ROAD PAVEMENT FORUM

5-6 November 2013

Bitumen specifications Committee

Dennis Rossmann

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD

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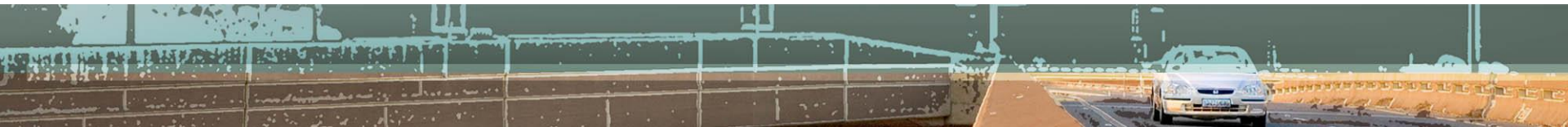

BITUMEN SPECIFICATIONS

RPF RESOLUTION TO COMBINE ALL BITUMEN TYPES UNDER A SINGLE STEERING COMMITTEE, WITH APPROPRIATE WORKING GROUPS TO ADDRESS SPECIFIC PRODUCTS

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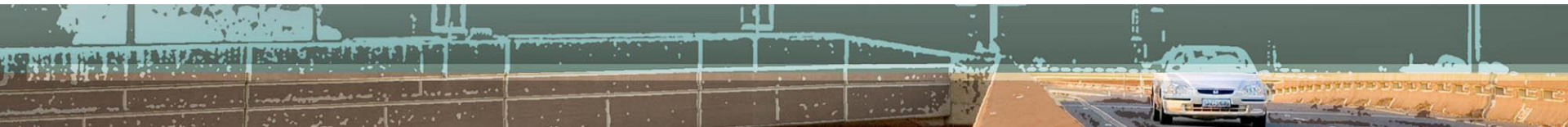
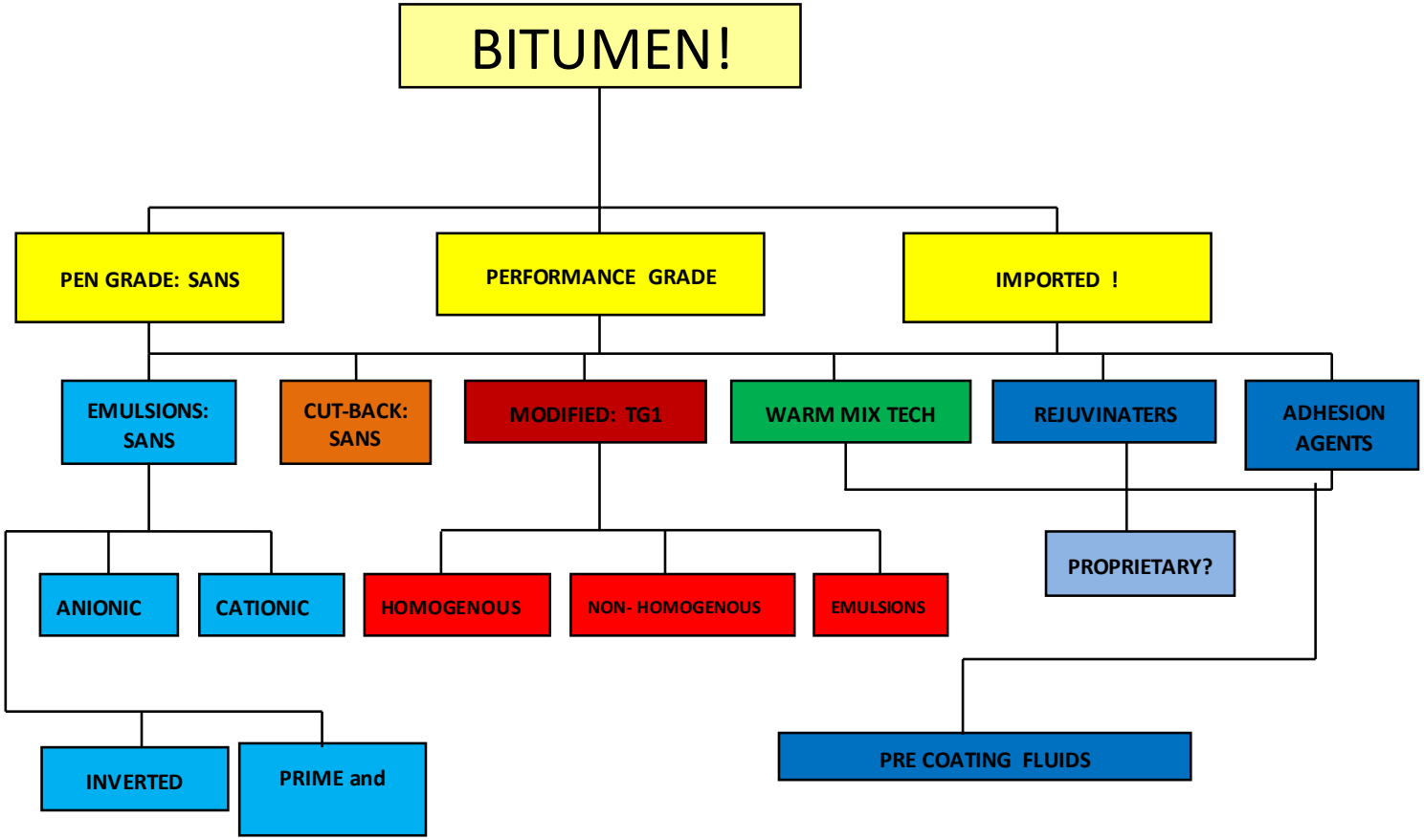


