

PROFICIENCY TESTING SCHEME FEEDBACK SOILS & GRAVELS, ASPHALT & BITUMEN

23rd Roads Pavement Forum

8th May 2012

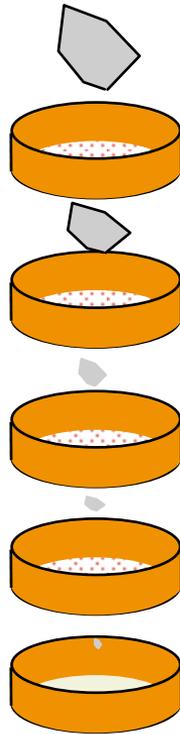
KZN

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Discussion to include...

- Background
- Methodology
- Soils & gravels
 - Results
 - Conclusions
- Asphalt
 - Current position



- Future PT schemes - 2012
 - Bitumen
 - Soils & gravels
- A final words





Background

- This process of PT schemes has been on cards for some time
- NLA has come on board to assist
 - **independent** laboratory association with international connections
 - Roads a new branch for them
 - Learning has been exponential for them as to road materials testing
- Various laboratory committees have existed in the past but never really accomplished what was desired of them
 - With respect...
- MatCivils committee formed to assist in representing laboratories interests
 - Under guidance of NLA
 - Assisting in planning & programming PT schemes among other issues

Methodology

- Procedure recommended in ISO13258 Annex A
 - enables treatment of 'outliers' at the same time as producing robust values of mean & SD
- Results used to determine Z-score
- Consensus value is representative of each sample
 - No standard material used as basis to evaluate results
 - As is the case with other lab results assessments

Methodology ...2

- Samples were evaluated for both stability & homogeneity by CSIR Built Environment
 - Miscommunication & all the samples were tested at the same time
 - Not possible to evaluate the data for stability
 - Should be done over a period of time typically 90 days
- PT scheme **NOT** done to point figures
 - All labs identified by a code unknown to others taking part

Methodology ...3

- A Z-score is a normalised value which gives a "score" to each result, relative to other numbers in data set

$$Z_i = \frac{x_i - \bar{x}}{s}$$

recommendations of SANS 17043:2010 as follows:

- $|z| \leq 2$ **Satisfactory**
 - $2 < |z| < 3$ **Questionable**
 - $|z| \geq 3$ **Unsatisfactory**
-
- Robust indicators include both a Robust Mean & Robust Standard Deviation

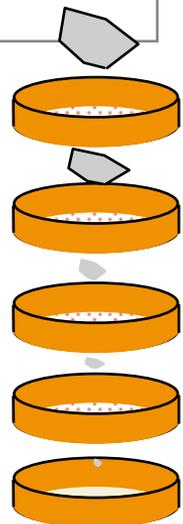
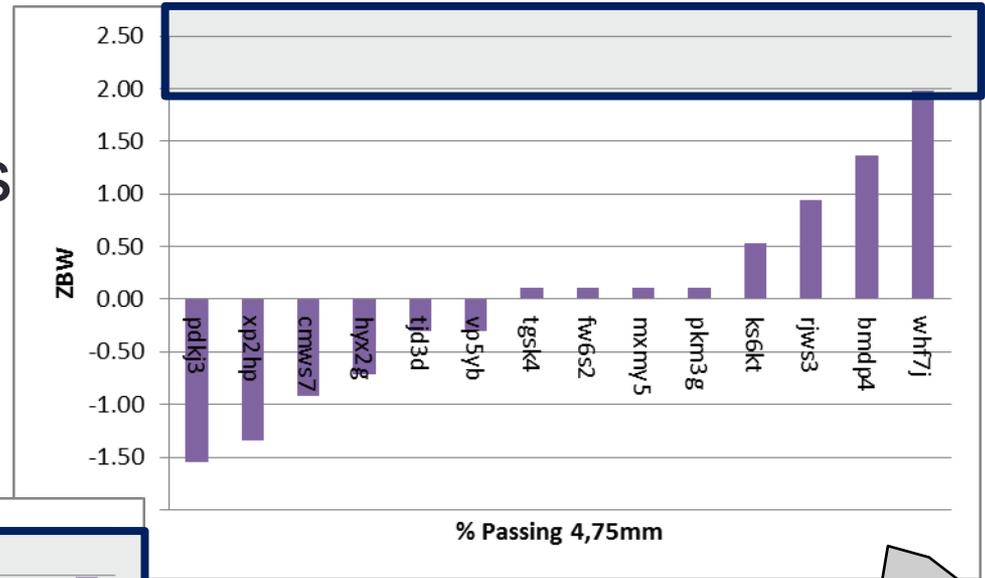
Soils & gravels

