

APT Steering Committee

A thick, horizontal yellow brushstroke underline that spans the width of the text above it, with a slightly textured, painterly appearance.

Concrete Sections

Background



- ⌘ Offer by SANRAL in July 2002
- ⌘ Proposal prepared during last quarter 2002
- ⌘ Presented to SANRAL and Gautrans December 2002
- ⌘ Original intention to use toll plaza at Bronkhorstspuit
- ⌘ Now intention to use Hilton and to test old inlay

Background (cont.)



⌘ Four research areas identified

- ☑ Slab support

- ☑ Materials

- ☑ Load transfer

- ☑ Construction

⌘ HVS testing best suited to load transfer research.

Intention



⌘ Investigate load transfer on two joint types

☑ Dowelled

☑ Aggregate interlock

⌘ Investigate load transfer on two aggregate types

☑ Dolerite

☑ Quartzite

⌘ Calibration of shrinkage model

Deliverables



- ⌘ Deterioration of load transfer with time, both on
 - ☑ Dowelled
 - ☑ Aggregate interlock
- ⌘ Further calibration of the 'C' coefficient and new model for incorporation into cncPave
- ⌘ Calibration of shrinkage model

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Trial Sections

Details



⌘ Support

- ☑ Insitu
- ☑ Two x 150 G10 layers
- ☑ One x 150 G7 layer

⌘ Concrete

- ☑ Two concretes
 - ☒ Dolerite from Lafarge PMB
 - ☒ Quartzite from Alpha DBN

Details (cont.)



⌘ Layout

- ☑ Two strips, 3,5m x 50m, 1m apart
- ☑ Each strip different concrete
- ☑ Half length undowelled and other half dowelled
- ☑ Joints @ 4m spacing

Details (cont.)

⌘ Materials testing

- ☒ Full materials tests
- ☒ Compaction & DCP in layers
- ☒ Full concrete materials eg ACV, 10% Fact, Flakiness, Gradings, etc
- ☒ Concrete on each truck
 - ☒ Compressive strength
 - ☒ Flexural strength
 - ☒ Shrinkage, lab and natural
 - ☒ Stiffness
 - ☒ ITS
- ☒ FWD on completed concrete surface

Details (cont.)



⌘ Instrumentation

- ☑ MDDs ????
- ☑ Crack activity (vertical and horizontal)
- ☑ Strain gauges (ex Wits) at joint and mid slab at four levels in concrete

Details (cont.)



⌘ Testing

- ☑ Two tests on each section ie 8 tests
- ☑ Cover 2 joints in each test
- ☑ 400 000 repetitions per test (3 weeks)
- ☑ Repeat FWD testing
- ☑ Total testing is approx 30 weeks

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“Old” Inlay

Details



⌘ Materials testing

- ☑ DCPs

- ☑ FWDs ???

⌘ Instrumentation

- ☑ MDDs ????

⌘ Testing

- ☑ 3 weeks

- ☑ Repeat FWD testing

Analysis



- ⌘ First and second level analysis
- ⌘ First level - CSIR
- ⌘ Second level - P Strauss