BITUMEN SPECIFICATIONS

BITUMEN CHARECTERISATION AND PROPERTIES MUST BE ALIGNED WITH “FINAL PRODUCT” REQUIREMENTS:

- SAPDM
- HMA DESIGN MANUAL
- SURFACE SEAL DESIGN
- “WINTER SEAL” REQUIREMENTS


BITUMEN!
PEN GRADE: SANS
PERFORMANCE GRADE
IMPORTED !
EMULSIONS: SANS
CUT-BACK: SANS
MODIFIED: TG1
WARM MIX TECH
REJUVINATERS
ADHESION AGENTS
ANIONIC
CATIONIC
HOMOGENOUS
NON- HOMOGENOUS
EMULSIONS
PROPRIETARY?
INVERTED
PRIME and
PRE COATING FLUIDS

PENETRATION GRADES

SANS 307 NOW SANS 4001 – BT1

What about binders for Hima??

The requirements (based on EN 13924: 2006) are proposed by the RPF task group on bituminous materials.

Property	Test Method	Unit	Penetration grade	
			10/20	15/25
Before RTFOT				
Penetration at 25°C	EN 1426	0,1 mm	10 – 20	15 - 25
Softening Point	ASTM D36 [a]	°C	58 - 78	55 - 71
Dynamic viscosity at 60°C	ASTM D4402 [b]	Pa.s	≥700	≥550
Viscosity at 135°C [c]				
Kinematic viscosity	ASTM D2170	cSt	≥700	≥600
Dynamic viscosity	ASTM D4402 [b]	mPa.s	≥750	≥650
Flash point	EN ISO 2592 [d]	°C	≥245	≥235
After RTFOT				ASTM D2872
Retained penetration	EN 1426	%	-	≥55
Softening point	ASTM D36		-	≥57
Increase in softening point	ASTM D36	°C	≤10	≤8
Mass change		%	-	≤0,5

[a] Using shouldered ring

[b] Recommended apparatus is the RV viscometer using SC4 spindles with thermosel system

[c] This is an optional requirement of EN13924. Alternative values of dynamic viscosity are proposed.

[d] Cleveland open cup specified in EN 13924. If ASTM D93 (Pensky-Martens closed cup) is specified the compliance limits will have to be adjusted.

RPF Resolution

APPROVAL OF BITUMEN SPEC COMMITTEE'S RECOMMENDATION FOR 10-20 AND 15-25 PENETRATION GRADE SPECIFICATIONS (as proposed) TO BE INCLUDED AS NEW CLASSES WITHIN THE SANS 4001 – BT1 SPECIFICATION

EMULSIONS

- SANS 309:2004 – Anionic Road Emulsions
- SANS 548:2003 – Cationic Road Emulsions
- SANS 1260:2004 – Invert Bitumen Emulsion

After revisions having been completed > 1 year ago – STILL awaiting SABS approval and publication!!!!

TACK COATS

Different applications/demands to 10-15 years?

- “Thinner” pavement layers?
- Asphalt overlays on concrete pavements?
- Night work?

