

I-90 Bridge Studies

Structural Feasibility and Live Load Simulation For Light Rail Conversion

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**Washington State
Department of Transportation**

Sound Transit Board Meeting

December 15, 2005

**Homer Hadley Floating Bridge
Structural Feasibility Study for
Light Rail Conversion
April 27, 2001**



Light Rail Conversion Studies of I - 90

Floating Bridge and Structures

April 2001

Homer Hadley (HH) Floating Bridge Structural Feasibility Study

- Computer modeling showed that it appears feasible for the bridge to support proposed light rail loading with mitigation measures, including:
 - Replacement of concrete barrier with cable rail.
 - Limiting location of rail on bridge deck.

- Unique nature and history of the floating bridges calls for more refined analysis.

Light Rail Conversion Studies of I - 90

Floating Bridge and Structures

August 2001

HH Floating Bridge Approach Structure and Transition Span Structural Feasibility Study

- Feasible for the approach and transition structures of the HH bridge to support proposed light rail loading with mitigation measures, including:
 - Strengthening the transition span and approach structure roadway.

Light Rail Conversion Studies of I - 90 Floating Bridge and Structures

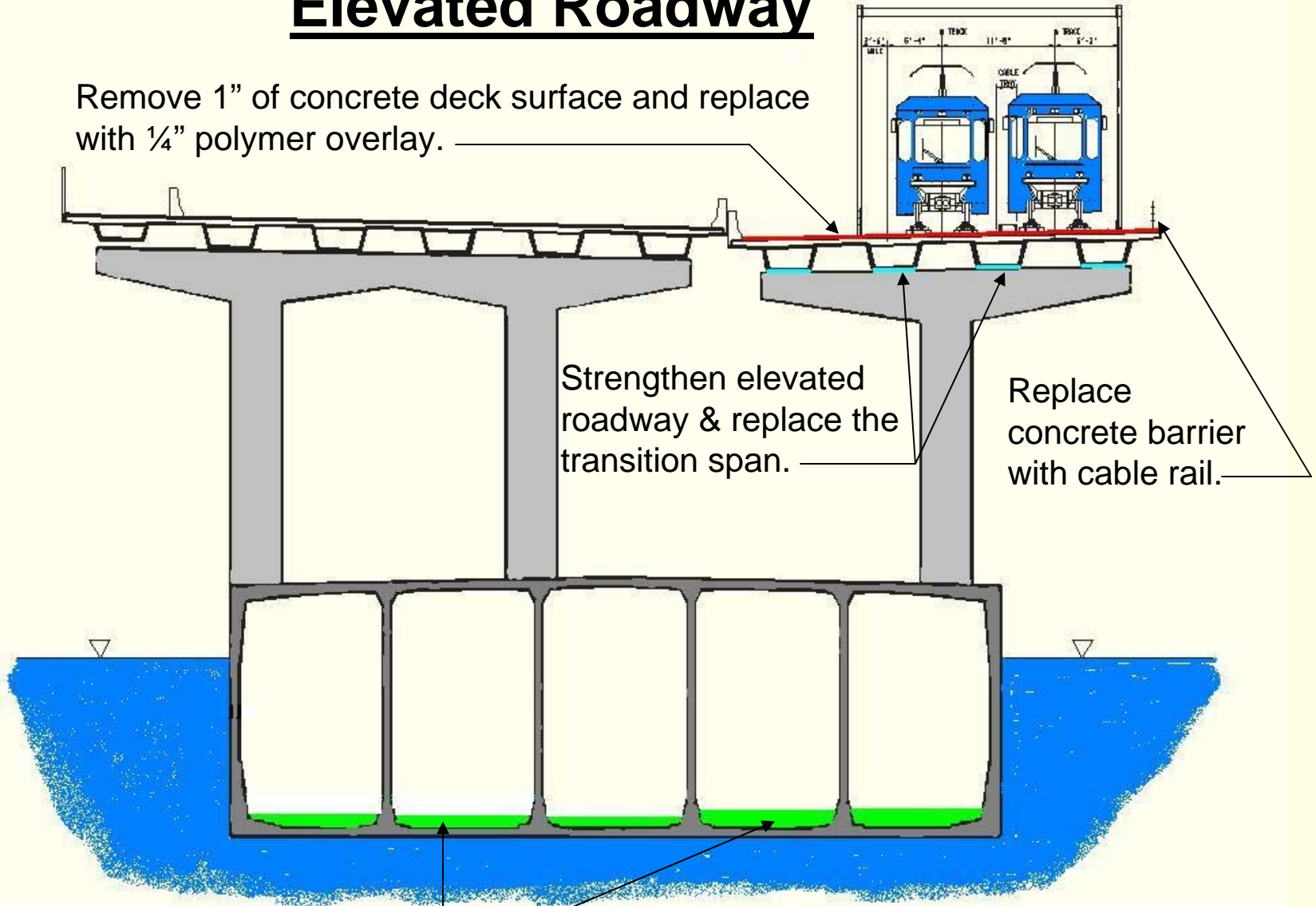
September 2005

Light Rail Live Load Simulation on the HH Floating Bridge

- Live test validated the 2001 computer model results
- Bridge can carry light rail with modifications called for in earlier studies – the bridge is not a showstopper for light rail
- Operations and maintenance restrictions
 - Sustained wind speed could require closure of the bridge
 - Restrictions on type of screening along the pedestrian/bike pathway.

