PRECAST CONCRETE PAVEMENT IMPLEMENTATION IN CALIFORNIA

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Mehdi Parvini, Ph.D., PE, PMP
Pavement Program
California Department of Transportation
Outline

• Introduction
• Implementation Update
• Sample Operation
Precast Construction

General
• Fast
• Durable
• Less space
• Weather Friendly

Pavement
• Less user delay & worker exposure
• Less maintenance
• Less lane closure, lower safety risk
• More construction window
Application

Rapid rehabilitation and re-construction of existing rigid pavements

- Slab Replacement
- Lane Replacement

New Construction?
Systems

• Jointed
  – Reinforced
  – pre-tensioned

• Continuous
  – post-tensioned
Jointed System

Generic or patented systems:

- Connection
- Grading
- Support
Continuous System

Alterations depending on:

• Post-tensioning location
• Joint configuration
Production Rate

Typical production rates/nighttime closure

- Repairs: 15 to 20
- Continuous: 30 to 40

- Record is 60 panels
  (about 1000 ft)
## Precast Pavement Projects

<table>
<thead>
<tr>
<th>Location</th>
<th>System</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-10 El Monte, Los Angeles</td>
<td>PPCP</td>
<td>Completed 2004</td>
</tr>
<tr>
<td>San Bernardino, Research Center</td>
<td>PJCP</td>
<td>2005</td>
</tr>
<tr>
<td>I-15 Ontario, San Bernardino</td>
<td>PJCP</td>
<td>Completed 2010</td>
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<td>I-5/14 Sylmar, Los Angeles</td>
<td>PPCP</td>
<td>Completed 2010</td>
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<tr>
<td>I-680 San Ramon</td>
<td>PPCP &amp; IPSR</td>
<td>Completed 2012</td>
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<tr>
<td>I-710 Los Angeles</td>
<td>PPCP</td>
<td>Construction</td>
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<tr>
<td>I-80 Dixon, Solano</td>
<td>PPCP</td>
<td>Completed 2014</td>
</tr>
<tr>
<td>I-580 Alameda</td>
<td>PPCP &amp; IPSR</td>
<td>Completed 2014</td>
</tr>
<tr>
<td>I-5 Los Angeles</td>
<td>PPCP &amp; IPSR</td>
<td>Completed 2014</td>
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<tr>
<td>I-405 Los Angeles</td>
<td>PPCP</td>
<td>Completed 2015</td>
</tr>
<tr>
<td>I-210 Los Angeles</td>
<td>PJCP, IPSR</td>
<td>Construction</td>
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<tr>
<td>101 (Section 1) Los Angeles</td>
<td>PJCP, IPSR</td>
<td>Construction</td>
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<tr>
<td>101 (Section 2) Los Angeles</td>
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<td>I-605 Los Angeles</td>
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<td>I-15 Cajon Pass, San Bernardino</td>
<td>PPCP, IPSR</td>
<td>Construction</td>
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<td>I-710 (Phase II) Los Angeles</td>
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<td>Design</td>
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<td>210, 134, 101, 15 Los Angeles, San Bernardino</td>
<td>IPSR</td>
<td>Maintenance Projects</td>
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<td>101 Santa Barbara</td>
<td>IPSR</td>
<td>Completed 2015</td>
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<tr>
<td>I-15/215 San Bernardino</td>
<td>IPSR</td>
<td>Construction</td>
</tr>
<tr>
<td>57 Los Angeles</td>
<td>IPSR</td>
<td>Design</td>
</tr>
<tr>
<td>I-80 Emeryville, Alameda</td>
<td>PJCP</td>
<td>Design</td>
</tr>
</tbody>
</table>
Design Challenges

• Design/Performance Criteria
• Service life (LCCA)
  – PC versus CIP/RSC
  – PPCP versus PJCP
Construction Challenges

A change of culture in pavement world

• Contractor
• Agency
What is Done

• Design Methodology
• Standards (Specifications and plans)
• Guidelines
• Workshops
• Pilot Projects (lessons learned)
What needs to be done

• Monitoring and Evaluation
• Policy Improvement (design, standards, guides)
• Construction Quality
  – Contractor Qualification
  – Guides & Manuals
  – Training
Future Products

- Final Standards and Guides
- Approved Materials and Systems
- Performance Curves
- Cost & Maintenance Schedule (LCCA)
Cut Existing
Remove Existing
Compact Subgrade
Place Base
Place Panels
Slide Panel
Operation Overview
Bedding Grout
Fill Dowel Slots
Finished Product
Challenges
Questions?

Contact:
Mehdi Parvini
mehdi.parvini@dot.ca.gov
(916) 227-5848