


RPF
Umhlanga May 2014

Dr T Milne

Progress :Modelling Surfacing Seals and Contribution to TRH3

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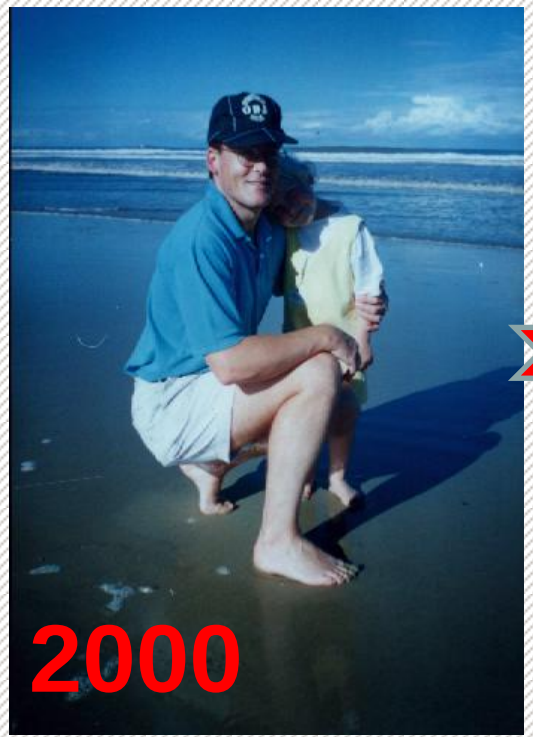
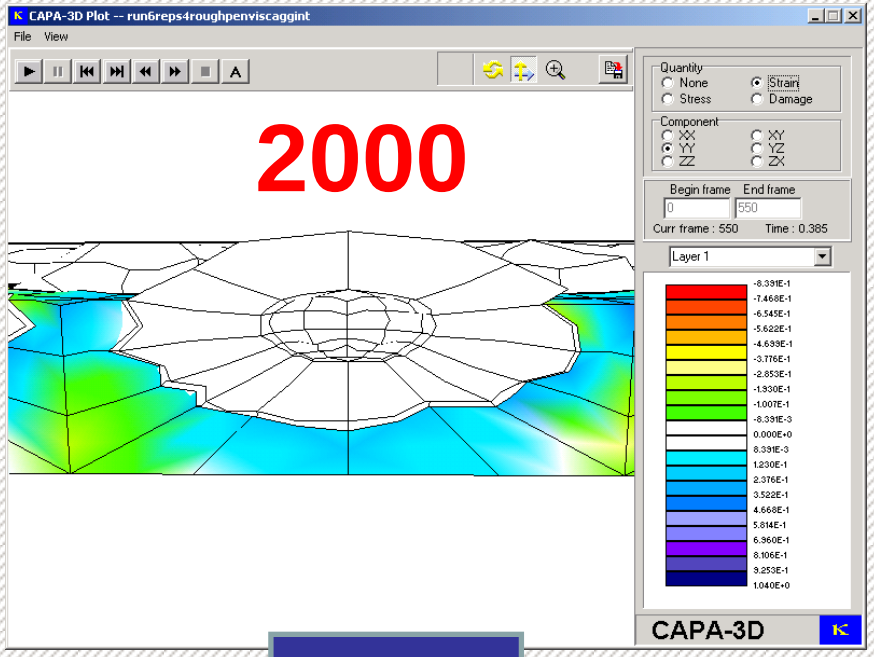
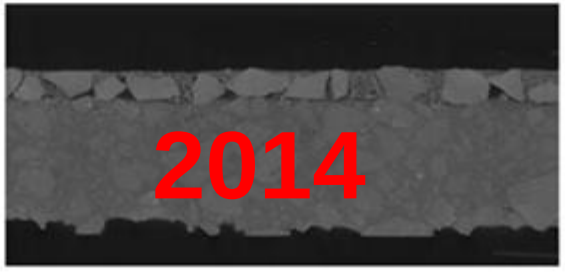
In June 2000, a new forum for the roads industry, the **Road Pavements Forum (RPF)**, ….from Bituminous Materials Liaison Committee (BMLC) and the Cementitious Pavement Forum (CPF). First meeting of the RPF…. 120 representatives from the bitumen and cement industries, …. CSIR Conference Centre in Pretoria on 7 . 8 August, 2000.

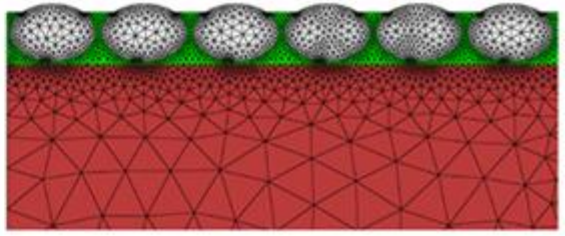


Seal Modelling Progress



Field extraction ⇨ X-ray image ⇨ Spatial model





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Nov 2013
What's coming next?

- Full single seal system
  - Binder types and application
  - Base types
  - Traffic
  - Environment
  - Ageing
  - Aggregate types and application

And NOW

- SAPDM Thin Surfacings
  - Johan Gerber
  - Estime Mukandila
- Review by TU Delft
  - Modelling bitumen response and damage models
  - FEM modelling reality
  - Field Verification
- SAPDM recursive modelling initiated

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Project Phasing

ie WHY we are doing this

Move from empirical to performance prediction - PM

- HDM Modelling
- TRH3 Interim Improvements
- SAPDM platform for recursive modelling (seal design inside Godzilla)

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TRH3 Interim

- Use Current TRH platform
- Factors to adjust binder application
  1. Aggregate spacing (mat)
  2. Macro texture- stone orientation
  3. ELV determination
  4. Minimum binder volumes
  5. Temperatures (seasons) for sealing
  6. Embedment
  7. Climate
  8. Aggregate type (bond strength/texture)

TRH3 Interim

- TRH3 is based on ALD orientation
- Shoulder to shoulder
- Adjustment factors based on deviations from these
- Dolerite aggregate as “1”

Traffic

- Elv: current 1 heavy is 40 elv's
- Move to SAPDM vehicles classification, S M L B worked back to elv using FEM and SAPDM info
- Outcome is sum of elv's for the projected traffic count and type, then back in to TRH curves

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Embedment

- Current ball pen
- Model base stiffness, will be able to allow for differing embedment per actual traffic and base type, use FEM model stress transferred
- Outcome a factor to the max application rate for the specific seal

Aggregate spacing (mat)

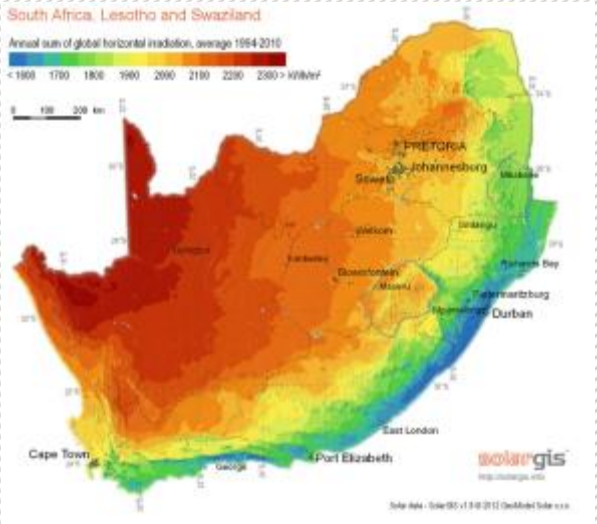
- Model by volume, more voids means more binder
- Minimum application rate will increase as seal is opened
- Outcome is a factor to be used on minimum binder

Aggregate type (bond strength/micro texture)

- Take in to account micro-texture and surface charge (DSR)
- Different binders = different adhesion
- Eg rougher stone surface =less binder
- Factor = 1 : dolerite
- Outcome is factor to the minimum binder

Temperatures (seasons) for sealing

- Construction issue
- Binder choice
- Seal type
- Value now :stripping potential (defining risk)



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Thank You

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