Expansion Joint & Bearing Installation Issues:
An Owner’s Perspective

Ralph J. Dornsfie P.E., S.E.
Washington State Dept. of Transportation
Bridge & Structures Office
Olympia Washington USA
Joint / Bearing Case Studies

- I-5 SB Blakeslee Junction
- I-5 SB BNSF / Dike Road O/C
- I-5 Capitol Lake O/C
- I-5 / SR 18 Triangle Project W-S Ramp
- I-90 WB East Channel
- Nalley Valley SW-Line N-W Ramp
- SR 520 Floating Bridge Replacement
I-5 Blakeslee Junction Bridge
Strip Seal Joint Failure
Support and Setting Details
Installation Hardware
Installation Hardware - Close-up
Strip Seal Joint Failure
I-5 BNSF / Dike Road O/C
Installation Hardware
Detached Elastomeric Seal
Preformed Silicone Seal Replacement and Failure

Seal debonding
Unarmored Silicone Strip Seal Installation Deficiencies
I-5 / SR 18 Triangle Project
Modular Expansion Joints
MEJ Repairs
MEJ Repairs
MEJ Blockout Reinforcement
Traffic Implications
I-90 WB East Channel Bridge
Failed MEJ Centerbeam Splices
MEJ at Splice Location
Damaged SS Slide Plate
Nalley Valley SW-Line Bridge
Misoriented Disk Bearings

Sliding Disk Bearing

Transverse Stop Bearing
Disk Bearing Installation
SR 520 Replacement Floating Bridge
Elastomeric Bearings Damaged during Installation
Gouged Elastomer
Exposed Steel Shims
Use of Installation Technician

- Acknowledgment of Role
- Qualifications
- Present at Critical Times
Role of the Inspector

• Experience
• Specialized Training (Just-in-Time)
• Staff Retention
Communication

- Backgrounds
- Roles
- Coordinating
Installation Procedures

• Documentation
  – Shop Drawings
  – Written Procedures
• Review & Approval
Modular Finger Joint System
Installed Finger Joint System
Design Considerations

- Inspection
- Maintenance
- Installation
Contact Information

• Ralph J. Dornsife
  – WSDOT Bridge & Structures
    P.O. Box 47340
    Olympia WA 98504-7340
  – 360-705-7199
  – dornsir@wsdot.wa.gov