- Sample prepared by SNA laboratory , Pta
 - Very fine material
 - Very low percentage coarse fractions
- Done for mainly only for
 - Grading or sieve analysis
 - Atterberg tests
- Lacked info on coarse aggregate sieving
 - Will be covered in later PT schemes

Soils & gravels results

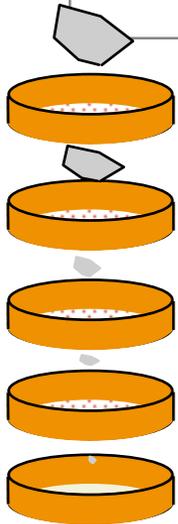
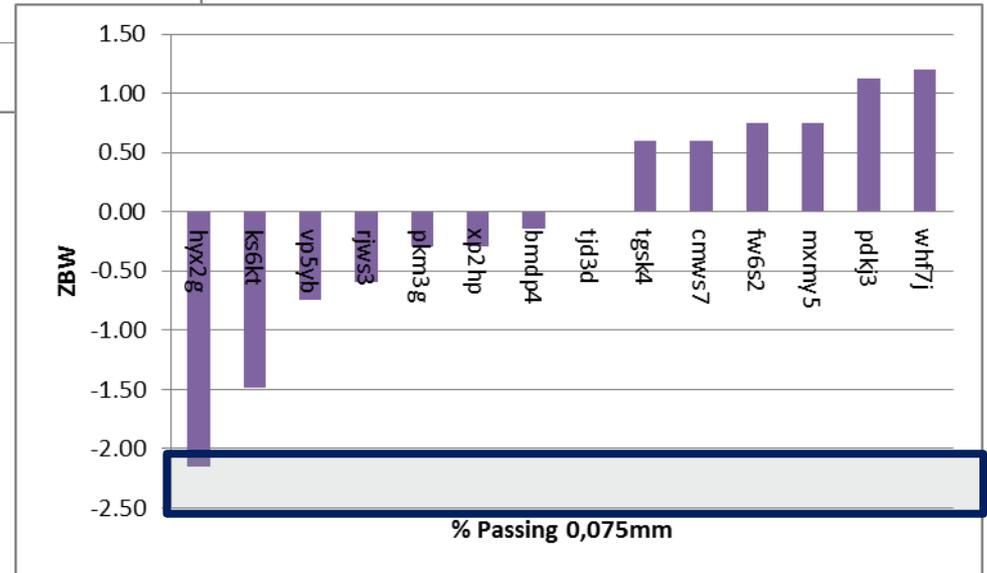
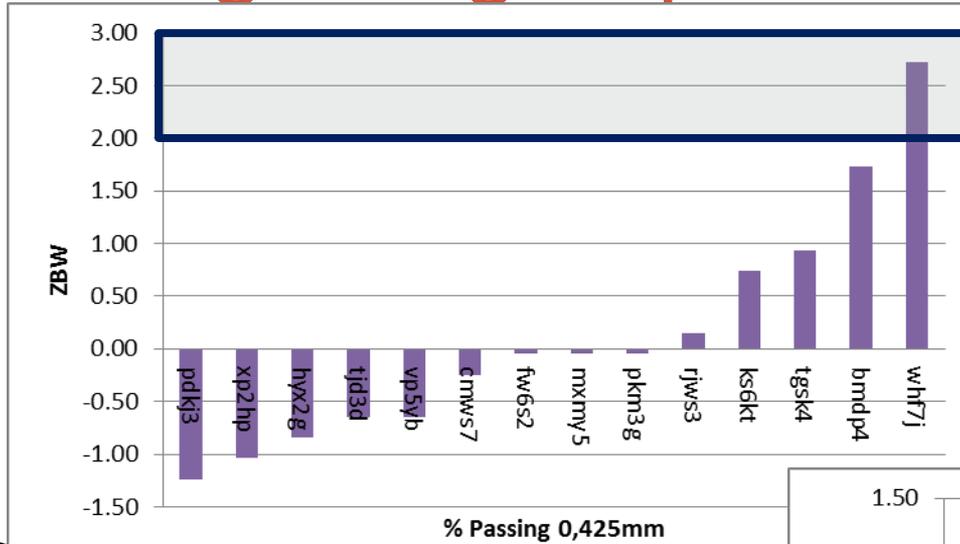
Wet grading as per TMH 1

