

South Layton SPUI Bridge Raised Construction,

*Lowering and Launching –
An Innovative ABC Method (first bridge launch in Utah)*



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I-15 South Layton Interchange Project

Type: Design Build

Location : North of Salt Lake City a full-interchange at
South Layton

Contractor: Ralph L. Wadsworth Construction

Designer : Michael Baker Jr. Inc. (for structures)

Cost: 97.3 M total, 8 M SPUI

Start (NTP): Aug 2009; Finish: Dec. 2010



Bridge Overview

- new Single Point Urban Interchange (SPUI) over I-15
- Removal of existing ramp bridges
- New on ramps and reconstruction of southern main street



Bridge Site and Construction Constraints

- Short timeline for design
- New 24'-0" embankments required 12'-0" of surcharge (for 3 to 4 months) to expedite 13" of settlement
- No work permitted over I-15 traffic
- MOT Demands -Two 6 hour I-15 closures for each direction



Why Launch Bridge?

- Proposal solution – use SPMT's
- At 60% design, changed approach to launch (after girders / diaphragm plans were released)
- super elevations and structure size a problem
- Proceeded with launch design Dec. 2009



MODEL



Temporary Shoring Construction



East Span Abutment Piles Extended



Abutment Pile Bracing Connection



Deck Placement (East Span)



East Span Surcharge Removed



East Span Surcharge Removed



Abutment Pile Cap Constructed



Structure on Ikki Wood Towers



Inverted Slide Shoe and Slide Tracks



Ikki Wood and Jack Towers



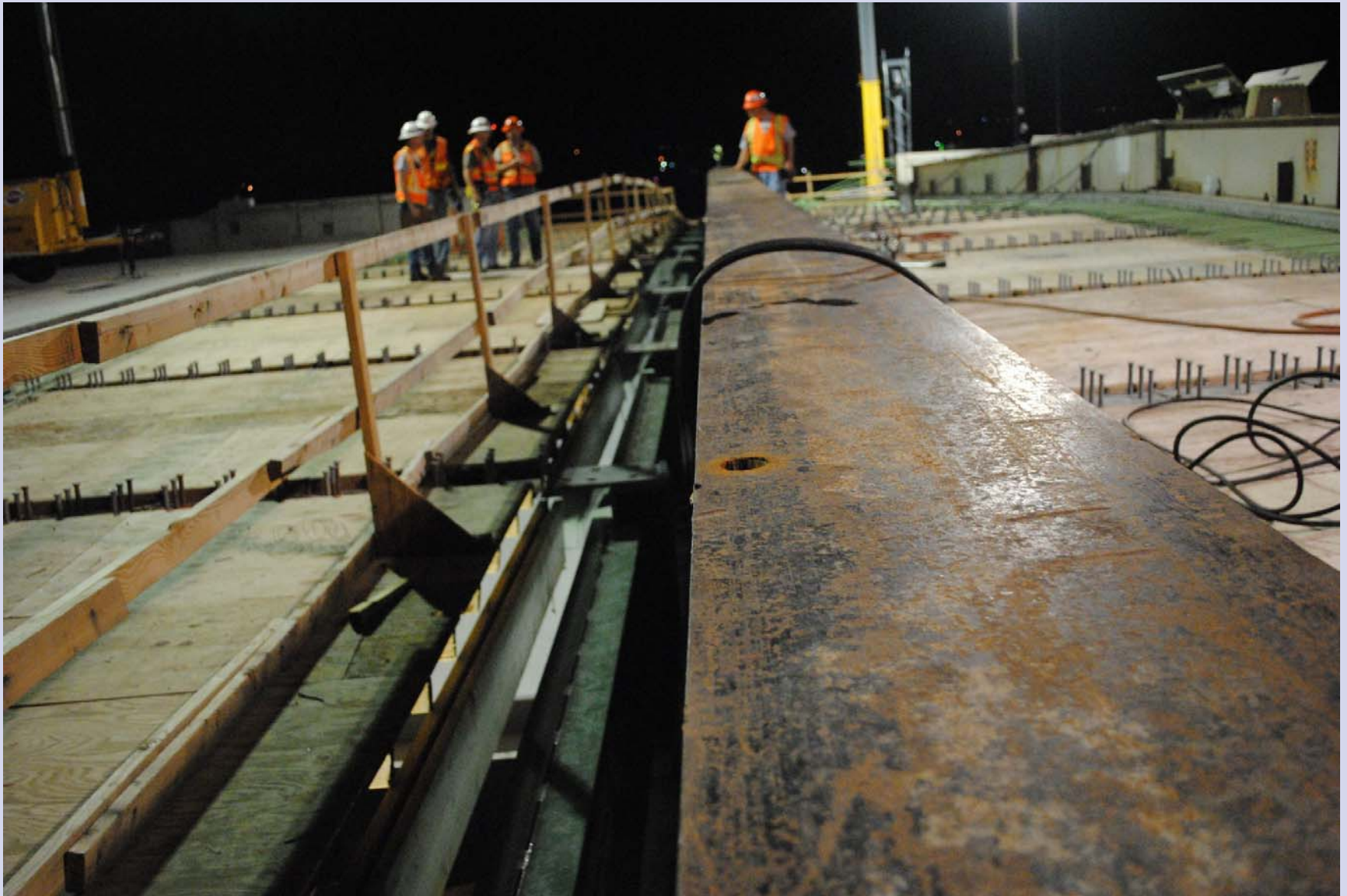
Skid Beam, Push Jacks and Sliding Pads



West Span Launch Aug 7, 2010



Girder Distribution/Carrier beams



Plywood under nose, Clamps & Inv. S Shoe



East Span Launch, Aug. 21, 2010

Removing Nose and Nose Diaphragms



Design and Analysis Summary

- Permanent structure per RFP requirements.
- Temporary supports
- Provided additional strength and changes to facilitate lowering and launching.
- Involved many deflection and geometry calculations
- As-built survey and related modifications



Key Items to Successful Launch

- As-built surveys
- Priorities: Safety and quality
- Effective resolution of construction issues.
- Clear and up to date plans and revisions
- UDOT – great teamwork and willingness to innovate
- Coordination by all parties: Contractor, Design team, UDOT/ Oversight,, roadway, MOT, heavy lifter/mover

Summary

- Each span launched in under 5 hrs
- Project remained within budget despite change in ABC method
- Bridge completed within 1 year from NTP

