Getting Quality Joints

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Goal – Better Densities

• Our focus has been on getting better joint density due to performance issues of under compacted material.
On our RPS and NHS routes we have gained in terms of density.

<table>
<thead>
<tr>
<th>Year</th>
<th>Min. Spec. Limit</th>
<th>Avg. Joint Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>N/A</td>
<td>88.9%</td>
</tr>
<tr>
<td>2009</td>
<td>N/A</td>
<td>89.2%</td>
</tr>
<tr>
<td>2010</td>
<td>N/A</td>
<td>88-90%</td>
</tr>
<tr>
<td>2011</td>
<td>≥ 89%</td>
<td>91.0%</td>
</tr>
<tr>
<td>2012</td>
<td>≥ 89%</td>
<td>91.6%</td>
</tr>
<tr>
<td>2013</td>
<td>≥ 89%</td>
<td>91.4%</td>
</tr>
<tr>
<td>2014</td>
<td>≥ 90%</td>
<td>92.3%</td>
</tr>
<tr>
<td>2015</td>
<td>≥ 90%</td>
<td>92.6%</td>
</tr>
</tbody>
</table>
Joint Density Up

- We have done well in raising the density at our joints. This will pay off.

- Now let’s focus on making sure we get the density without causing cracking.
Goal – Dense Joints that Don’t Crack

• Better densities mean more roller passes

• More roller passes mean more chance to crack the pavement in the area of the joint

• Tender mixes will make this tendency worse. Be on your guard to ensure you are not creating cracking.
Close up - Unsupported Edge

Note the overhang… this needs to be on every pass, not just some of them.
What We Don’t Want

Rolling Unsupported Edge
(First Paver Pass)

Edge of drum inside unsupported edge
Can cause cracking near the edge and lateral mix movement at the unsupported edge (especially on tender mixes)
• Note the crack that formed at the unsupported edge.

• This illustrates why rolling just inside of the edge is not desirable.

• This mix had a tender zone and cracks formed at the edge of the roller drum.
Make sure rollers overhang edges
Watch what is Going on at the Screed

Project:
- Paved June 2015
- Wedge Joint
- No joint spec
- Paver leaving shadow in mat about 3" from joint
- Next winter?

- Often watching the mat closely can pick up an issue that could be corrected
Tack at Unsupported Edges

- Apply tack coat slightly beyond the edge of the lane to be paved

Extra Tack Coat Width
I Want to See Tack Coat

Note the extra 6 inches of tack
Overlap Paver Screed 1” (to 1 ½”)

- Consistent proper overlap is key
- Operate paver so that the edger plate on the screed overlaps the previously placed pavement by 1 inch (to 1 ½ inches)
• **WARNING**: The photos you are about to see are not for the faint of heart nor desirable.
Longitudinal Joint Performance

Project 1:
- After 1st Winter
- Wedge joint
Longitudinal Joint Performance

Project 2:
- 1st D-3 ‘Pilot’
- No incentive/disincentive
- 1st winter
- 4-digit SR
- 2 lane roadway
Longitudinal Joint Performance

**Project 3**: 1st winter, wedge joint, bonus
Longitudinal Joint Performance

Project 3: 1st winter, wedge joint, bonus
Longitudinal Joint Performance

Project 4: 1st winter, wedge joint, bonus
Longitudinal Joint Performance

Project 4: 1st winter, wedge joint, bonus
Longitudinal Joint Performance

Project 4: 2 yrs, wedge joint, bonus
Longitudinal Joint Performance

Project 5: Wedge joint, bonus
1st winter
Project 5: Wedge joint, bonus 1st winter
Longitudinal Joint Performance

Project 6:
- 5 years old
- Wedge Joint - unknown
- No Joint Specification
Longitudinal Joint Performance

Project 7: 1st winter, wedge joint, bonus
Over banded
Longitudinal Joint Performance

Project 7: 1st winter, wedge joint, bonus
Project 7: 1st winter, wedge joint, bonus
Longitudinal Joint Performance

Project 8: Repair approximately 5 years old
Not Desirable
Longitudinal Joint Performance

Project 9: 2 years, wedge joint, bonus
Over banded... Looks great
Longitudinal Joint Performance

**Project 10**: 2 years, vertical joint, bonus
Over banded… Looks great
Longitudinal Joint Performance

Project 11:
2 years
wedge joint
Bonus
Over banded
Looks great
Longitudinal Joint Performance

Project 12: 2 years, wedge joint, bonus
Over banded... Looks great

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Longitudinal Joint Performance

Project 13: 1 year, wedge joint, bonus
Over banded... Looks great
Conclusion

• Density is important, so get it
• Watch details so cracking doesn’t happen
  • Roller passes, overhang
  • Roller speed
  • Stay out of tender zone
  • Tack application
  • Watch the screed
• Use your eyes to look for issues
Questions?