Update to NZTA Specifications and Impact on Laboratories

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We’re working on updating our technical specifications….

- It might sound boring but:
  - We need to make our rule book modern and reflect best practice
  - The requirements need to drive excellence and durability, but be affordable and buildable
  - Having a fair and sensible suite of specifications minimises uncertainty and dispute
  - We’ve worked with leading industry technologists to develop the best for “NZ Inc.”
  - So here’s an update!

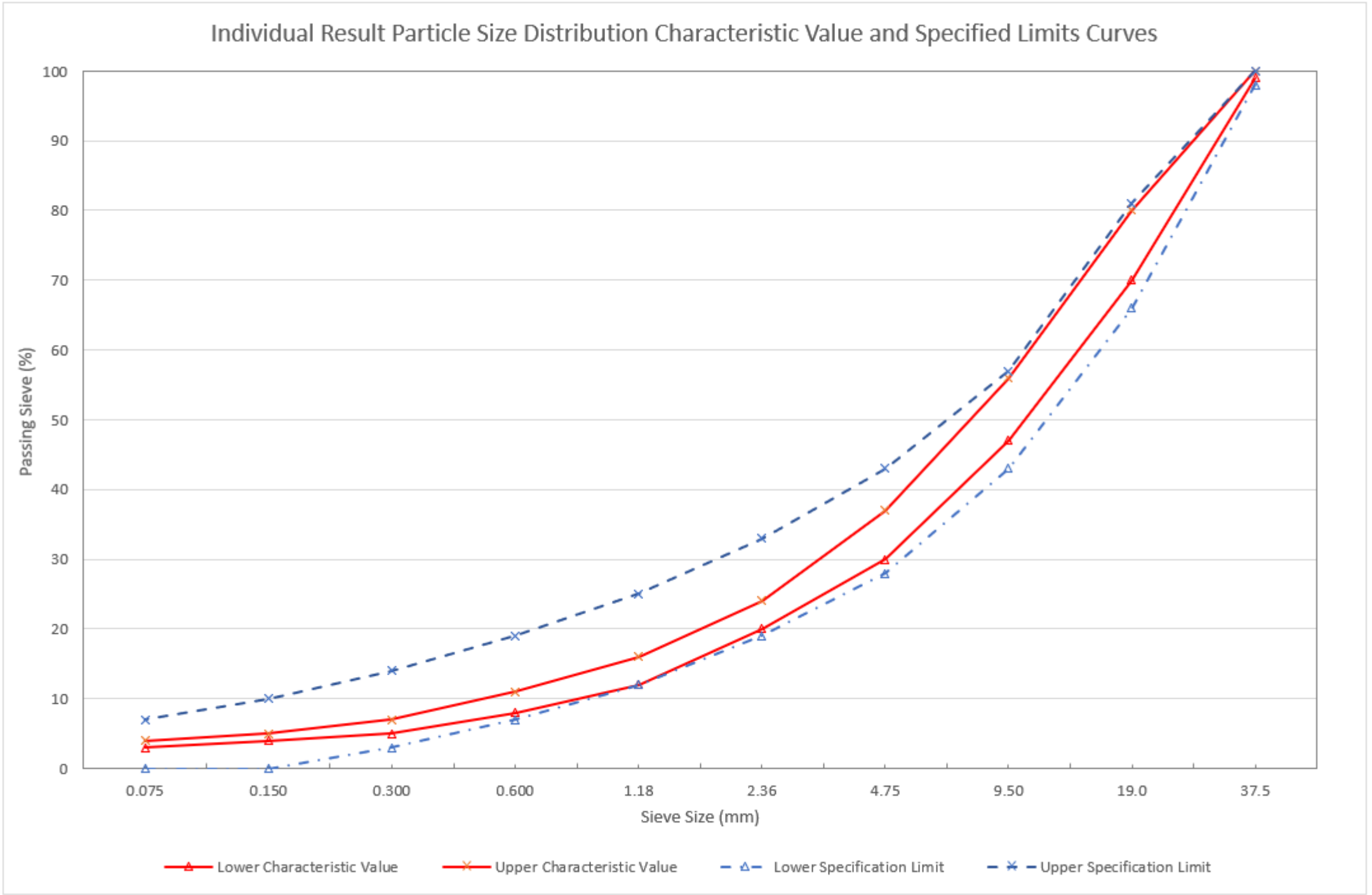
M03 Sub-base, M04 Basecourse

- M/3: 1986 is currently solely a “Notes” document. The idea was that bespoke sub-base specifications would be drawn up within contracts supporting the use of locally available aggregates, but:
  - This rarely happened, and
  - This led to a lack of standardisation.
- Major updates to M03 and M04:
  - Several “Classes” of aggregate based on loading
  - Better control on source rock and fines quality
  - Use of XRD to monitory rock composition
  - Regular MDD/OWC and Solid Density testing mandated
  - Statistical approach for determining PSD compliance.

