

Independent Review and Assessment Feasibility for Addition of Light Rail Transit over I-90 Homer Hadley Bridge and Approach Bridges Findings JTC Briefing

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Washington State Legislature Joint Transportation Committee Briefing

SC SOLUTIONS

 **THE GLOSTEN ASSOCIATES**
Consulting Engineers Serving the Marine Community

 **RUSSELL CORROSION CONSULTANTS, INC.**
Columbia, Maryland
Garden City, New York

 **CONCORR, Inc.**
CONCRETE CORROSION SPECIALISTS

August 12, 2008

- Introduction of Team Members**

**Chuck Ruth (Structural Engineer)
Steve Nikolakakos (Stray Current Control)
Ali Akbar Sohaghpurwala (Corrosion Control)
J. Thomas Bringloe (Marine Engineer)**

Issue Categories

- 1. General Design Policy**
- 2. Stray Current Mitigation Measures**
- 3. Impact of LRT Track System Installation on the Bridge**
- 4. Track Bridge Expansion Joint Design and Prototype Testing**
- 5. Seismic Vulnerability of Structures**
- 6. Miscellaneous**

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General Design Policy

** Issue K - Criteria Established for Independent Review Team to Evaluate Numerous Issues (High Importance)*

Issue T - Washington State DOT's and Sound Transit's Goal for Life Expectancy of Bridge (High Importance)

Issue W - Additional Needs and Changes Required for LRT Installation to meet "Blue Ribbon Panel" Recommendations (Low Importance)

The General Design Policy Issues have all been successfully addressed, with no anticipated negative impact to the feasibility of the LRT East Link project

Stray Current Mitigation Measures

Issue F - Sound Transit Adoption of North Link/Airport Link Stray Current Mitigation Design Criteria for Homer M. Hadley Floating Bridge Installation (High Importance)

**** Issue H - Stray Current and Cathodic Protection System Interference and Compatibility (High Importance)***

Issue U - Methods for Identifying Stray Current Failure and Response/Repair Plan (Medium Importance)

Issue Q - Modification of Current Bridge Inspection procedures (Low importance)

The Stray Current Mitigation Issues have all been successfully addressed, with no anticipated negative impact to the feasibility of the LRT East Link project. Sound Transit will be including a multi-level stray current collection system into their LRT installation design. The upgraded cathodic protection systems will be a backup to the primary stray current collection system designed by Sound Transit.

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Impact of LRT Track System Installation on the Bridge

Issue E - Need for Lightning Arrestors on Floating Bridge and Approaches (Medium importance)

Issue G - Impact of Stray Current Dispersion in Lake Washington on Environment and Fish (Low Importance)

**** Issue N - Attachment of OCS Supports to Edge of Homer M. Hadley Floating Bridge Deck Cantilevers (High Importance)***

**** Issue O – Method(s) to be Utilized for Locating Rebar and Post Tensioning in the Bridge Deck (High Importance)***

Issue V - Effect of LRT Installation on Construction Operations Associated With Anchor Cable Replacement (Low Importance)

The Impact of LRT Issues have all been successfully addressed, with no anticipated negative impact to the feasibility of the LRT East Link project

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Miscellaneous

Issue B - Operational Restrictions for Combination of Train Loading and One-year Storm Loading from North (Medium Importance)

Issue I - Analysis to Confirm Torsional Capacity of the Existing Bridge (High Importance)

Issue J - Analysis "North Wind" Storm Effects on Homer M. Hadley Floating Bridge (Medium Importance)

Issue L - Operation and Maintenance Coordination Agreement between Sound Transit and Washington State DOT (Medium Importance)

Issue P - Determining Strength and Resistance of Existing Concrete (Medium Importance)

Issue S - Median Barrier Relocation Design, Attachment, Maintenance and Drainage (High Importance)

The Miscellaneous Issues have all been successfully addressed, with no anticipated negative impact to the feasibility of the LRT East Link project

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Rail Expansion Joint Design and Prototype Testing

** Issue A - Track Bridge/Expansion Joint Design and Performance Criteria (High Importance)*

Issue M - Rider Comfort Performance for LRT Track Bridge at Expansion Joints (High Importance)

Issue R - Storm water Drainage System Modifications under New LRT Track Bridge at Expansion Joints (Low Importance)

• The Rail Expansion Joint Design Issues have been addressed with no anticipated negative impact to the feasibility of the LRT East Link project.

• There are several unknowns associated with the design.

• The track bridge design and prototype testing will be started early in the project delivery process to insure successful completion in a timely manner.

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Seismic Vulnerability of Structures

** Issue C - Seismic Vulnerability and Seismic Retrofit of Approach Spans and Transition Span
(Medium Importance)*

Issue D - West Approach Tunnel Design Criteria Consistency (Medium Importance)

The Seismic Vulnerability of Structures Issues need further study by the LRT project team. Preliminary analysis by the IRT indicates that significant seismic retrofit will be required for the approach spans. A more complete and detailed seismic vulnerability study of the approach spans needs to be performed. A retrofit strategy along with associated cost estimates will then be developed to determine the cost impact.

Schedule for Completion of Findings

- **August – Complete Final Draft Report**
- **September – Submit final report**
- **September – Presentation to the House Transportation Committee**