Existing Standard

COLTO (1998)
Clause 4205 (C) iii – Tack Coat

(iii) Tack coat

Where required In these specifications or the project specifications, or where indicated by the engineer. a tack coat shall be applied to the surface to be paved

The tack coat shall consist of a stable-grade bituminous emulsion diluted to have a 30% bitumen content and shall be applied at a rate of 0.55 l/m^2 or as directed by the engineer.

For bridge decks a tack coat consisting of 30% stable-grade grade bituminous emulsion shall be applied to the surface at a rate of 0.4 l/m2 • The tack coat shall then be allowed to dry.

The use of hand operated equipment for the application of tack coats shall be at the sole discretion of the engineer and his approval shall be timeously obtained.

All exposed portions of kerbing. channelling and bridge railing, shall be protected in terms of section 2300 when the tack coat is applied.

The tack coat shall not be applied more than 24 hours before the paving is done.


STOP


Standard Tack!!!!!!


"Modified tack"!!!!!!

PRIMES AND TACK COATS

- ENVIRONMENT “FRIENDLY” PRIMES???
- “TRACKLESS” (TACKLESS) TACK-COATS!

MODIFIED BINDERS: TG1

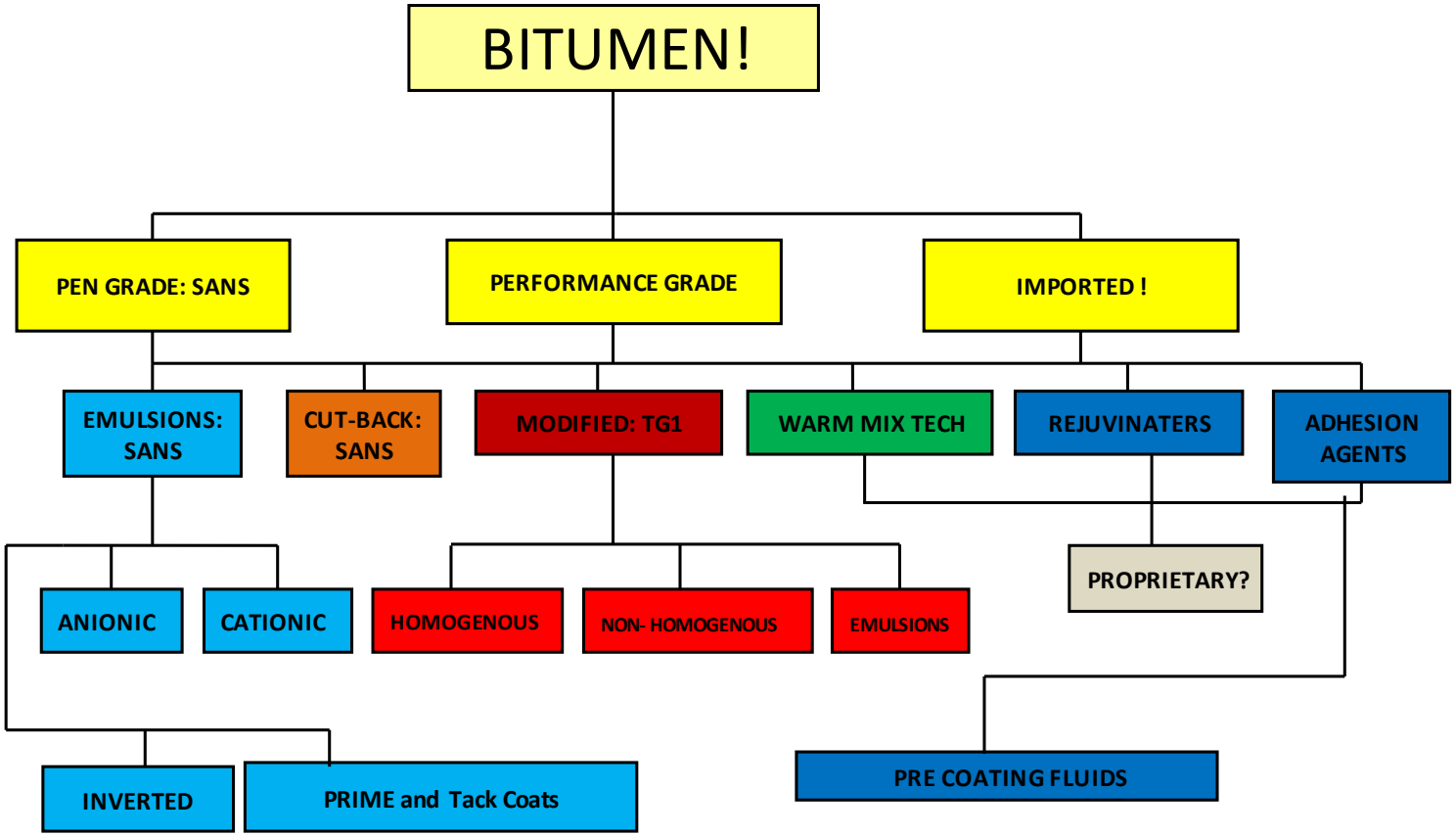
- ONLY MINOR AMMENDMENTS/CHANGES TO EXISTING PRODUCT REQUIREMENTS

- "NEW GENERATION" BINDERS TO BE INCLUDED

- INCLUSION OF HYBRID BINDERS (COMBINATION OF POLYMERS/AGENTS) PRODUCTS?

- ADDITIONAL BACKGROUND INFORMATION TO BE INCLUDED W.R.T DIFFERENT PRODUCTS AND "MAKE-UP"

- GUIDENCE W.R.T "WHAT IF" SITUATIONS TO BE INCLUDED (E.G NON-CONFORMANCE)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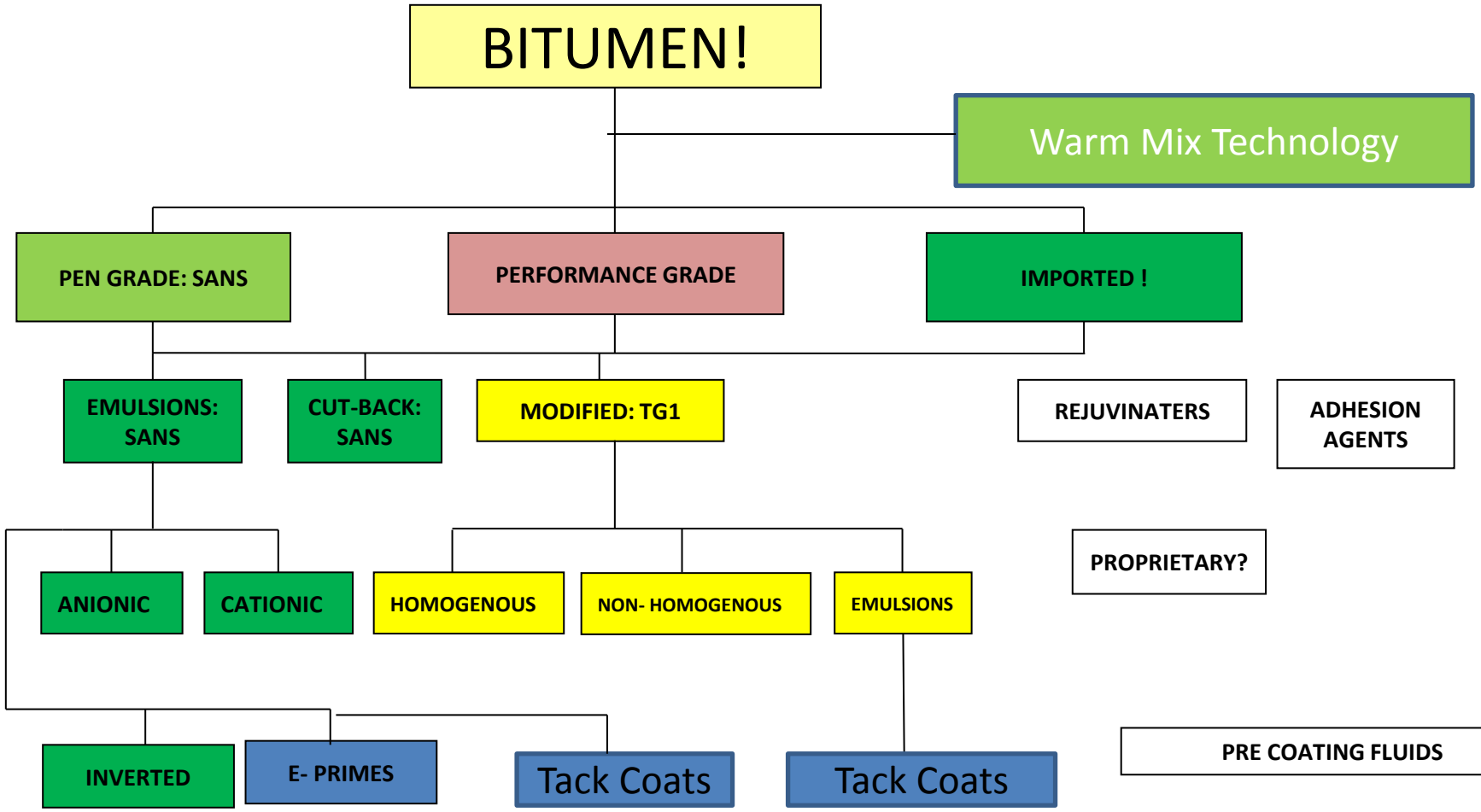
BITUMEN!
Warm Mix Technology
PEN GRADE: SANS
PERFORMANCE GRADE
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E- PRIMES
Tack Coats
Tack Coats
PRE COATING FLUIDS