Statistical Model for Compliance

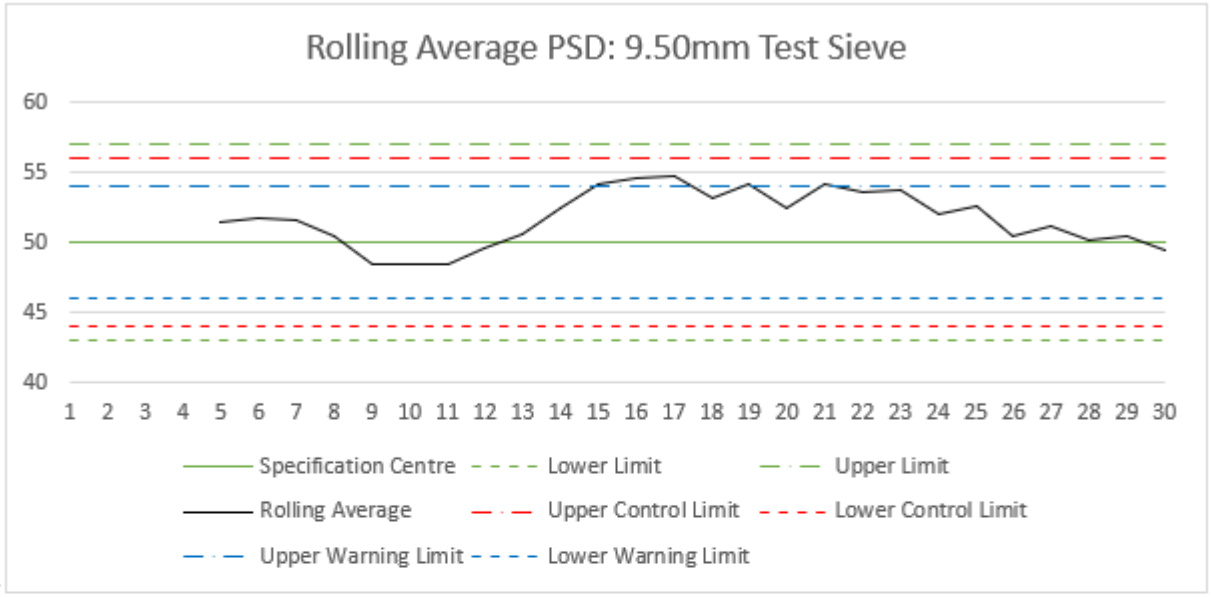
- We've talked about this for decades
- Statisticians were engaged to develop a solution, but complexity of the specification created huge difficulties
- The specification updates focussed on the PSD for the statistical acceptance process, and
- We might have done something clever!

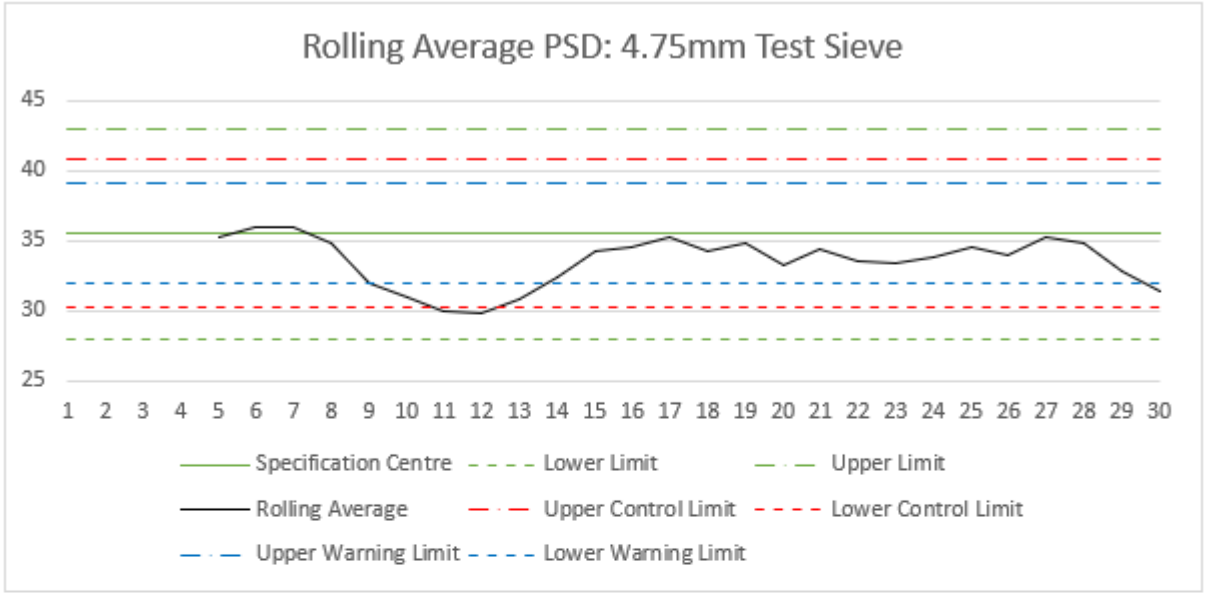
"There are lies, damn lies, and statistics. We're looking for someone who can make all three of these work for us."

