

# Washington State Movable Bridges

Mechanical Inspection, Rehabilitation Design, and Balance Testing | Various Locations, WA



### CLIENT

Washington State Department of Transportation

### BACKGROUND

The Washington State Department of Transportation operates seventeen movable bridges on state routes throughout the state, including the I-5 Interstate Bridge; SR99; First Avenue South Bridge; SR101 - Houquiam River Bridges; SR101 - Chehalis River Bridges; SR104 - Hood Canal Bridge; SR513 - Montlake Bridge; SR529 - Snohomish River Bridges; US12 - Heron Street Bridge, US12 - Wishkah Street Bridge; US12 - Snake River Bridge; and several floating and retractable bridges, including the Lacey V. Murrow Memorial Bridge, Hood Canal Bridge, and the Homer M. Hadley Bridge.

WJE staff have provided on-call mechanical and electrical engineering movable and floating bridge engineering services since April 2002 as part of two on-call service contracts. For the most recent contract (March 2006 – present), WJE has provided mechanical and electrical inspection services and mechanical and electrical construction support services on nine movable and floating bridges.



### SOLUTION

WJE's on-call services have included two random electrical inspections, three specialty inspections, and four in-depth mechanical and electrical inspections. The in-depth inspection of the Wishkah River Bridge included span balance testing using the strain gage method conducted by in-house personnel. Construction services provided under this contract included mechanical and electrical support during the rehabilitation of the Simpson Avenue and Heron Street bridges.



Simpson Avenue Bridge, a double-leaf Strauss trunnion bascule bridge, underwent a major rehabilitation including rehabilitation of counterweight trunnion machinery, span drive machinery span lock machinery, live load supports, and electrical power and control systems. WJE provided full-time on-site inspection of the mechanical and electrical work during critical closure periods and inspected manufactured components at the point of manufacture.



As part of the rehabilitation of SR99 - Duwamish River Bridge (First Avenue South), WJE provided trunnion stabilization, span lock mechanical and hydraulic rehabilitation, live load support rehabilitations, and minor electrical modifications for the double-leaf hydraulic cylinder drive bascule bridge.