

23rd ROADS PAVEMENT FORUM MAY 2012

BSM DESIGN/PERFORMANCE

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Why are we here?

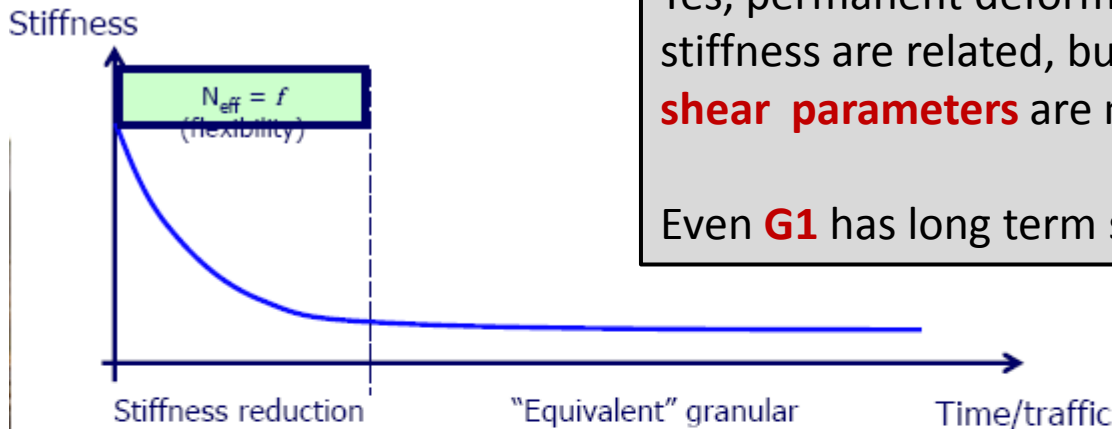
- At 22nd RPF Nov 2011 the following came up:
 - *“The objective is to question the current design philosophy behind the foamed bitumen treatment”*
 - *“Base design philosophy on laboratory data and field observations”*
- SANRAL embargo on new BSM Foam projects
 - Inconsistencies in design
 - Delays with construction
 - Performance?

Design philosophy

- Active filler: % binder?
 - $> 1\%$ = bound material
 - $< 1\%$ = granular material on steroids (KJJ)
- Effective long term stiffness
 - Increase, decrease, or BOTH?
- Out of balance pavements

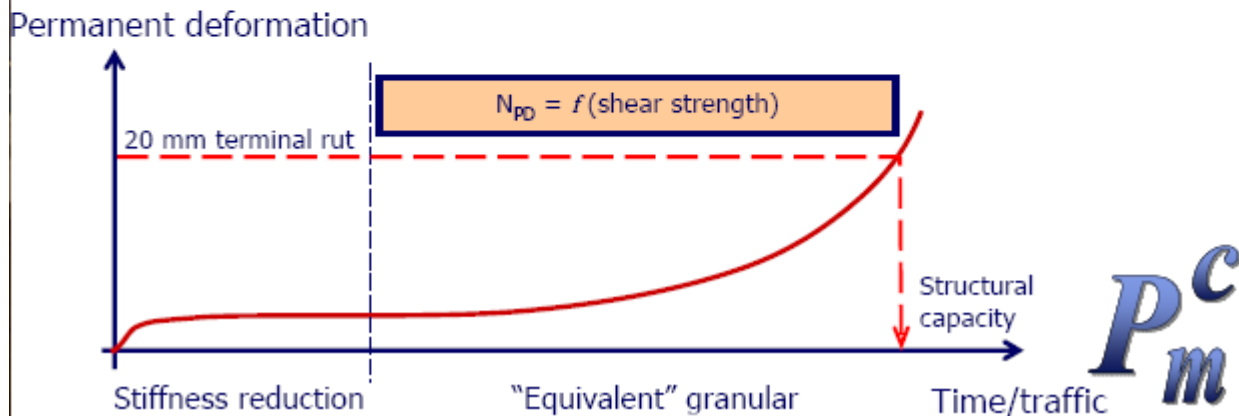
Need to look critically at the design philosophy so that everyone can agree.

Effective long term stiffness



Yes, permanent deformation and long term stiffness are related, but **stress ratio** and **shear parameters** are more significant

Even **G1** has long term stiffness reduction



Time variable a problem with BSM

Concerns for SANRAL embargo

- Mix design
- Start-up time on site
- Early trafficking
- Bitumen handling
- Construction delays



Embargo: Design related

- Experienced materials engineers, or lack thereof
- Design stage:
 - Only preliminary design due to limited material available
 - Justify quantities and binder types
 - Specifications
- Construction stage:
 - Detail material design
 - Long lead time before actual construction
 - Schedule for winter
 - Designs expensive (or perceived to be)
 - Experts
 - Specialist laboratory
 - Variability of material

Embargo: Construction related

- Start-up time on site, equipment
- Early trafficking on BSM layer?
- Bitumen handling
 - Adequate and effective site storage
 - Ageing on site?
- Construction delays
 - Winter road temperatures
 - Bitumen availability

Planned Investigation Study

- Info gathering on BSM Foam sites on issues
 - questionnaire
- Scrutinize BSM Foam designs of sites
- Evaluate construction problems/solutions
- Investigate temperature distributions
- Workshop contractors/consultants
- Report

Way forward

- Finalise report
- Foam party between foam-heads
- Agree on “problem” with solutions
- Task group
 - Design guidelines
 - Economic justification for foam
 - Specifications
 - Method statements
 - Etc
- Institute recognized, accreditation of courses



Thank you for your attention.

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