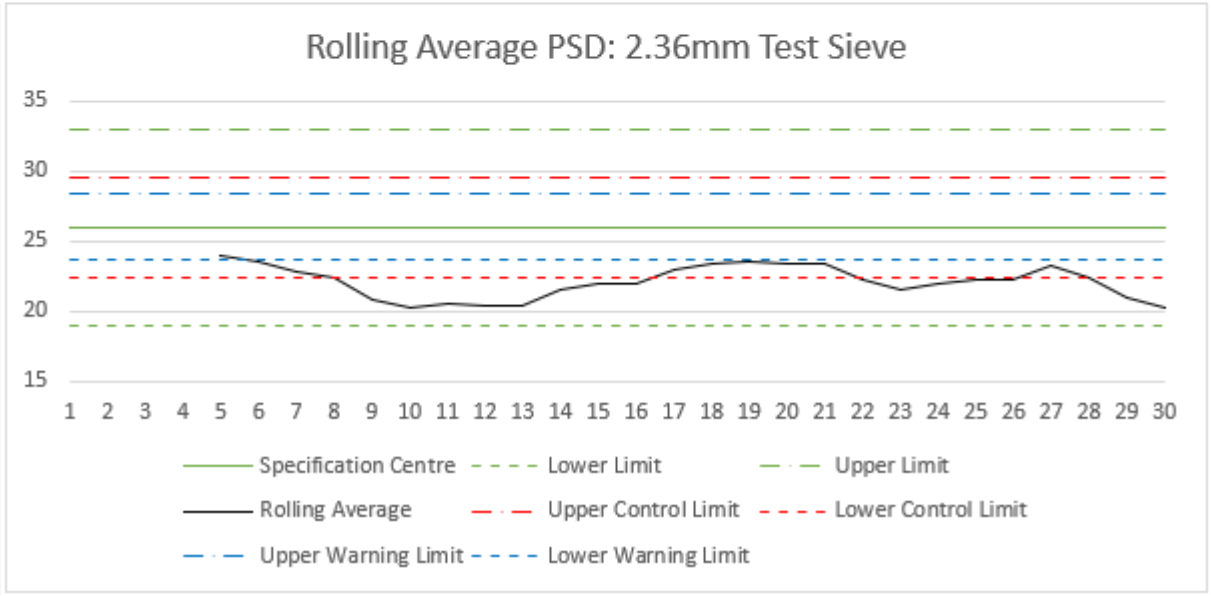

Individual Result Particle Size Distribution Characteristic Value and Specified Limits Curves
Passing Sieve (%)
100
90
80
70
60
50
40
30
20
10
0
0.075
0.150
0.300
0.600
1.18
2.36
4.75
9.50
19.0
37.5
Sieve Size (mm)
Lower Characteristic Value
Upper Characteristic Value
Lower Specification Limit
Upper Specification Limit