- 19 mm & 13.2 mm all very close with results all well below 2



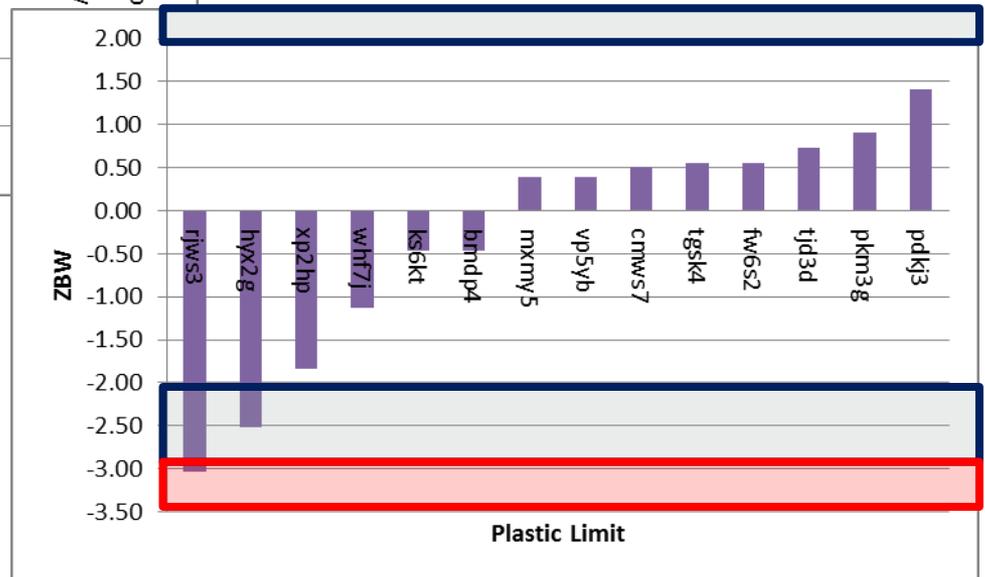
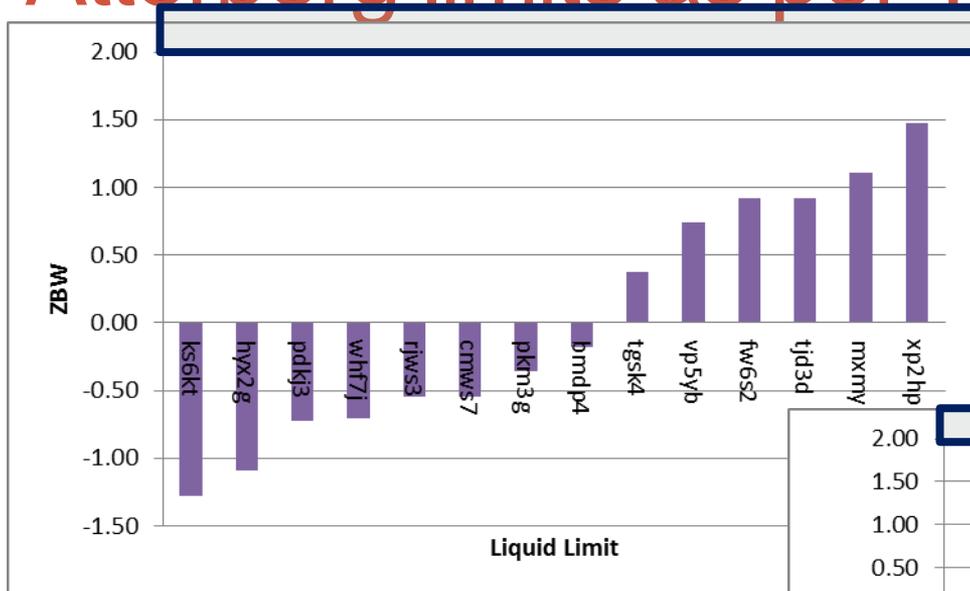
Soils & gravels results

