

Restoration of Two Historic Movable Bridges

**Frank MARZELLA, PE,
PEng**

Principal Associate

Hardesty & Hanover

Lacey, WA, USA

fmarzella@hardestyhanover.com

Frank Marzella is a Senior Project Manager leading design and construction for movable bridge and other special projects. His expertise includes structural, mechanical & electrical system coordination and operating system design.



Contact: fmarzella@hardestyhanover.com

1 Abstract

The Murray Morgan Lift Bridge in Tacoma WA was constructed in 1913. In 2007, the bridge was closed to vehicular and pedestrian traffic for advanced deterioration of structural systems, mechanical and electrical components. The bridge was scheduled for demolition. In 2010 after acquiring funding, the City of Tacoma awarded a design-build contract to reconstruct this historic bridge. The restoration work included structural steel strengthening repairs, seismic improvements, roadway deck, and stringer replacement, complete paint system removal/re-coating, as well as modernization of the antiquated mechanical/electrical systems. Construction was completed 2012 and full legal load traffic was restored.

The Broadway Bridge in Portland OR was constructed in 1912. The bridge is a unique Rall type double leaf bascule and is listed on the National Register of Historic Places. After more than 100 years of service, the cast steel Rall wheels and tracks that support the entire weight of the movable spans were severely deteriorated and required replacement. Complex jacking, machining, and updated materials were required to renew these critical components. Construction was completed in 2018.

This paper will summarize the innovative design solutions developed to restore and strengthen these two historic movable bridge structures.

Keywords

Historic preservation, bridge rehabilitation, concrete & steel repairs, bridge machinery.