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Homer Hadley Bridge Modular Expansion Joint Replacements

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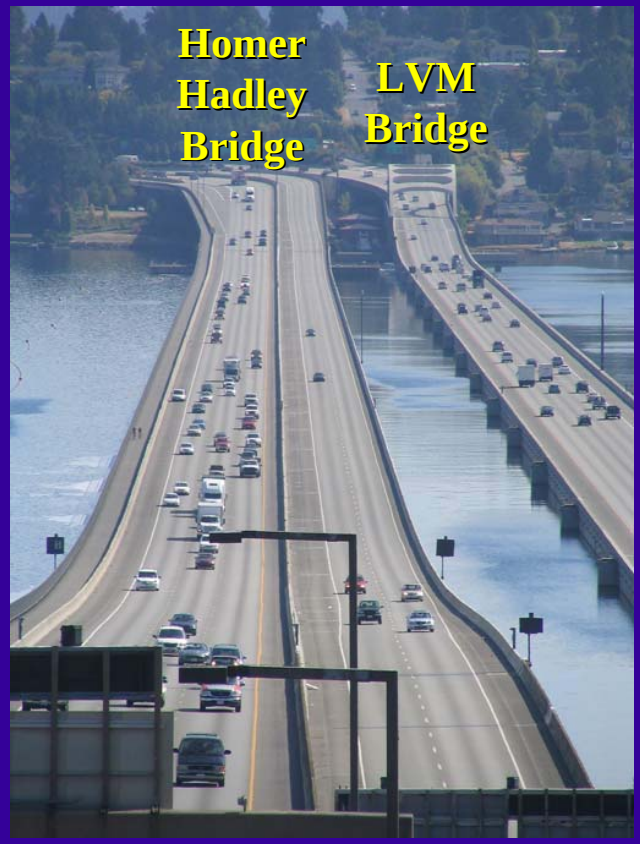
I-90 / Seattle / Lake Washington

Background

- Constructed about 1987
- One of three Lake Washington floating bridges between Seattle and Eastside
- Two roadways
  - Westbound lanes (65' curb-to-curb) – Approx. 60,000 ADT
  - Reversible lanes (40' curb-to-curb) – Approx. 12,000 ADT



I-90

History

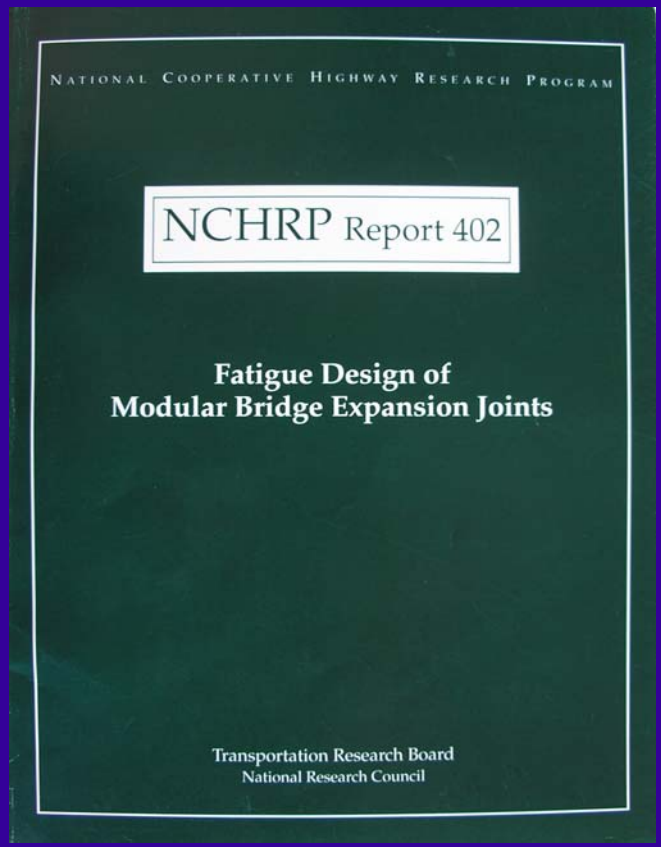
- **Four 48" motion range modular expansion joints**

History (cont.)

