

Independent review team confirms that light rail can run on I-90 floating bridge

As part of the Link light rail expansion from Seattle to East King County (East Link), Sound Transit has proposed running light rail on the Interstate-90 floating bridge over Lake Washington. A recent independent review confirms that the I-90 floating bridge can accommodate light rail, as was intended with the original bridge design.

Background

The Joint Transportation Committee of the State Legislature commissioned an independent technical review of running light rail on the floating bridge. The technical review was meant to complement Sound Transit's current and planned engineering design work to expand light rail across Lake Washington. The final Independent Review Team (IRT) report is posted on its Web site: <http://www.wsdot.wa.gov/partners/irt/default.htm>.

Following extensive study, analysis, and discussion with Sound Transit and WSDOT (Washington State Department of Transportation), the IRT report:

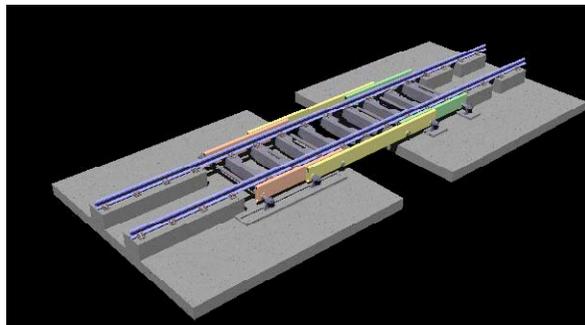
- Identified 23 issues related to the impact of the proposed light rail installation.
- Determined that installation of light rail on the I-90 floating bridge and approach spans can be addressed or mitigated, providing that the IRT resolutions and recommendations are incorporated.

Results

After reviewing the IRT recommendations, Sound Transit and WSDOT developed an implementation plan that includes accelerating design activities into the light rail expansion's preliminary engineering phase that begins in 2009.

Other specific floating bridge concerns that are addressed include:

Expansion Joints. The existing traffic expansion joint between the fixed and floating portions of the bridge allows for bridge movement. A new light rail expansion joint would also need to accommodate this movement. Sound Transit has developed a conceptual design for the new rail expansion joint. During preliminary design Sound Transit's consultants will complete the design, prototype and test the rail joint.



Conceptual design of track expansion joint to accommodate floating bridge movements

Additional East Link Weight. Load testing conducted by WSDOT and Sound Transit in September 2005 confirmed that the bridge can be structurally retrofitted to carry both the light rail system and general traffic. (See the Load Test fact sheet for more detail http://www.soundtransit.org/Documents/pdf/projects/eastlink/I90LOAD_0808.pdf).

Stray Currents. Because light rail trains are powered by electricity, the I-90 bridge would include three layers of protection against stray currents. Additionally, the project would include a system to monitor stray current levels on the bridge.

Seismic Upgrade. WSDOT recently adopted a new seismic retrofit policy for bridges, including portions of I-90 where the light rail would run. Light rail would not make the bridge more vulnerable to damage in an earthquake. However, based on the new criteria, Sound Transit anticipates making seismic retrofits that are consistent with WSDOT practices for some elements of I-90 utilized by light rail, including the bridge approach spans.

Light Rail Installation. Rails are typically attached to a bridge by placing them on concrete plinth blocks. These and other pieces of equipment, such as the overhead wire supports and rail posts, normally attach to a bridge deck with dowel rods. However, the bridge deck has a dense fabric of reinforcing steel and post-tensioning cable, so it is important to locate this steel during construction to avoid damaging it. Sound Transit has demonstrated that it can locate the steel using the proven method of ground-penetrating radar. Sound Transit also prepared conceptual attachment details that minimize penetrations into the existing pontoon concrete deck.

Bridge Maintenance. Some maintenance procedures may change with light rail on the bridge. Sound Transit is working with WSDOT to make sure that the bridge can continue to be maintained satisfactorily.



The I-90 load test involved loading trucks and driving them across the bridge to simulate the weight of light rail vehicles



Workers using ground-penetrating radar to locate the steel in the I-90 bridge deck.