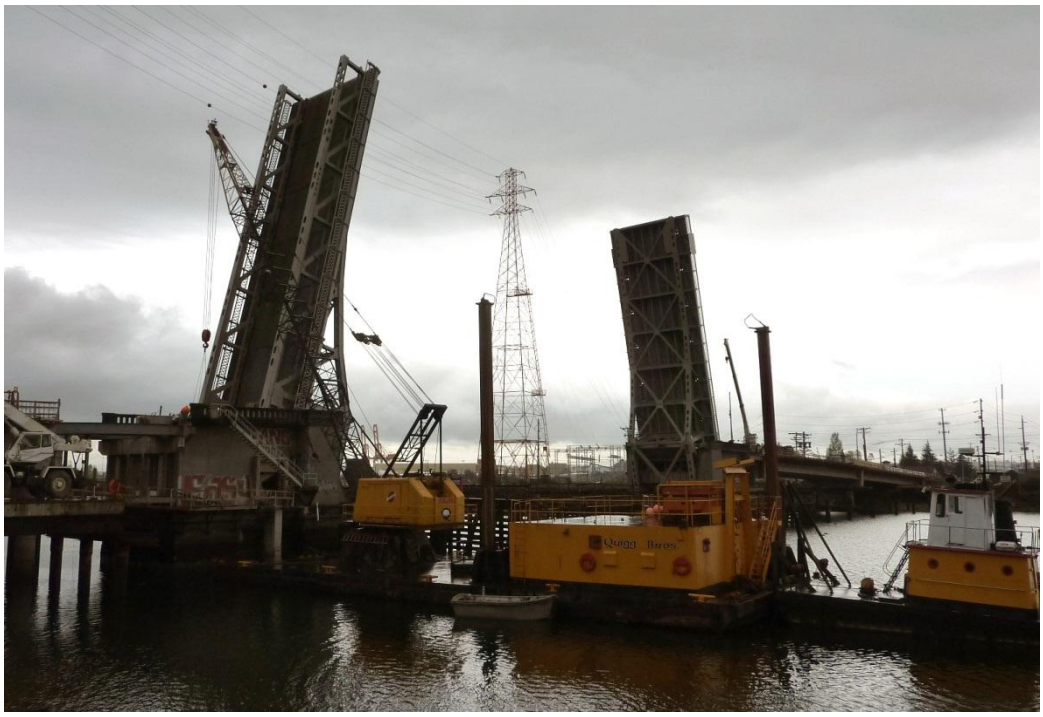
PROJECT PROFILE

Hylebos Waterway Bridge

Load Rating Analysis, Condition Assessment, and Repair Design | Tacoma, WA



CLIENT

City of Tacoma

BACKGROUND

Constructed in 1939, the Hylebos Waterway Bridge is a 217-foot-long double leaf trunnion bascule bridge spanning the Hylebos Creek. The bridge was originally designed for an H15 load rating.

A failed bascule leaf drive shaft left both bridge leafs permanently open. Ships continued to navigate beneath, but the East Bay Peninsula—a heavy industrial area—lost one of its main traffic arteries. Three years later, the bridge sustained electrical and mechanical damage from a fire. Concerned about having too few evacuation routes in the event of an emergency, the City sought to repair and re-open the bridge. To do so, WJE was retained to assess the bridge's current capacity and design strengthening repairs needed to achieve an HS20 load rating.

SOLUTION

WJE engineers began with an initial visual inspection and condition assessment to determine the extent of deterioration and fire damage. Due to the permanent upright position of the bridge leafs, WJE relied on industrial rope techniques in order to complete a thorough, up-close evaluation. WJE engineers then performed structural computer modeling and load rating analyses based on the structure's original design drawings, making adjustments for the damage identified during field observations.

The Hylebos Bridge was found to be in generally good condition considering its age and length of time out of service. WJE developed repair details to stiffen the edges of some truss gusset plates so that the bridge met the desired HS20 load rating. WJE engineers also recommended repairs to elements that did not impact the load rating, such as a damaged stringer, drain trough, and angle supports. WJE's work contributed to the success of the project and to the re-opening of the bridge.

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS