Hot Rolled Asphalt

By John Thorp
What is Hot Rolled Asphalt?

- Essentially a gap graded material
- Sand, Bitumen, Pen 50 filler and stone floating
- On which 20mm Bitumen coated chippings are applied to the surface – before rolling
What does it produce

• A surface that is:
  – Dense impervious layer
  – Weather resistant durable surface
  – Resistant to cracking
  – And with the correct chipping a safe skid resistant surface
Brief history

- First used in the late 1890’s in America
- First used in London in 1895
- In the 1930’s move to more cars and pneumatic tyres led to slipping issues
- Solution was to roll in broken stone
- In the 1940’s – aggregate added to the mix to increase load spreading ability
- Until the early 1970’s produced as a recipe mix
Modern History

• The material of choice for motorways and trunk roads
• In 1973 Marshall test introduced – move to design mixes
• Mid 1970’s introduction of texture depth
• But from the mid 1980’s problems started to develop.
Problems

• Embedment of chippings
• Diminishing supplies of good sand
• Deformation under load
• Workmanship
Social History

• Enter Europe – move from 32 tonnes to 44 tonnes
• Reduction in rail freight
• Super Singles
• Development of distribution centres
• Congestion
• Climate Change
• Environment
• Health and Safety Legislation - 1996
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Playing

- Added more aggregate – 30% - 35%
- Moved from sand to rock fines
- Changed the binder
- Attempted high stone content
- Introduced the wheel tracker
- But in effect we have been one step behind what the country demands
- Finally…….
In the mid 1990’s

• Trials took place on both the HA and the Local Authority network of ‘thin surfacing’ and stone mastic asphalts

• Finally in 1999 the highway pulled the plug on HRA preferring thin surfacings.
Conclusions - Good

- Waterproof – protects underlying layers
- Flexible under foundation movement
- Lasts a long time under low stress
- Resistant to erosion
Bad

• Deforms under load and temperature
• Needs extra width to lay
• Needs skill to lay
• Can go wrong
• Noisy
The Future

• A long life, low maintenance urban surface which is not subject to load and temperature
Finally

• The County Surveyors Society has produced Guidance on specifying HRA to comply with European Standards
Thank You

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