Wet grading as per TMH 1 ...2



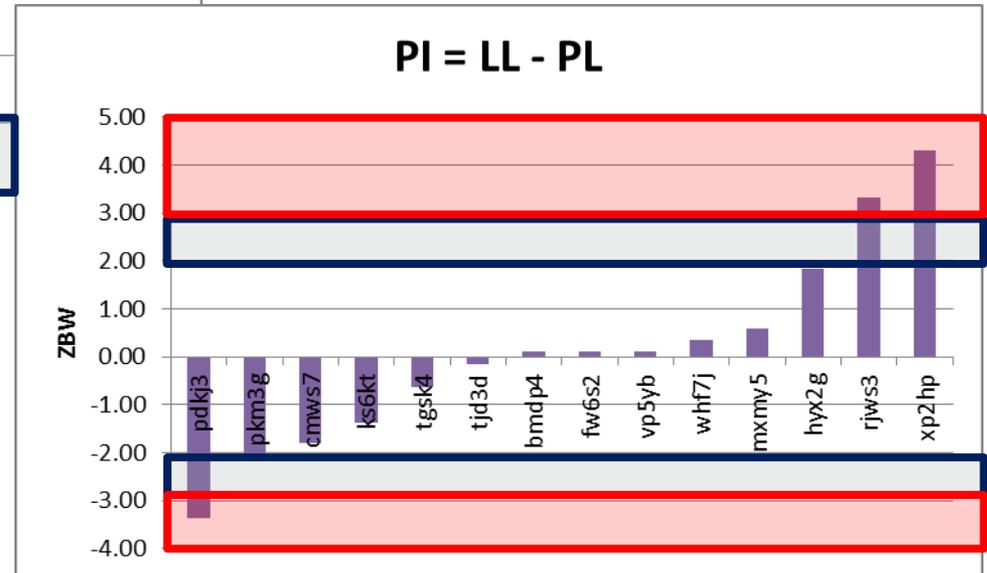
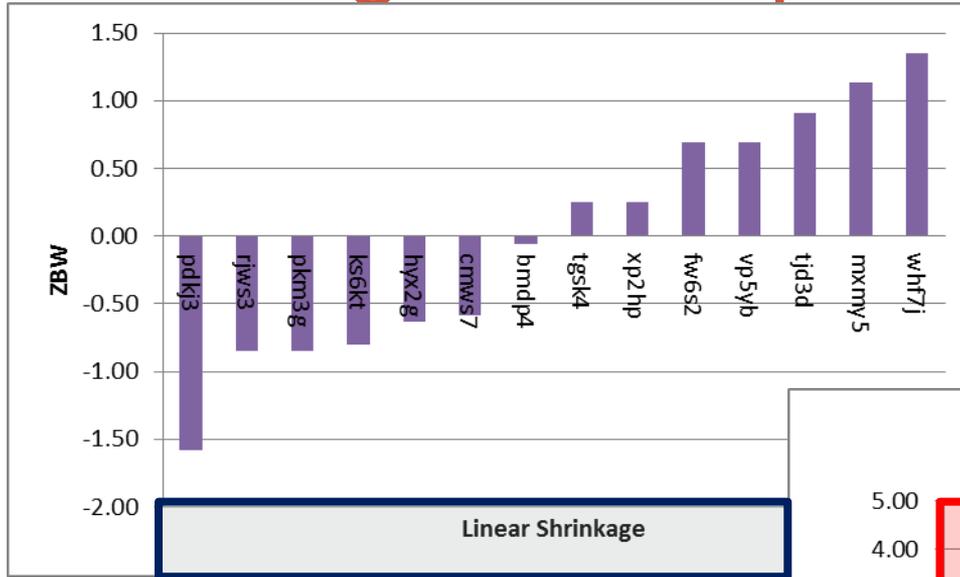
Soils & gravels