Focus Groups

Chair –	**Dennis Rossmann**
Performance grade bitumen (SANS)	**Kim Jenkins**
PG binders: Additional research on PG testing	**Johan O'Connell (R&D ongoing)**
Imported bitumen (SANS)	**John Onraet (received)**
Emulsions (SANS)	**Joe Grobler (Awaiting SABS)**
Cut-Back binders (SANS)	**Jacques van Heerden (SABS)**
Primes ("E" + emulsion)	**Johan Muller (New)**
Tack Coats	**Johan Muller (New)**
Modified binders (TG1)	**Dennis Rossmann (ongoing)**

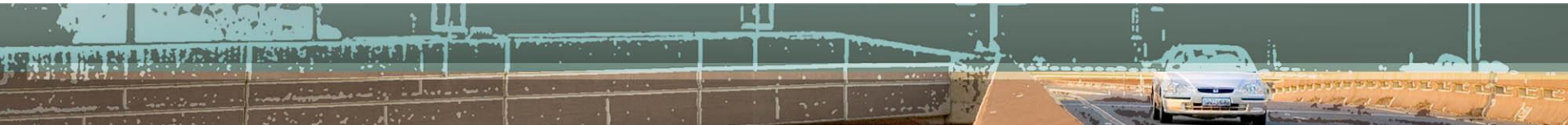
TG 1 REVISION

Chapter 1: Introduction:	**D Rossmann**
Chapter 2: OHS:	**S Solomons (Received)**
Chapter 3: Composition and Characteristics;	
Hot:	**J Muller**
Emulsions:	**J Louw (received for comment)**
Warm Mix:	**K Naidoo (x-cutting)**
Rejuvenators:	**W Nortje/Marais (move to HMA)design)**
Chapter 4: Manufacture:	**J Van Heerden (received this week)**
Chapter 5: Classification:	**Collective**
Chapter 6: Product Requirements;	**H Loots/C Roux (in progress)**
Chapter 7: Selection	**D Rossmann**
Chapter 8: *Construction*	**J Grobler (Tie in with SAPEM et al)**
Chapter 9: *Storage and Handling*	**C Williams (Due November)**
Chapter 10: *Sampling / Testing*	**H Loots (Tie in with SANS)**
"What if" section	**J van Heerden (New)**

CONCLUSIONS - 1

In the context of “Project Management” is the project:

- On time? – NO!
- In budget? – “NO BUDGET” (sweat equity)



CONCLUSIONS - 2

Objective of committee's work is not just to compile and recommend new/amended product specifications:

But also to give guidance to industry w.r.t:

- Selection of appropriate binder type
- Correct application of selected product

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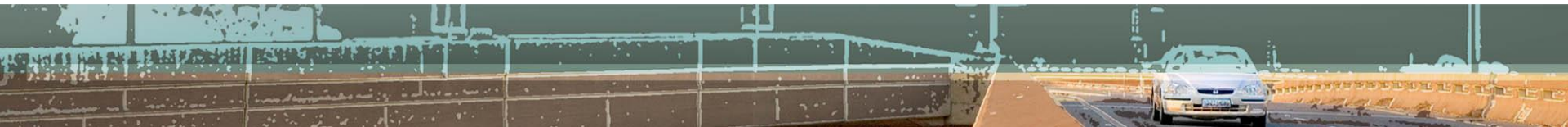

CONCLUSIONS - 3

The GOOD NEWS!

We are making progress ☺

Thanks to all.