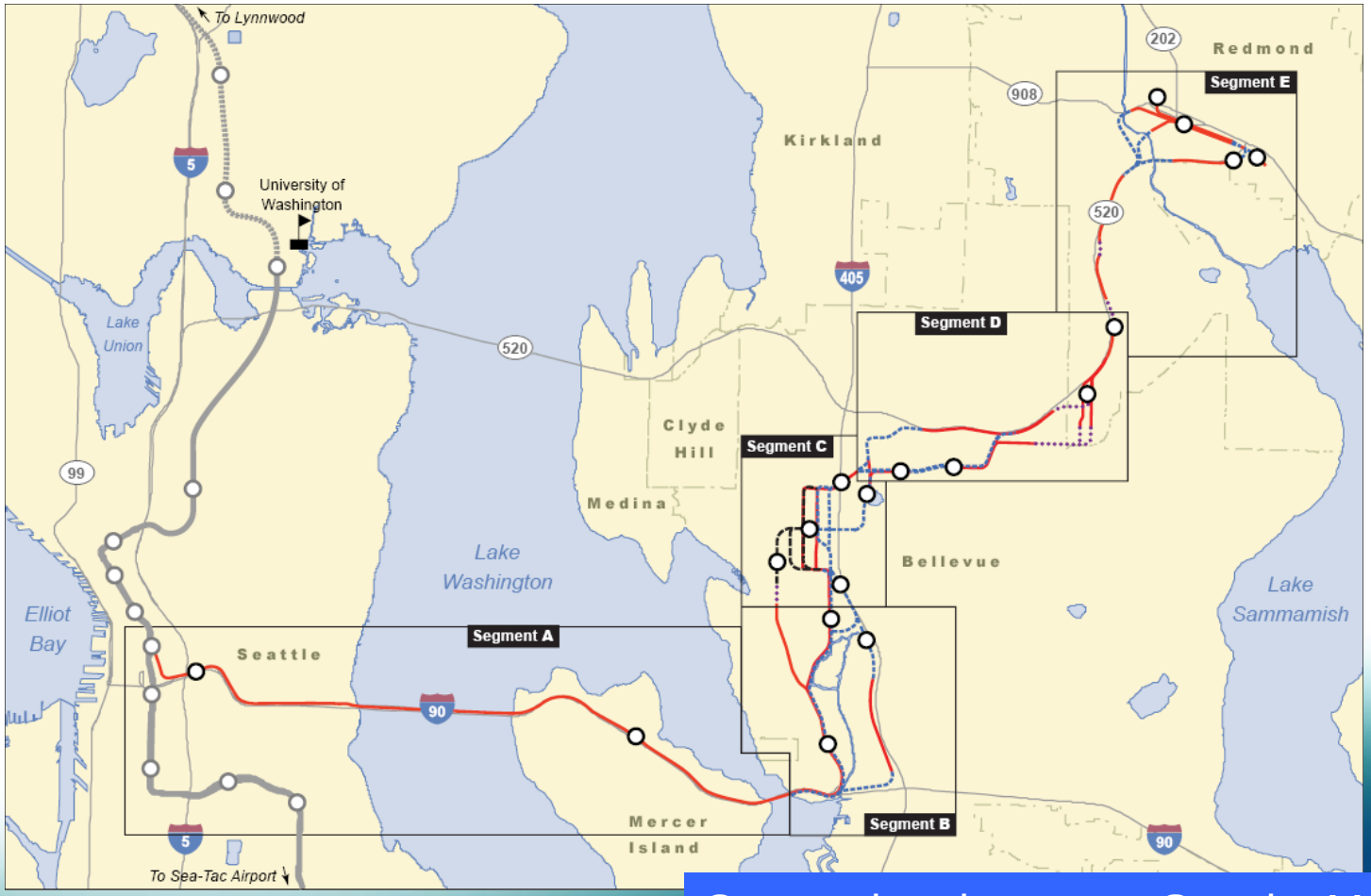
Sound Transit: East Link Project Update

Joint Transportation Committee

April 8th, 2008

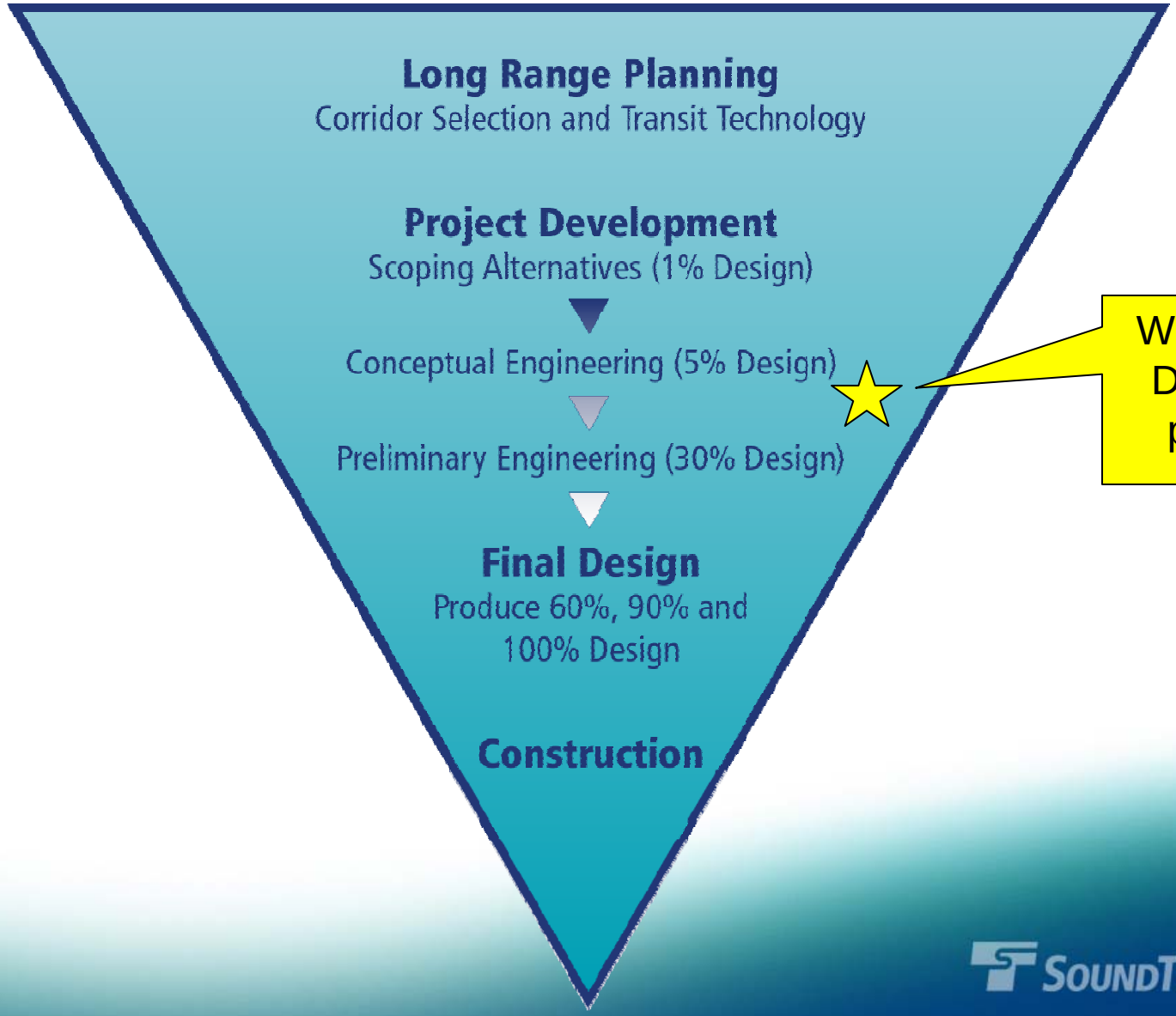


Connecting downtown Seattle, Mercer Island, Bellevue and Redmond via I-90

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

Design Process



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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

