

**Independent Review and Assessment  
Feasibility for Addition of Light Rail Transit over I-90 Homer Hadley Bridge**

- **Scope**
- **Team Members and Qualifications**
- **Schedule and Milestones**

# **Independent Review and Assessment Feasibility for Addition of Light Rail Transit over I-90 Homer Hadley Bridge**

## **Scope**

### **1 - Review and Evaluate Stray Current Mitigation Measures**

Review ST conceptual proposals for stray current mitigation. Recommend areas of further investigation and design milestones through preliminary engineering and final design. Review and recommend designs for isolating stray current that avoids corrosion of the steel reinforcing and other metal elements of the existing floating bridge and transition spans.

### **2 - Evaluate Impact of LRT Track System Installation on the Bridge**

Review ST standard drawings for the light rail track and power systems. Determine the extent of impact of LRT track system installation from embedded steel and moisture from lake effect on the bridge. Recommend design approaches for attaching the LRT track system to the pontoon, elevated roadway, and transition span decks that maintains the reinforcing steel post-tensioning cables, other metallic embeds; and limits existing concrete installation damage to an acceptable level. Identify LRT operational factors, if any, from the avoidance of embedded steel bridge components during LRT track system installation should the material preclude full track system installation.

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### **3 - Review Load Test and Weight Mitigation Measures**

Review the previous load test data, perform preliminary analysis as required to evaluate structural feasibility and recommend additional analysis needed to determine the operational storm limitation on the floating bridge in combination with LRT dead and live loads. Review weight mitigation measures for sufficiency of loads.

### **4 - Evaluate Impact of Weight Mitigation Measures and LRT Track System on Bridge Life, Maintenance and Operation**

Assess impact of weight mitigation measure on bridge life, effects of LRT track system on existing maintenance and operations policies, recommend new policies, maintenance criteria and potential work force and cost increases needed to accommodate LRT beyond existing bridge maintenance practices and budget, and recommend any additional analysis.

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**5 - Review and Evaluate Effects of the LRT Loads on Bridge Elements**

Review the effects of the LRT dead/live loads and rails on the transition span expansion joints, bridge decks, and other bridge elements and make recommendations for design criteria.

**6 - Review and Evaluate the Rail Expansion Joint Design**

Review the proposed rail expansion joint design and provide an additional comment or suggestions to accommodate anticipated joint movements and any associated modifications to the bridge.

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**Independent Review Team Members and Qualifications**

**Steve Nikolakakos  
Ali Akbar Sohangpurwala  
J. Thomas Bringloe  
Chuck Ruth  
Thomas Ballard (Chair)**

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**Steve Nikolakakos, P.E.  
Russell Corrosion Consultants, Inc.**

**Stray Current and Corrosion Control  
Scope Elements 1, 2 and 4**

- **New York City Transit Authority – Corrosion Control Studies**
- **New Jersey Transit (Hudson-Bergen) - Stray Current Testing**
- **Tren-Urbano Transit, Puerto Rico – Quality Control Testing**
- **Port Authority of New York and New Jersey – Evaluation of Stray Current Conditions**
- **New York City Transit Authority (NYCT) – Stray Current Control Guidelines**
- **Port Authority of New York and New Jersey, PATH Reconstruction – Stray Current Consultant**
- **Port Authority of New York and New Jersey, Newark International Airport – Corrosion Survey**

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**Ali Akbar Sohangpurwala  
CONCORR, Inc.**

**Corrosion Condition Evaluation and Mitigation  
Scope Elements 1, 2 and 4**

- **NCHRP (National Cooperative Highway Research Projects) – Cathodic Protection for Life Extension of Existing Bridges**
- **NCHRP – Repair and Rehab of Bridge Components**
- **NCHRP – Service Life of Corrosion-Damaged Reinforced Concrete Bridges**
- **FHWA (Federal Highway Administration) - Projects on Epoxy Coated Rebar in Bridges**
- **NSF (National Science Foundation) – Development of Zinc Based Anode for Galvanic Cathodic Protection**
- **FHWA – Corrosion Detection of Reinforced Concrete Structures**
- **FHWA – Assessment of Physical Condition of Concrete Bridge Components**
- **FHWA - Long-term Effects of Cathodic Protection on Prestressed Concrete Elements**

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**J. Thomas Bringloe, P.E.  
The Glosten Associates**

**Marine Consulting Floating Bridges  
Scope Element 3 and (5,6)**

- **WSDOT - Construction Phase Consulting, Lacey V. Murrow Replacement Bridge**
- **WSDOT - Construction Phase Consulting - SR-520 bridge.**
- **WSDOT - Flooding Damage Assessment of I-90 Homer Hadley Bridge**
- **WSDOT - SR 520 Floating Bridge Expert Panel for Pontoon Construction Sites**
- **WSDOT - WS Bridge Construction Lacey V Murrow Floating Bridge Replacement**
- **WSDOT - Expert Testimony to the SR 520 Mediation Group on Retrofit Concepts**

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**Chuck Ruth, S.E.  
SC Solutions, Inc.**

**Floating Bridge Design and Construction  
Scope Elements 2, 3, 4 and 5**

- **WSDOT - WSDOT Bridge Design Manager (Retired)**
- **WSDOT - SR 520 Floating Bridge Expert Panel for Pontoon Construction Sites**
- **WSDOT - WS Bridge Construction Lacey V Murrow Floating Bridge Replacement**
- **WSDOT - Expert Testimony to the SR 520 Mediation Group on Retrofit Concepts**

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**Thomas A. Ballard, P.E.  
SC Solutions, Inc.**

**Rail-Structure and Train-Rail Interaction  
Scope Elements 5 and 6**

- **Bay Area Rapid Transit - Seismic Retrofit and Rail-Structure Interaction**
- **TriMet - IMAX Light Rail Rail-Structure Interaction**
- **Taiwan High Speed Rail - Seismic and Rail-Structure Interaction Criteria**
- **California High Speed Rail - Seismic and Rail-Structure Interaction Criteria**
- **Fruitvale Railroad Bridge - Seismic Retrofit**

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### **Schedule and Milestones**

- **April 21 – Kick Off – Review existing reports, site visit, interviews with WSDOT ST and consultants, identify focus areas and make assignments. Prepare and present action plan to JTC staff, WSDOT and ST.**
- **May – Report on initial findings, identify additional issues and review milestones. Meet with JTC staff, WSDOT and ST to discuss status of findings.**
- **June – Submit initial findings report and make assignments for final report preparation. Report findings and draft recommendations.**
- **July – August – Prepare and submit draft findings report. Stakeholder review and comment on draft study. Present final draft report and discuss comments.**
- **September – Submit final report to JTC at September meeting.**