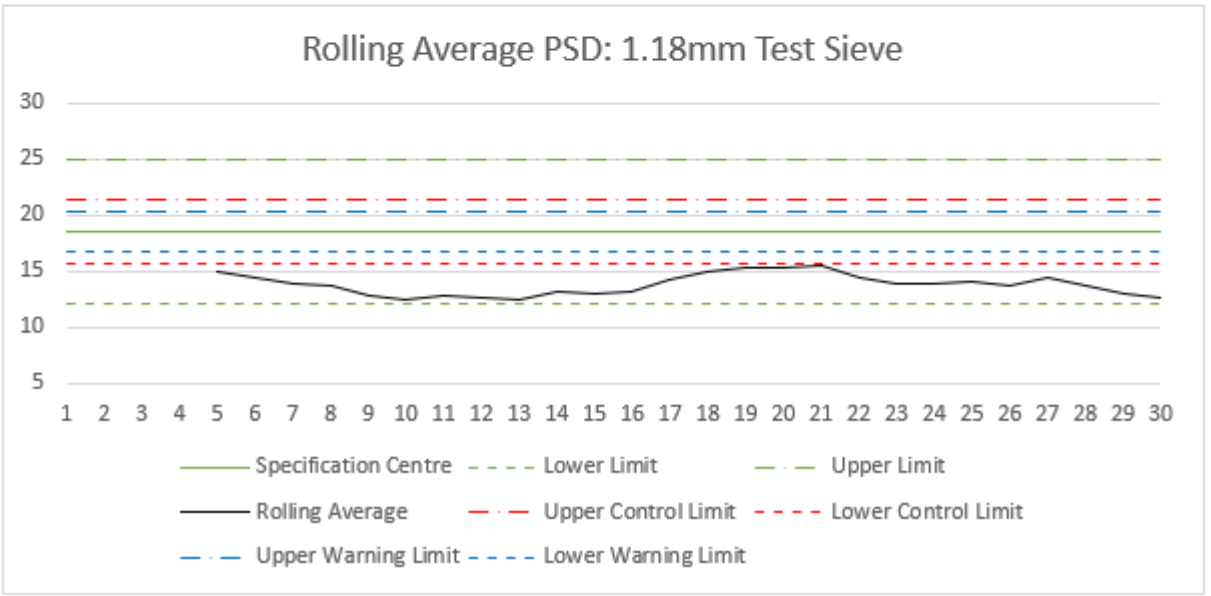

9.00
37.5

Process Control Graphs









P03 First Coat Sealing and P04 Resealing

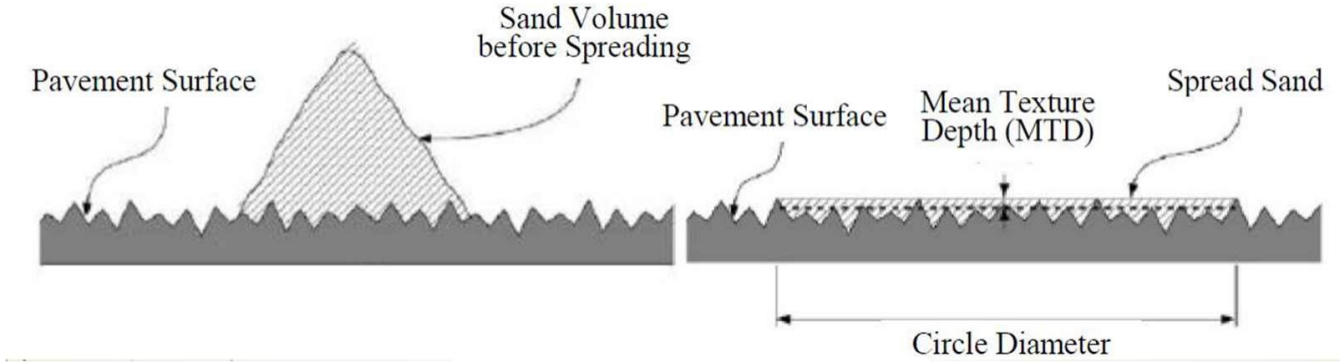
- P/3 (1995) and P/4 (1995) were somewhat overdue for an update…..
- The change to the IDM contract model for delivery of pavement maintenance meant that the method specifications urgently needed update
- Work done by a technical working group and a great consensus reached.
- The updates meant that a number of subsidiary documents also needed review and modernisation
- P18 specification for the design of chip seals also published.

What else?

