

Multnomah County Willamette River Bridges Capital Improvement Plan



Project Summary Information: Operating Machinery, Trunnion, and Trunnion Tower Structural Rehabilitation							
Bridge Name(s):	Hawthorne			Project ID#:	BUN-HA-01	Project Status:	In Progress
Project Rank:	19	Primary Category of Work	Mechanical	Performance Attribute Total Score	24	Importance Score	TI-2 21.23
Logical Grouping Project ID #'s:	HA-MECH-01, HA-MECH-02, HA-MECH-03, HA-MECH-06, HA-ELEC-01						
Bridge Num and Name(s):	02757 Willamette River, Hawthorne Ave [Hawthorne]						

Definition of Problem

The motors and brakes on the Hawthorne Bridge are over 40 years old, exceeding their 25 years expected lifespan. The bearings that hold the machinery shafts in place are worn, which causes increased wear of adjacent components. The operating ropes are in good condition, however the ropes are over 20 years old and wire rope standards recommend replacement at this age. The operator house water and sewer lines cannot be operated during the winter. The electrical system requires general repair and component replacement before 2034. Past analysis has indicated that the counterweight trunnion sheaves have fatigue-prone details. The tower stairways are not OSHA compliant. The west tower appears to be leaning, as evidenced from the contact observed on the span guides.

Description of Proposed Solution

The proposed solutions for the problems are the installation of new motors, brakes and associated electrical control equipment. Bearings will be adjusted to reduce play in shafts and attached components. The operating ropes will be replaced in-kind. A heat system will be installed on the water and sewer piping to enable use during the winter months. Impacted electrical components above will be replaced as required. Tower access, walkways, and stairs will be improved to meet current OSHA standards. The tower trunnions will be rehabilitated to mitigate fatigue-prone details. The west tower will be investigated for the nature of the "out of plumb" condition, and the proposed solution assumes that the east tower will be jacked from the substructure in order to permit structural repairs to re-align the tower.

Project Justification

The benefits of the proposed solution with respect to replacement/rehabilitation of the motors, brakes, bearings, operating ropes, trunnions, west tower and electrical equipment are increased service life and reliability against an unexpected failure of the machinery system. Electrical maintenance maintains reliable operation of the bridge. Up to date drawings and documentation will assist in troubleshooting if there is a problem with the electrical system. Installation of a heat system will eliminate the maintenance cost of bringing water to the bridge during the winter. The tower stairways should be OSHA compliant to keep working areas safe for maintenance personnel.



Right-of-Way:	\$0	Notes: None entered.
Utility Reimbursement:	\$0	
Construction:	\$12,161,508	
Preliminary Engineering:	\$2,876,445	
Construction Engineering:	\$2,876,445	
Total Cost at Target Construction Time:	\$17,914,399	
Target Construction Time:	2020-2024	