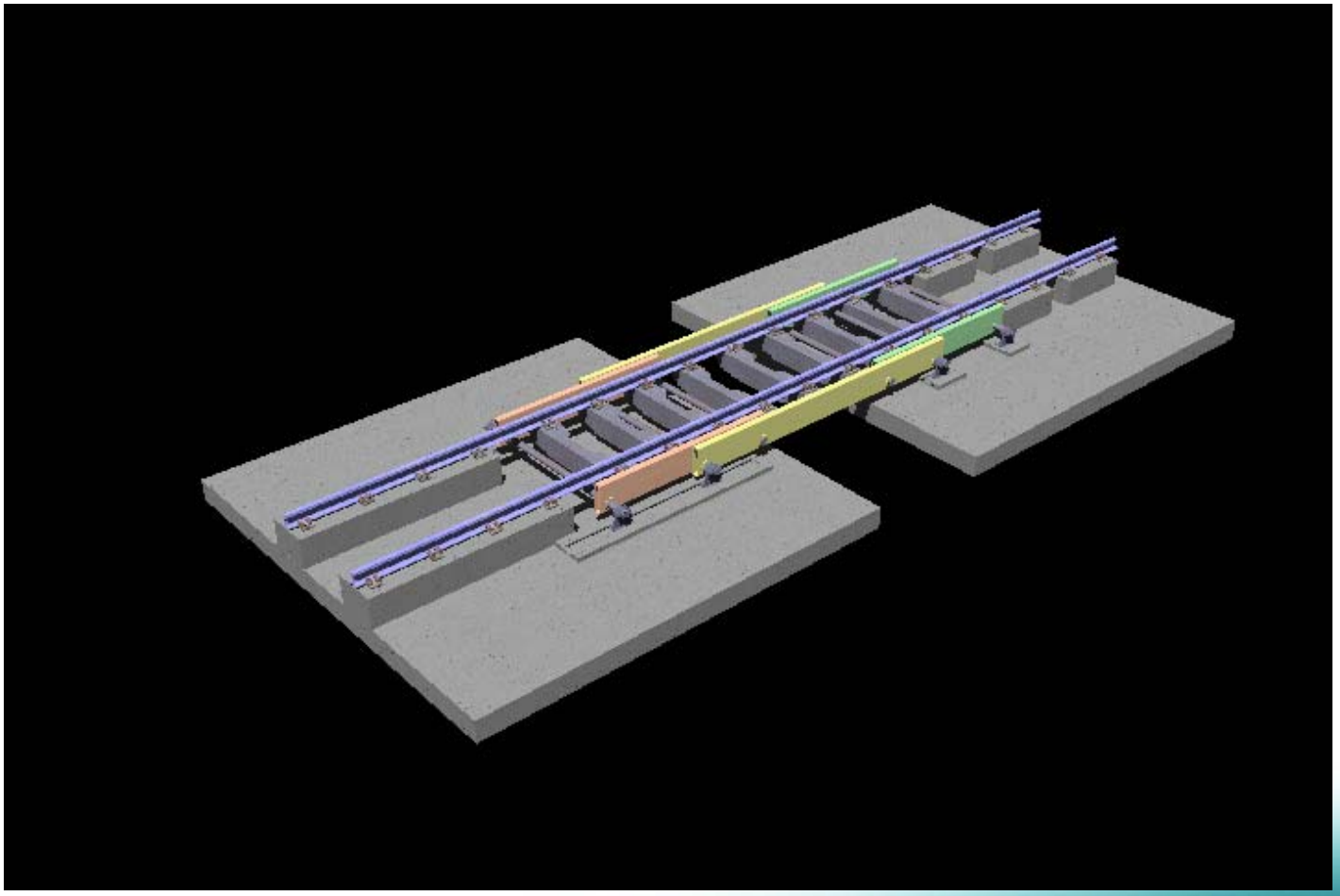
Tagus River Bridge

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

SkyTrain Bridge

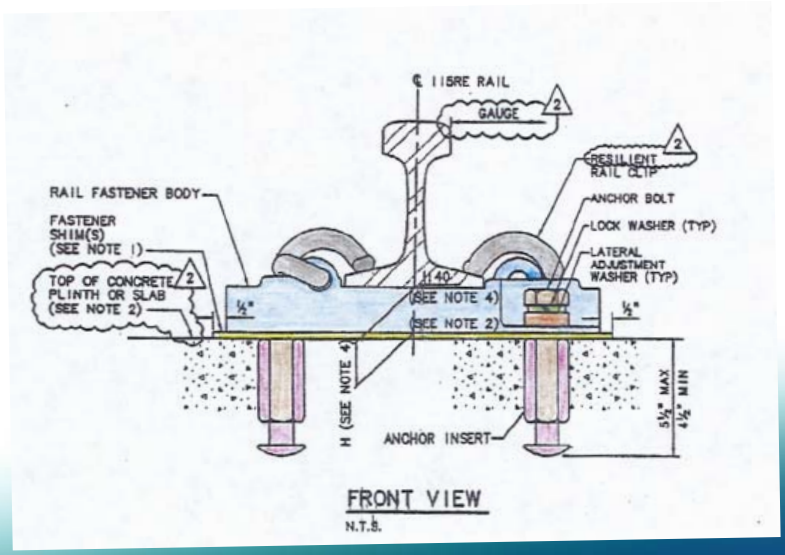
- Vancouver, British Columbia
- Cable stay bridge
- Rapid rail bridge

