De-bunking the myths of concrete pavements

John Donegan – Chairman Roads Task Group
Smart motorways use concrete pavements

- Isn’t concrete noisy, expensive, difficult to build etc etc?

- These are the myths!
Smart motorways create Truck Lanes

• The hard shoulder becomes the new Lane 1
  • Trafficked almost exclusively by HGV
  • 40 years cumulative traffic > 400msa!!
Case Study – somewhere on M6

- reported cv/d
- > 75% in Lane 1
- 40 years cumulative traffic >> 400msa!!
Highways England expects

- Low maintenance solutions
- Good life cycle value – low whole life cost
Highways England needs concrete pavements

• Flexible pavements could require structural maintenance after as little as 5/6 years
• Can we meet this challenge?
New Britpave guidance

• Address myths about concrete pavements
• Key positives & benefits
Thinner construction thickness
Thinner construction thickness
## Thinner construction thickness

<table>
<thead>
<tr>
<th>Pavement Types</th>
<th>PQC</th>
<th>Design Traffic (msa)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>FC 2</td>
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<td></td>
<td>Flexural Strength</td>
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<td>200 mm thick CRCP</td>
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<td>80</td>
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<tr>
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<td>6.0</td>
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Inlays

- M23 near Gatwick – 1999
  - CRCP with EACS
- Retain lower part of existing flexible pavement as bound foundation – FC 3/4
M23 – lane 1 inlay
Latest construction techniques

- Fast track paving
- Mechanised processes
- Logistical constraints
Gang-drill for tie bars
Customised rebar carpets
Single lane paver with side feeder
Single lane paver with side feeder
Multi-lane paving
Single-lane paving
Side feeding concrete
Some “do’s and don’ts”

- CRCP is best solution – except alongside existing jointed concrete
- Match existing jointed concrete construction
- Plan longitudinal joint positions to avoid wheel tracks
What about the surface?

• Thin surface courses (30mm) last 50% longer on CRCP
  • Exposed aggregate surface (EACS) IS permitted
  • EACS stays 2dB(A) quieter than Hot Rolled Asphalt
    • EACS is maintenance free for 25 years
Exposed aggregate concrete surface
Cost & Value

• CRCP is CHEAPER than fully flexible construction!
  • Even with Thin Surface Course
  • Cheaper to build AND cheaper to maintain
Whole life cost

- Evidence from DBFO schemes
  - Connect Roads
    - M6 Toll
  - M25 – concrete sections
Innovation in concrete surface treatment

• Diamond grooving & grinding of concrete pavements

• Reduce noise & improve ride quality
Get Smart!

• Be maintenance free
• Choose concrete