- Pre-fatigue design criteria
- Fatigue cracking initiated within 2 years of construction completion

History (cont.)

- WSDOT Research
- New LVM fatigue resistant design specification
- NCHRP Project 12-40
- NCHRP Report 402



Project Challenges

I. Traffic, Staging, and Schedule

II. Procurement and Shipping Issues

III. Technical Issues

Traffic Issues

Staging

- Stage 1
  - Reversible lanes
  - (2) – 40' long joints
  - May 2009
- Stage 2
  - Westbound lanes
  - (2) – 63' long joints
  - July 2009

Schedule

- Construction Duration Estimates
  - Assumptions
  - Joint AGC/WSDOT Structures Team review
  - Incentive provisions
- Procurement Issues
  - Advance procurement of new joints
  - Contractor responsible for shipment

Shipping

Shipping

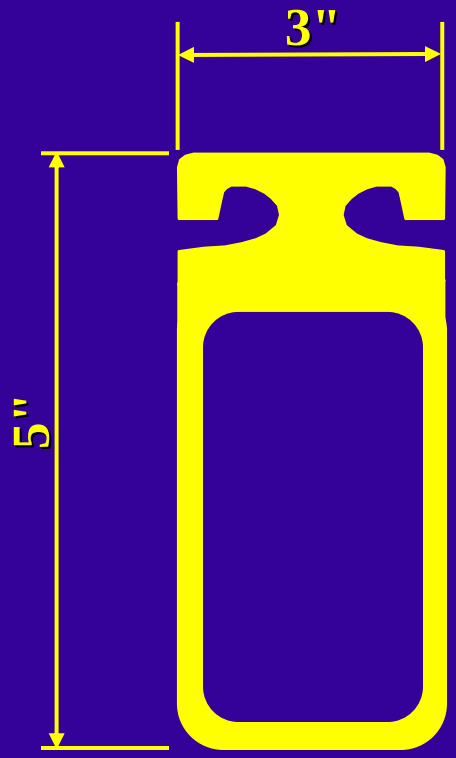
Shipping

Shipping Route

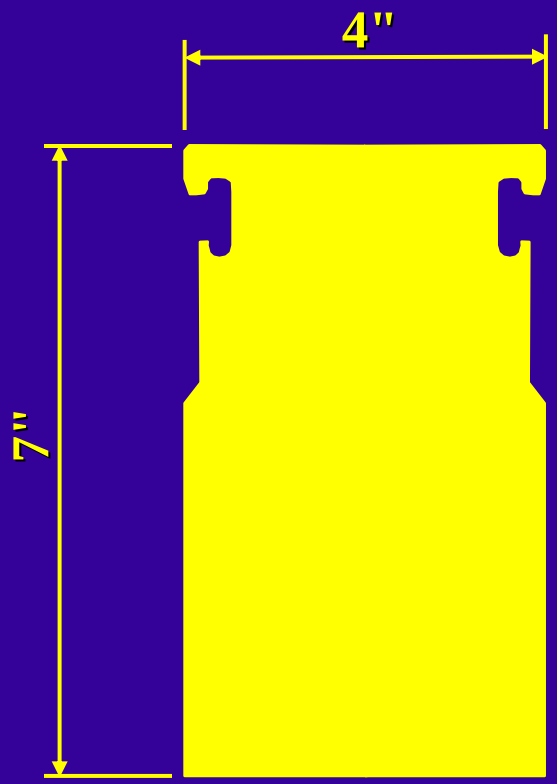
Technical Issues

- **Modular Joint Installation**
  - **Traffic barrier clearances**
  - **Setting criteria**

Center Beam Geometry



Old Center
Beam Geometry



New Center
Beam Geometry

Joint at Traffic Barrier

Technical Issues

- **Modular Joint Installation**
  - **Traffic barrier clearances**
  - **Setting criteria**