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

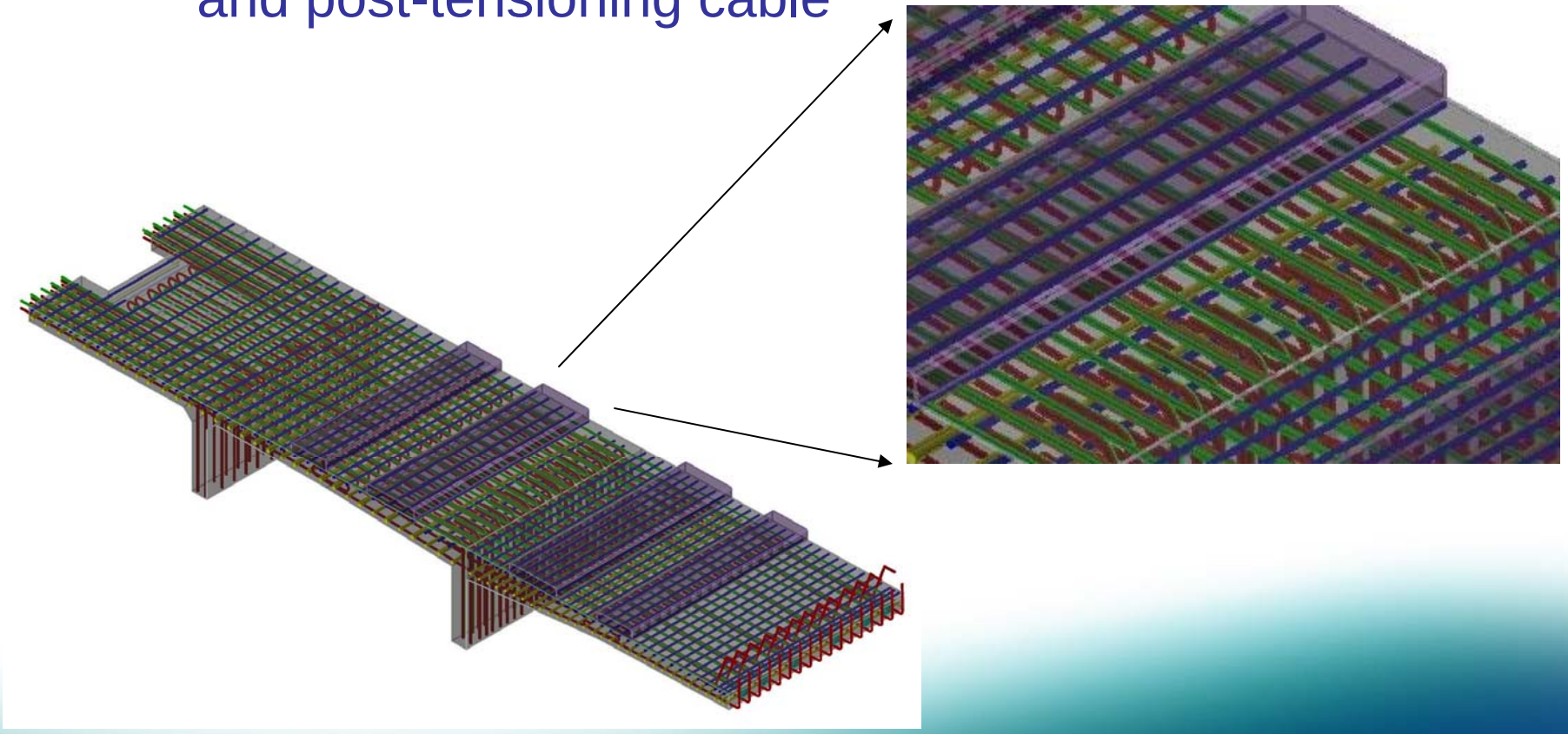


Stray Current Control

- 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

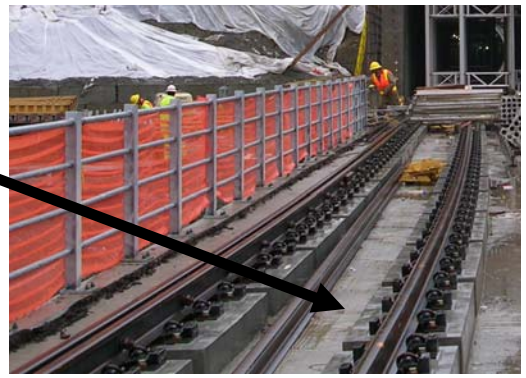
Light Rail Installation

- 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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