few truss parts including one panel’s flooring system and some bracing members.
- Lay new deck and track on approach.
Wells Street Bridge

Design/Historic Significance

One of two similar bascule bridges in Chicago that carry the CTA L trains on an upper deck and vehicular/pedestrian traffic on a lower deck.
Wells Street Bridge

Design/Historic Significance

Construction of the Wells Street Bridge was conducted in a manner similar to the Deering Bridge.

Bridge was carefully built around the previous double deck swing bridge so trains could continue to run during construction.
Design/Historic Significance

When the bascule was ready for traffic, the swing bridge was opened, and the center quickly cut out so the bascule could lower and open to traffic.

Then, the remaining swing structure was demolished.
Roughly, the five outermost truss panels of each leaf, which were badly deteriorated, have been replaced entirely. New members and trusses replicate the original design, except that bolts will be used instead of rivets.

The new truss sections were assembled and brought in on barge. Swapping out the truss sections took less than a week for each leaf, to minimize bridge closure to trains.
Wells Street Bridge

2012-2013 Rehabilitation

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