

Asphalt design

Implementation of Manual 35 / TRH8

RPF

12 November 2018

Current focus

- RPF Task group on bituminous materials
- Convened a working group
 - Implementation of Sabita Manual 35 / TRH8
 - Foster wider, correct use of the document
 - Not necessarily to effect revision

Membership

P Myburgh (convenor)	
Gretchen Weber-Cherry	(SANRAL)
Steph Bredenhann	Ex officio (SANRAL)
Ian Bowker	(COCT)
Eric Lathleiff	eThekwini Municipality
Louw du Plessis	Gauteng Roads and Transport
Kit Ducasse	KZN DoT
Dirk Immelman	PGWC
Christi Botha	Smec
Johan van Heerden	RH DHV
Wynand Nortje WN	(National Asphalt)
Colin Brooks	(Much Asphalt)
Herman Marais	(Much Asphalt) (visitor)

Revisions

Approved by RPF BitMat task group

- More coverage on bitumen rubber asphalt (Section 5.6 – Design of special mix types)
- Traffic classes (incorporated in SATS 3208)

Design traffic (million E80)	Traffic Speed (km/h)			Asphalt mix design level
	< 20	20 - 80	>80	
< 0.3	S	S	S	IA
0.3 - 3	H	S	S	IB
> 3 - 10	V	H	S	II
> 10 - 30	E	V	H	
> 30 - 100	E	E	V	III
> 100	E	E	E	

- HWTT compliance for EME – min passes to **4mm rut – 20,000**
- Clarity on void content of test specimens (Table 33)

Proposed revisions / cont. ...

- Clarity on HWTT
 - AASHTO 324 (specimen prep R30 – 4 hrs at 135C)
 - Draft Sabita protocol ASP4 different
 - HM to follow up with JAB
- Permeability – current test EN 12697 – 19 *water* for *interconnected voids*

Propose *air* permeability - limit of $1 \times 10^{-8} \text{ cm}^2$ (Liebenberg et al)

Table 27

Property	Test	Method	Criteria
Durability/TSR	Modified Lottman	ASTM D 4867 M	See Table 26
Stiffness	Indirect tensile strength	ASTM D 6931-07	900 kPa - 1 650 kPa @ 25°C
Creep modulus	Dynamic creep	CSIR RMT 004	10 MPa min. @ 40°C
Permeability	<i>Air</i> permeability	TRH8 (1987) Appendix C	$\leq 1 \times 10^{-8} \text{ cm}^2$

Implementation issues

- Fatigue testing duration
- Continued use of (withdrawn) SABS 1200
- PG Binder for EME
- Linkage with COTO specifications
- Bailey working group

Fatigue

- Modifying procedures - speed up test duration
- Examine increased strain levels at higher temperatures
- Steph B & Johan vH investigating

Withdrawn SABS 1200

- Ongoing use of withdrawn SABS 1200 (by developers) was posing problems in view of divergences relative to Manual 35
- Sabita - approached to contact SABS in this regard
- Awaiting SABS response

PG Binder for EME

- Step B investigating
- Possible use of $G^*/\sin\delta$ to limit viscous flow

T_{\max}	$G^*/\sin\delta$
58	> 12
64	> 5
70	> 2

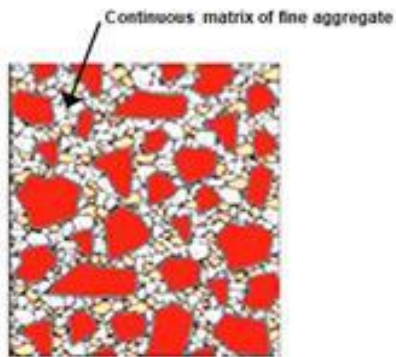
- J_{NR} recovery to ensure no modification

COTO

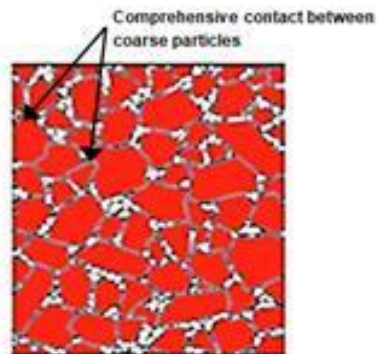
- ***Interpretation of COTO - single most significant impediment***
- Lack of clarity regarding simultaneous compliance with conventional design (as per COTO) and performance testing
- Compliance with gradings published in COTO
- Work group engage with COTO (SANRAL)
- Sabita will also engage with SANRAL

Mix types

- Aggregate configuration determines performance characteristics – NOT GRADINGS



Sand skeleton mix



Stone skeleton mix

- Gradings useful for QA

Bailey working group

- Colin B charged to get this up and running
- Purpose
 - Clearing house for coordinated comms with Bill Pine
 - Identify issues related to SA conditions (e.g. aggregate and binders)
 - Formulate revisions in the applications to SA conditions
 - ***Generally, give impetus to the use of the method in SA***

Next meeting – 23 Nov

- Hope to resolve a number of the issues