Sound Transit: East Link Project Update
Joint Transportation Committee
April 8th, 2008

Connecting downtown Seattle, Mercer Island, Bellevue and Redmond via I-90
ST Interests

• Fulfill legislative mandate to meet public transportation and mobility needs for high-capacity transit (RCW 81.104)

• Implement commitment in I-90 MA 2004 Amendment to “…provide high-capacity transit in the center lanes of I-90 between Bellevue and Seattle as quickly as possible…”

• Protect freeway asset and planned light rail investment by maintaining the useful life of the I-90 floating bridge
We are here. DEIS being prepared.
Areas of Advanced Design on Floating Bridge

- Weight mitigation
- Rail expansion joints
- Stray current control
- Installation on bridge deck
- Maintenance access
Weight Mitigation

• What’s unique
  – Floating bridge is a marine structure
  – WSDOT standard is no loss of freeboard

• What’s been done
  – Weight mitigation developed in 2001
  – Verified in 2005 load test
Expansion Joint

• What’s Unique
  – Rail expansion joint must accommodate longitudinal expansion, vertical rotation and horizontal rotation
  – Maintain center roadway traffic expansion joint for maintenance lane

I-90 Traffic Expansion Joint
Passenger Rail Bridges with Similar Movements as I-90

Tagus River Bridge
- Lisbon, Portugal
- Suspension bridge
- Autos on upper deck
- Rail on lower deck

SkyTrain Bridge
- Vancouver, British Columbia
- Cable stay bridge
- Rapid rail bridge
I-90 Rail Expansion Joint
Stray Current Control

• What’s Unique
  – Power to light rail supplied via overhead catenary and returns to substation via running rail
  – Modern rail systems include track isolation measures
    • Older rail systems did not isolate track and could cause corrosion on nearby structures and utilities
Stray Current Control

• What’s Been Done
  – Traction power simulation completed
  – Substations located at each end of floating bridge
  – Conceptual control measures proposed
    • Electrical isolation of track system from bridge deck
    • Grounding cable for OCS poles and other systems
    • Track isolation monitoring system
    • On-going maintenance program by Sound Transit

• What’s Next
  – Analyze isolation techniques to maintain useful life of floating bridge
  – Build test section to confirm analysis results
Light Rail Installation

• What’s unique
  – Bridge deck has a dense fabric of reinforcing steel and post-tensioning cable
Light Rail Installation

• What’s Been Done
  – Direct fixation rail on plinth blocks
  – Portal system for overhead catenary system explored

• What’s Next
  – Preliminary design of plinth block attachment
  – Preliminary design of overhead catenary system attachments, including single pole option
Maintenance

• What’s Unique
  – Coordination of WSDOT and ST maintenance responsibilities required
  – Daily access required by WSDOT to pontoon hatches
  – Some LRT components on I-90 will have extra maintenance requirements

• What’s Been Done
  – Light rail design includes maintenance lane on center roadway
  – Regular maintenance of trackway and monitoring of electric isolation identified as important to stray current control

• Future Steps
  – Future agreement for conversion of center roadway will need to define roles and keep WSDOT whole with respect to cost
Questions?

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