Technical Issues

- **Lifting and Placing**
  - **Reversible lanes**
  - **Westbound lanes**

Modular Joint Delivery

Hydraulic Rock Splitter

Sawcutting

Concrete Removal Preparation

Concrete Removal

Concrete Removal

Concrete Removal

Existing Modular Joint Removal

Stage 1 Weather Issues

Concrete Blockouts

Crane – Reversible Lanes

Setting New Joint

Setting New Joint

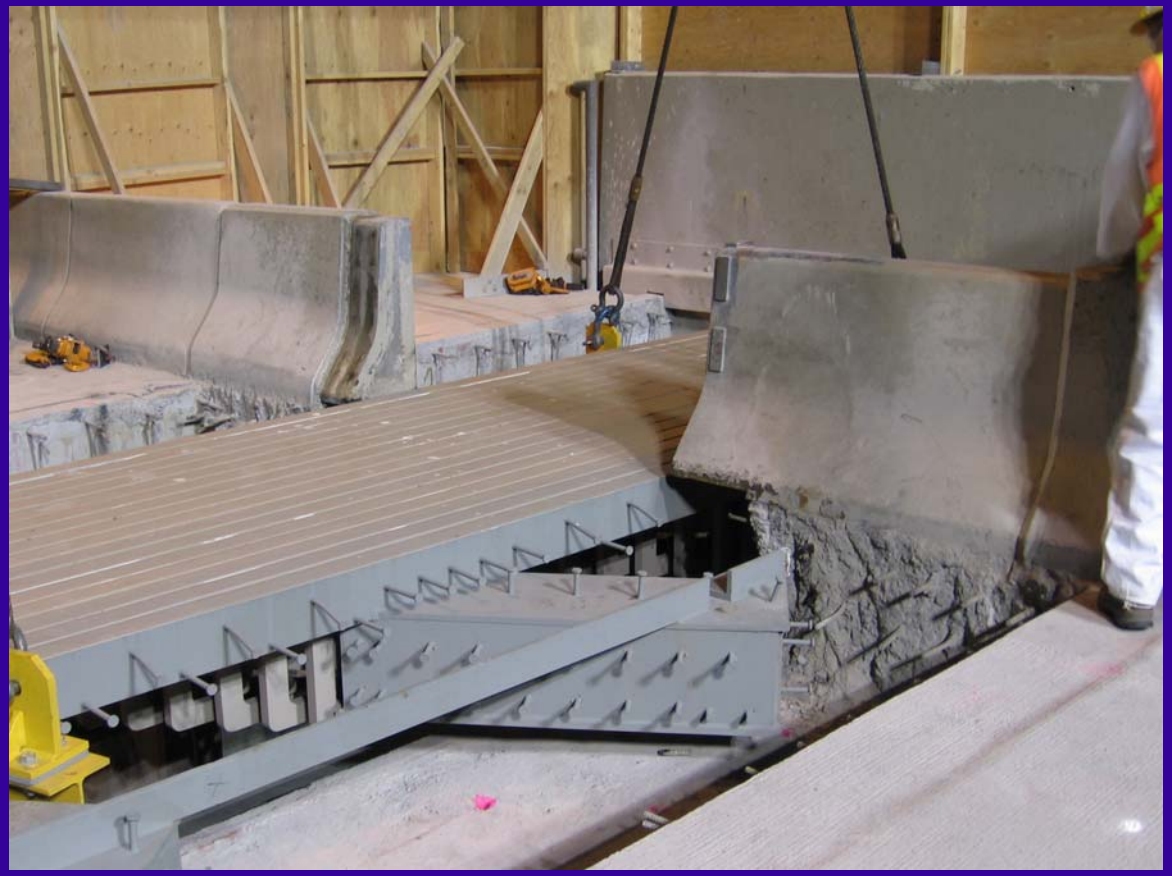
Setting New Joint

Setting New Joint

Setting New Joint

Setting New Joint

Setting New Joint



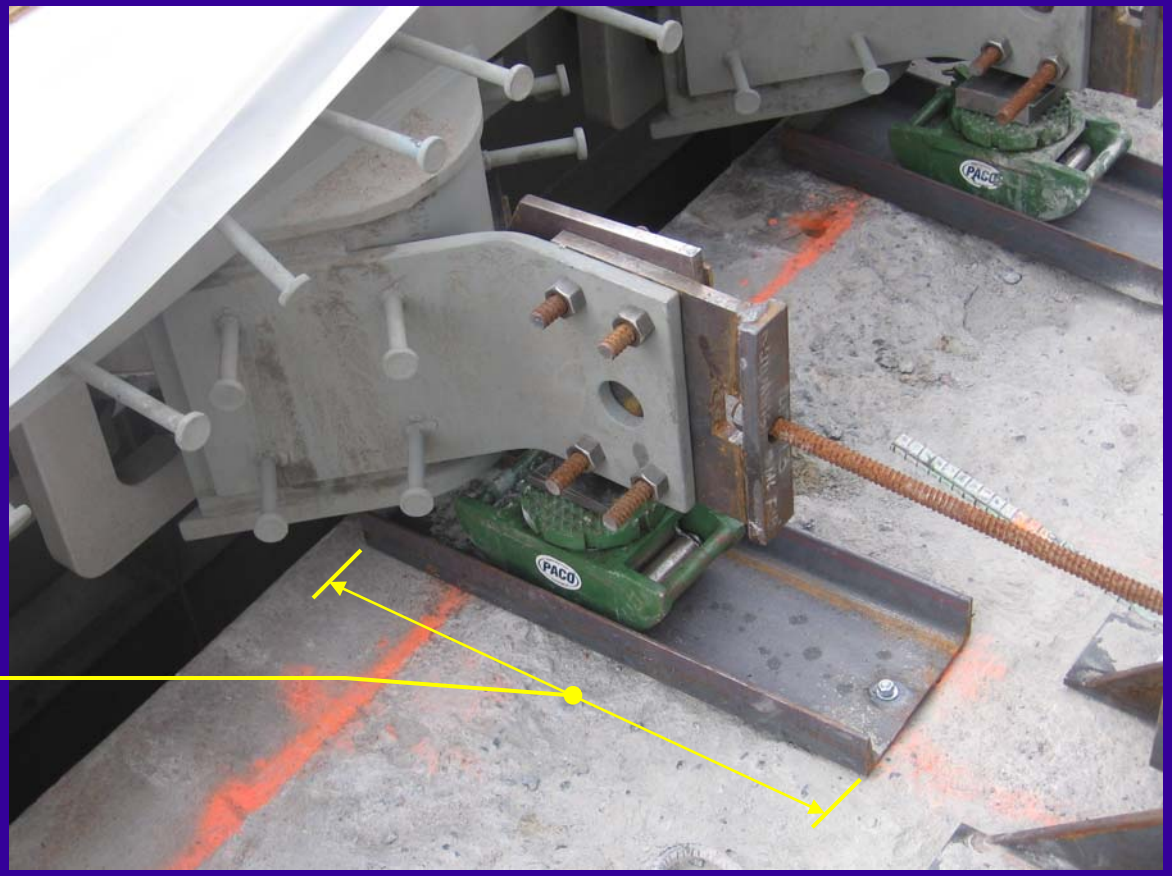
Setting Anchorages

Temporary Ped / Bike Bypass

Joint Opening Hardware

Joint Opening Hardware

Joint Opening Hardware



Hilman Roller Assembly

Joint Opening Hardware

Rebar Placement

Concrete Placement

Concrete Placement

Concrete Placement

Concrete Placement

Watertightness Testing

Actual Work Duration

- Stage 1 (Reversible Lanes)
  - 19 days allowed
  - Work completed in 12 days
- Stage 2 (Westbound Lanes)
  - 21 days allowed
  - Work completed in 12 days

Homer Hadley Bridge

Contact Information

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