Mitigation Measures for LRT on Elevated Roadway

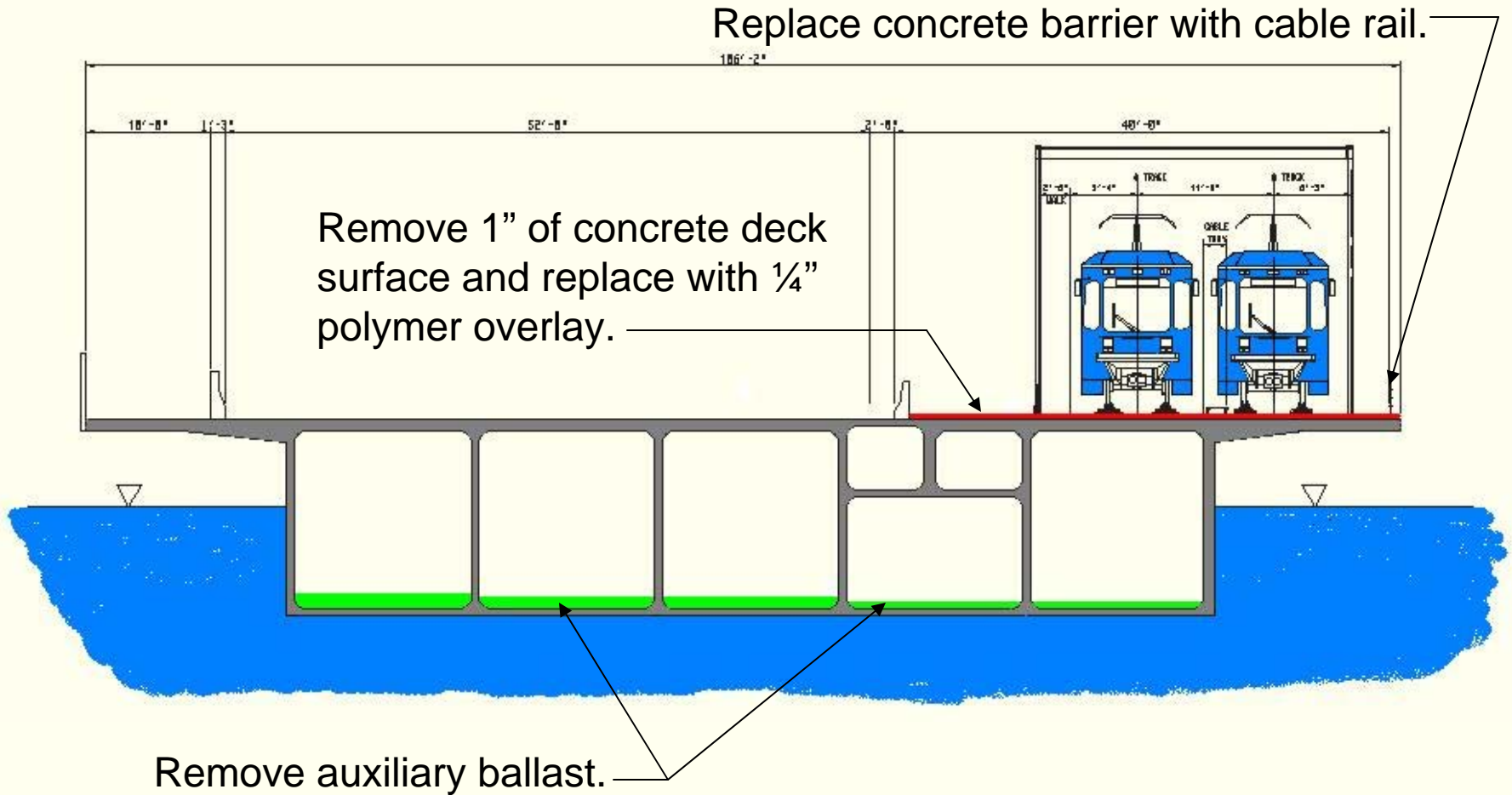
Remove 1" of concrete deck surface and replace with ¼" polymer overlay.



Remove auxiliary ballast.

Location of LRT tracks limited to position shown.

Mitigation Measures for LRT on Pontoon Deck Roadway



Location of LRT tracks limited to position shown.

Next Steps:

- Initiate light rail conversion study for the D2 roadway, Rainier Avenue, Bellevue Way Ramps and East Channel Bridge
- Sound Transit develops conceptual track design to accommodate floating bridge movements