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"Bascule Bridge"

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Abstract- *A bascule bridge (sometimes referred to as a drawbridge) is a moveable bridge with a counterweight that continuously balances a span, or "leaf", throughout its upward swing to provide clearance for boat traffic. It may be single- or double- leafed.The name comes from the French term for balance scale, which employs the same principle. Bascule bridges are the most common type of movable span because they open quickly and require relatively little energy to operate, while providing the possibility for unlimited vertical clearance for marine traffic. It is commonly made by steelwork.It is cantilever type bridge having a short span.*

Keywords- *drawbridge;movable;energy;balance span;short span;cantilever;steelwork.*

I. INTRODUCTION"

Fortunately, misalignment usually becomes a problem for movable bridges after many years of service dueto changes in structural rigidity, machinery wear and fatigue, shifts in foundations due to subsidence, orbarge impact, which causes permanent structural distortion or rupture. However, in general, steel movable bridges are economical, compact, and useful transportation structures if they are well designed and built, properly maintained, and suitably aligned. They have honorably served many American states, cities, and counties for more than 100 years. bascule bridges are possibly the least practical, from a maintenance and operation standpoint, of all commonly used types of modern era movable bridges. They use two separate moving leaves when one would do, with all the associated expense in construction, operation, and maintenance of two totally independent movable bridge leaves. They also join these two moving leaves together for the support of live load, compounding the difficulties. There are advantages to double leaf bascules: they can open and close somewhat more quickly than any other type of movable bridge; a double leaf bascule is less affected by wind loads than a single leaf bascule spanning the same channel width; they use slightly less structural steel than other types of movable bridges with the same load rating spanning the same width of navigation channel; double leaf bascules are less susceptible to collision with vessels navigating past them than other movable bridge types, and they are generally considered more aesthetically pleasing than other types of movable bridges. One might ask, however, whether these advantages are worth putting up with the additional complications, particularly in regard to stabilizing the structures under live load.

II. "HISTORY"

Bascule bridges have been in use since ancient times. However, it was not until the adoption of steam power in the 1850s that very long, heavy spans could be moved quickly enough for practical application. The Ashtabula lift bridge, a Strauss bascule built in Ohio in 1925 ,

The Patagones-Viedma Railway Bridge, Argentina. The longest rolling bridge in the world and the only with hydraulic counterweight.

The Birkenhead Bridge in Port Adelaide, Australia, fully opened,

The Strauss design Johnson Street Bridge across Victoria Harbour, British Columbia, built in 1924

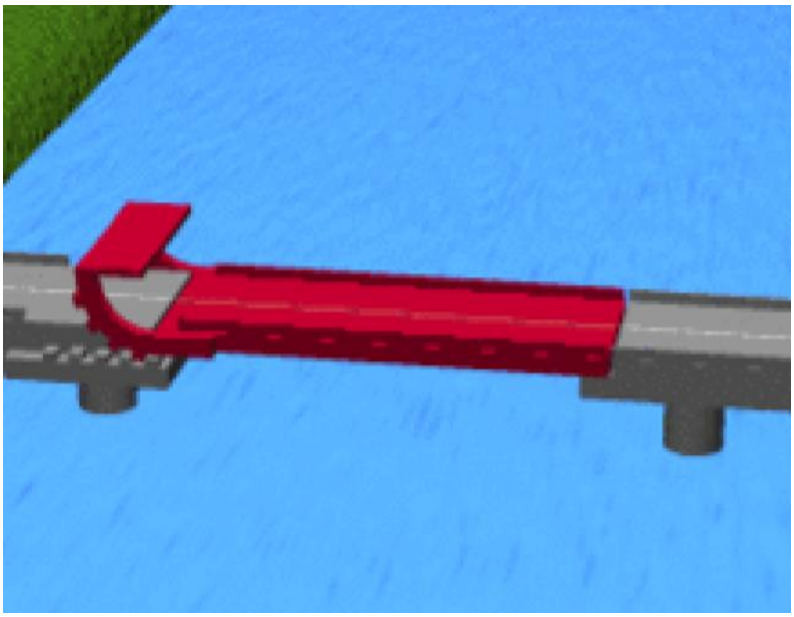
Wabash Avenue Bridge in Chicago, Illinois, honored for its elegance by the American Institute of Steel Construction in 1930 .

There are so many examples of bascule bridge in the world like, Tower Bridge in London ,

- Palace Bridge in Saint Petersburg, Russia,
- Mystic River Bascule Bridge, Mystic, Connecticut,
- Rolling lift Pegasus Bridge over the Caen Canal, Normandy, France
- Railway Rolling lift bridge in Oldenburg, Germany
- Single-leaf through truss with overhead counterweight, Seattle, Washington
- Animation of a rolling lift bridge (such as the Pegasus Bridge)
- Bascule bridge in Montceau-les-Mines , France
- Pamban Bridge in Rameswaram, India, over the Palk Strait
- White Cart Bridge, Renfrew, Scotland
- Cherry Street Bridge at Keating Channel in Toronto, Ontario, Canada
- Cherry Street Strauss Trunnion Bascule Bridge at Toronto Harbour Shipping Channel, Toronto
- The old Johnson Street Bridge in Victoria, British Columbia, etc.

III. " DESIGN"

Options For The New Bridge Three low level options with movable span and two high level fixed span designs were considered. The high level fixed spans were rejected as creating a detrimental impact on the area, from greater visual intrusive appearance and a greater property and land use requirement. The three low level options were a) Reconstruction on the Lock Street Alignment; b) Reconstruction just to the south of the existing alignment but entering Phoenix at Church Street. Both these alternatives were above the dam. c) Realigning the west approach to the river crossing and constructing the bridge below the dam and entering Phoenix at Culvert Street. After holding local meetings NYSDOT issued its final transportation project report recommending the adoption of the third Option — the Culvert Street Alignment..This finally adopted alignment for the bridge provided for a crossing of the Oswego River and navigation canal in two distinct elements. The first portion was a 192m long fixed bridge over the river from the left bank to Lock Island, below the dam in a position of much less visual impact than the existing Lock Street Bridge. Because of the decision to construct at a low level a movable span was therefore reguired to continue the roadway from Lock Island to the East Bank, to permit passage of river traffic.



"Figure 1. Bascule Bridge"

"Figure 2. Palace Bridge in Saint Petersburg, Russia"

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