Atterberg limits as per TMH 1



Soils & gravels

Atterberg limits as per TMH 1 ...2



Soils & Gravels PT scheme Round 1

Conclusions

- Only 11 samples
Possibly too little to make far reaching decisions
 - But... a start all the same
- Critical that questionnaires get answered accurately
 - Used as 1st desktop check on discrepancies in test results
- All are considered to have been passed.
 - Except for few results
- **Z-scores $2 < |z| < 3$,**
 - Labs to conduct a thorough investigation to establish Root Cause of problem.
- **Z-scores >3**
 - An urgent & even more thorough investigation required

Soils & Gravels PT scheme Round 1

Conclusions ...2

- Participants had no particular difficulty with tests.
 - New SANS 3001 methods to be tested into the future
- Good alignment with homogeneity data
 - independently evaluated
- Most participants did not take opportunity of submitting two sets of results.
 - This may not have been that clear in instructions
 - This aspect will be addressed in future rounds with clearer instructions.

Soils & Gravels PT scheme Round 1

Conclusions ...3

- Responses to questionnaire.
 - In some cases quite a wide range of responses
 - Improvement could be achieved if all participants conducted tests in a similar fashion.
 - NLA's MatCivils Committee will look at addressing this issue in being more precise with info requested.
- Quite a number of labs are currently working towards accreditation.
 - This is good news
- In some cases accredited labs are not accredited for all methods in this round.

Future PT schemes planned for 2012

- Asphalt PT scheme
 - Currently open for registration with NLA
 - 35 samples in total
 - 21 currently registered
 - Open for registration till end of this week
 - Looking to have a report out by August 2012
- Bitumen PT scheme
 - Programmed for later into 2012
 - Written up as for new SANS 3001 test methods
 - To be conducted as per current method you use
 - This will be picked up in the responses to the questionnaire
- Soils & gravels PT round 2
 - MOD & CBR
 - Programmed for later into 2012

Need as far reaching laboratory representation to make the process meaningful to broad roads industry

Thanx to ...

- To all labs for funding initial Soils & gravels Pilot PT scheme
 - SNA for complied the samples
- SABITA for funding Asphalt & Bitumen PT scheme
 - Much compiling the samples
- CSIR for homogeneity testing
- NLA for compiling the report
- MatCivils committee for their assistance in vetting the Report



Hope I haven't left anyone out

In closing...

- Looking towards this becoming regular annual activities
 - on a rotation basis for various testing streams
- **Purpose**
- to improve consistency of results between labs
- Assist in identifying potential problem areas
- addressing these issues
- Building towards a more professional laboratory environment that will be seen as being
 - Trustworthy
 - Honest
 - Quality driven

Thank you