- We've also updated:
  - T03 Texture Determination
  - T09 Kerosene Content
  - T23 Nuclear Density (Direct Transmission)
  - T28 Maximum Dry Density and Optimum Water Content
  - T29 Random Sampling
  - T30 Colour Indicator Test
  - T31 The Vialit Adhesion Test

T03 Determination of Road Surface Texture

- The “Sand Circle” test
- Updated and modernised
- Required by updated P03 (first coat sealing) and P04 (resealing)
- Allows the use of instrumental (laser profilometer) methods

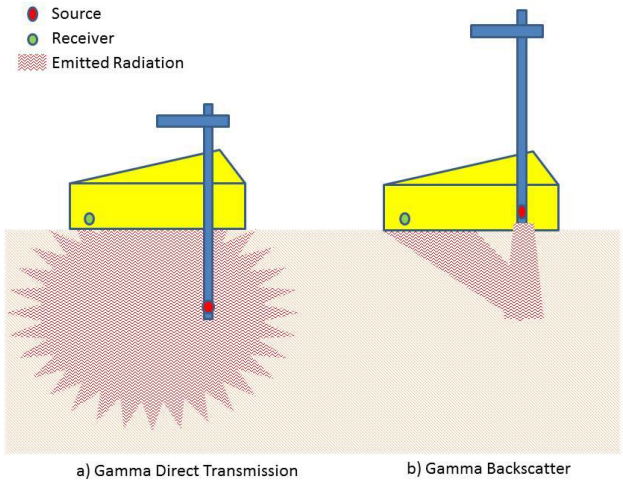


T09 Estimation of Kerosene Content

- Updated formula to allow for modern bitumen grades
- Generally tidied up and modernised
- Required by updated P03 (first coat sealing) and P04 (resealing)

T23 Nuclear Density by Direct Transmission

- Its an adjunct to NZS 4407 test 4.2
- Provides a calculation to estimate the density of layers in the pavement
- It’s designed to see if layers have segregated and non-uniform in density
- Particularly applicable to in-situ modified/stabilised pavements.



timum

ility issues

Table 3.2: Dry density between-laboratories reproducibility. (*TNZ6* source: Ball, 2008)

Sample	Average Dry Density (T/m³)	Between-lab Std. Deviation, S_R	Reproducibility, *R*
Sample 1	2.344	0.031	0.087
Sample 2	2.321	0.037	0.103
TNZ6	*2.351*	*0.084*	*0.212*

Table 3.3: Water content between-laboratories reproducibility. (*TNZ6* source: Ball, 2008)

Sample	Average water content (%)	Between-lab Std. Deviation, S_R	Reproducibility, *R*
Sample 1	5.592	0.733	2.053
Sample 2	5.185	0.662	1.853
TNZ6	*4.853*	*0.798*	*2.233*

T28 Maximum Dry Density and Optimum Water Content

- Still some work to be done:
  - We need a field version for stabilised materials
  - We need to develop a calibration procedure for the vibrating hammer
  - The calculation for correcting for the coarse aggregate gives odd results if the coarse aggregate portion is relatively high
- Nonetheless we've made a significant improvement to the method.

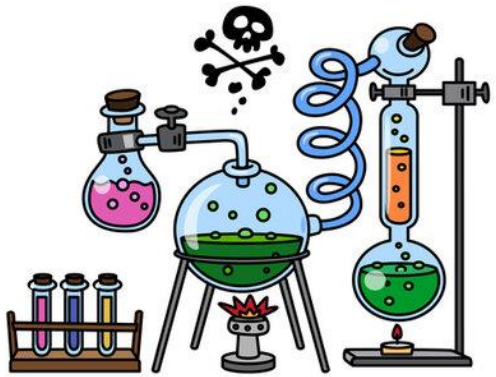
"I want you to find a bold and innovative way to do everything exactly the same way it's been done for 25 years."

T29 Random Selection of Test Sites

- Sets out a procedure for randomly determining where to (for example) do NDMs or take core specimens
- The intent is to protect labs from being directed where to test
- It will be mandated by subsequent specification updates.

T30 Presence of Adhesion Agent

- Old method tidied up and modernised
- Determines if adhesion agents have been added in detectable quantities to cutback bitumen binders
- Required by updated P03 (first coat sealing) and P04 (resealing)



T31 The “Vialit” Adhesion test

- There’s never been a formally published method
- Required by updated P03 (first coat sealing) and P04 (resealing), so I thought I’d better update and publish it
- We need to organise a proficiency round for IANZ to consider accrediting labs for the method.

In conclusion

- We've been working on updating and modernising our suite of technical specifications
- The move to the IDM contract model has driven some of the updates – for example the chip sealing specifications
- The expectation is that contractors will be asking for labs to be accredited for these testing services (Vialit excepted for the moment)
- There's still more work to be done but I think we've gone forward…..

Questions?