Overview of national EME Technology Transfer effort

Erik Denneman
Presentation outline

• Why EME?

• Technology Transfer ($T^2$) effort in Australia
  – Austroads TT1908: EME mix design
  – TMR P9: Structural design

• Translating mix design requirements

• Developing structural design guidelines
Why EME?

- **Properties**
  - Workable
  - Stiff
  - Rut resistant
  - Fatigue resistant
  - Moisture resistant

- **thanks to**
  - High binder content ≈ 6%
  - Hard binder: Penetration value 10-25
  - Low air voids content < 6%
  - **Performance related design method**

- **Opportunity to reduce pavement thickness**
EME $T^2$ effort

• 2012/2013
  – Suitable bitumen available
  – Austroads ARWG forms EME working group
  – Explorative mix design work under Austroads TT1353
  – Proposals for development of mix design and structural design guidelines submitted

• 2013/2014:
  – Austroads funds development EME mix design guidelines, with industry support
  – TMR funds development of EME structural design guidelines
  – Demonstration trials planned (through ARWG EME working group)
Translating design requirements

- Appropriate binder specification selected
- Suitable Australian aggregate criteria set
- Comparative testing using French and Australian test methods:
  - Existing French EME2 design tested at ARRB
  - Development of mix designs in France using Australian materials, by industry
Translating design requirements

Workability
Translating design requirements

Stiffness

Fatigue
Translating design requirements
Translating design requirements

Moisture
Translating design requirements

- Deliverable Austroads project: performance related mix design guideline using Australian test methods
- Testing for design criteria development nearing completion

<table>
<thead>
<tr>
<th>Performance property</th>
<th>Test description</th>
<th>Test method</th>
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<tbody>
<tr>
<td>Workability</td>
<td>Servopac compaction</td>
<td>EN 12697-31</td>
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<tr>
<td>Stiffness</td>
<td>Four point bending (4PB)</td>
<td>EN 12697-26, Appendix B</td>
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<td>Permanent deformation</td>
<td>Wheel-tracking</td>
<td>AGPT/T231</td>
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<td>Fatigue</td>
<td>Four point bending (4PB)</td>
<td>AGPT/T233</td>
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<td>Moisture sensitivity</td>
<td>Indirect tensile</td>
<td>AGPT/T232</td>
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Structural design guideline

• TMR/ARRB NACOE project P9
• Purpose: develop structural design guidelines for pavements containing EME
• Methodology
  – Evaluate compatibility of EME with current pavement design methods
  – Conduct laboratory experiments
  – Monitor field trials
  – Develop models for fatigue life prediction
Summary

- EME T² well underway thanks to combined efforts of road agencies, AAPA members and research organisations
- Performance related mix design guideline being prepared
- Structural design guidelines under development
- Trial sections being constructed (QLD, NSW)