Constructing PCCP Under High Traffic Volume

THE LANE CONSTRUCTION CORPORATION

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Agenda

- Lane Experience
- Challenges
  - Access
  - Design Elements
  - Staging of Construction
  - Traffic Management
  - Schedule
- Innovation
  - Dowel Bar Inserter
  - Stringless Paving
  - Zero Clearance Pavers
  - GSI – Real Time Smoothness
### High Traffic Volume Experience in North Carolina

<table>
<thead>
<tr>
<th>Route</th>
<th>Year Range</th>
<th>ADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 1/64 Cary</td>
<td>2005 to 2006</td>
<td>90,000</td>
</tr>
<tr>
<td>I-77 Yadkin</td>
<td>2007 to 2008</td>
<td>25,000</td>
</tr>
<tr>
<td>I-85 Yadkin River</td>
<td>2011 to 2013</td>
<td>74,000</td>
</tr>
<tr>
<td>I-85 Cabarrus</td>
<td>2012 to 2014</td>
<td>106,000</td>
</tr>
<tr>
<td>I-85/485 Mecklenburg</td>
<td>2012 to 2014</td>
<td>108,000</td>
</tr>
</tbody>
</table>
US 1/64 – Cary

- Innovative MOT
- Complex Phasing
- 36 Lane Miles
- Complete Reconstruction
I-77 - Yadkin

- Heavy Traffic
- Unbonded Overlay Design

- High Speed Rural Traffic
- 26.3 Lane Miles
I-85 Yadkin River

- Complicated Tie-In Paving
- Complete Reconstruction & New Location
- 23 Lane Miles
I-85 Cabarrus

- Heavy Traffic
- Complete Reconstruction
- Complicated MOT With Multiple High Volume Ramps
- 56 Lane Miles
I-85/I-485 Interchange - Mecklenburg

- Heavy Traffic
- Complete Reconstruction & Widening Along I-85
- Complicated MOT With Multiple High Volume Ramps
- 27.8 Lane Miles
Challenges

- Access
- Design Elements
- Staged/Phased Construction
- Traffic Management
- Schedule
Access

- Temporary Access Bridge & Ramp I-85
- Moving Paving Equipment
- Bridge Interference
- Plant Site Locations
Access

Temporary Access Bridge I-85
Access

Temporary Access Bridge I-85
Access

Temporary Access Bridge I-85
Access

Temporary Access Bridge I-85
Access

Temporary Access Bridge I-85
Access

Bridge Interference
Access

Bridge Interference
Access

Bridge Interference
Access

Moving Equipment
Access

Moving Equipment
Access

I-85 Yadkin Plant Location
Access

I-85 Concord Plant Location
Design Elements

- Jurisdictional Features at Structure Locations
- Roadway re-alignment to avoid impacts
- Super-elevation corrections to accommodate new design speeds
- Structure End Bent designs – staged shoring
- Temporary Drainage during Construction
Design Elements

Jurisdictional Features
Design Elements

Jurisdictional Features
Design Elements

Roadway Re-alignment
Design Elements

Super-elevation Corrections
Design Elements

Structure End Bend Designs – Staged Shoring
Design Elements

Temporary Drainage
Design Elements

Temporary Drainage
Staged / Phased Construction

Providing maximum space for the traveling public increases safety for them but creates challenges for us

- Impacts to Linear -L- Construction
- Impacts to Ramp -Y- Construction
- Maintaining ramp traffic creates constructability issues
Staged / Phased Construction

Impacts to Mainline -L-
Staged / Phased Construction

Impacts to Mainline -L-
Staged / Phased Construction

Impacts to Mainline -L-
Staged / Phased Construction

Impacts to Ramp -Y-
Staged / Phased Construction

Impacts to Ramp -Y-
Staged / Phased Construction

Impacts to Ramp -Y-
Traffic Management

- Coordinating traffic shifts with existing infrastructure
- Constructing ramps and loops while maintaining traffic
- Incorporating Emergency Pull Offs into the work
Traffic Management

Coordinating Traffic Shifts
Traffic Management

Emergency Pull Off Areas
Traffic Management

Wedge Between New & Old Pavement
Traffic Management

Coordinating Emergency Situations
Schedule

I-77 Yadkin
Schedule

I-85 Concord
Innovation

- Dowel Bar Inserter
- Stringless Paving
- Zero Clearance Pavers (Cantilevered)
- GSI – Real Time Smoothness
Dowel Bar Inserter
Dowel Bar Inserter
Dowel Bar Inserter
Stringless / Wireless Paving
Stringless / Wireless Paving
Stringless / Wireless Paving
Zero Clearance Pavers (Cantilevered)
Zero Clearance Pavers (Cantilevered)
Upgraded Quality Control
GSI – Real Time Smoothness
Diamond Grinding
Diamond Grinding
Review

- Challenges
  - Access
  - Design Elements
  - Staging of Construction
  - Traffic Management
  - Schedule

- Innovation
  - Dowel Bar Inserter
  - Stringless Paving
  - Zero Clearance Pavers
  - GSI – Real Time Smoothness
Thank You!

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