

Ultrathin Concrete Pavements

INTRODUCTION

- Two different approaches and two different technologies.
 1. SANRAL option – very high strength, high percentage of steel, use of fibres, for use on heavily trafficked roads.
 2. CSIR/Gauteng option – conventional strength, lightly reinforced, for use on township streets, sidewalks etc

Terminology

- SANRAL option – Ultra Thin Continuously Reinforced Concrete Pavement
– **UTCRCRP**
- CSIR/Gauteng option – Ultra Thin Reinforced Concrete Pavement
– **UTRCP**

UTRCP

- Site visit by attendees to a conference in IOWA to a road experiment including amongst other a 100mm un-reinforced and 100mm reinforced road.
- Performance of mesh reinforced pavement after 15 years impressive

UTRCP

- If concrete laid continuously with limited steel mesh and without joints the following might be achieved:
 - No joint failures
 - Limited ingress of water at “joints”
 - No pumping
 - Possible better spreading of load
 - Thinner and more flexible slabs

Sebokeng streets

- A 100mm thick section of CRCP was identified based on the findings in Iowa as one of the alternatives







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Project Goals

- to arrive at appropriate transfer functions for the performance of thin concrete pavements
- to compare the performance of different designs
- to increase the reliability of the design methods presently being used
- to assess the constructability of thin concrete pavements

Roodekrans access road



Project Description

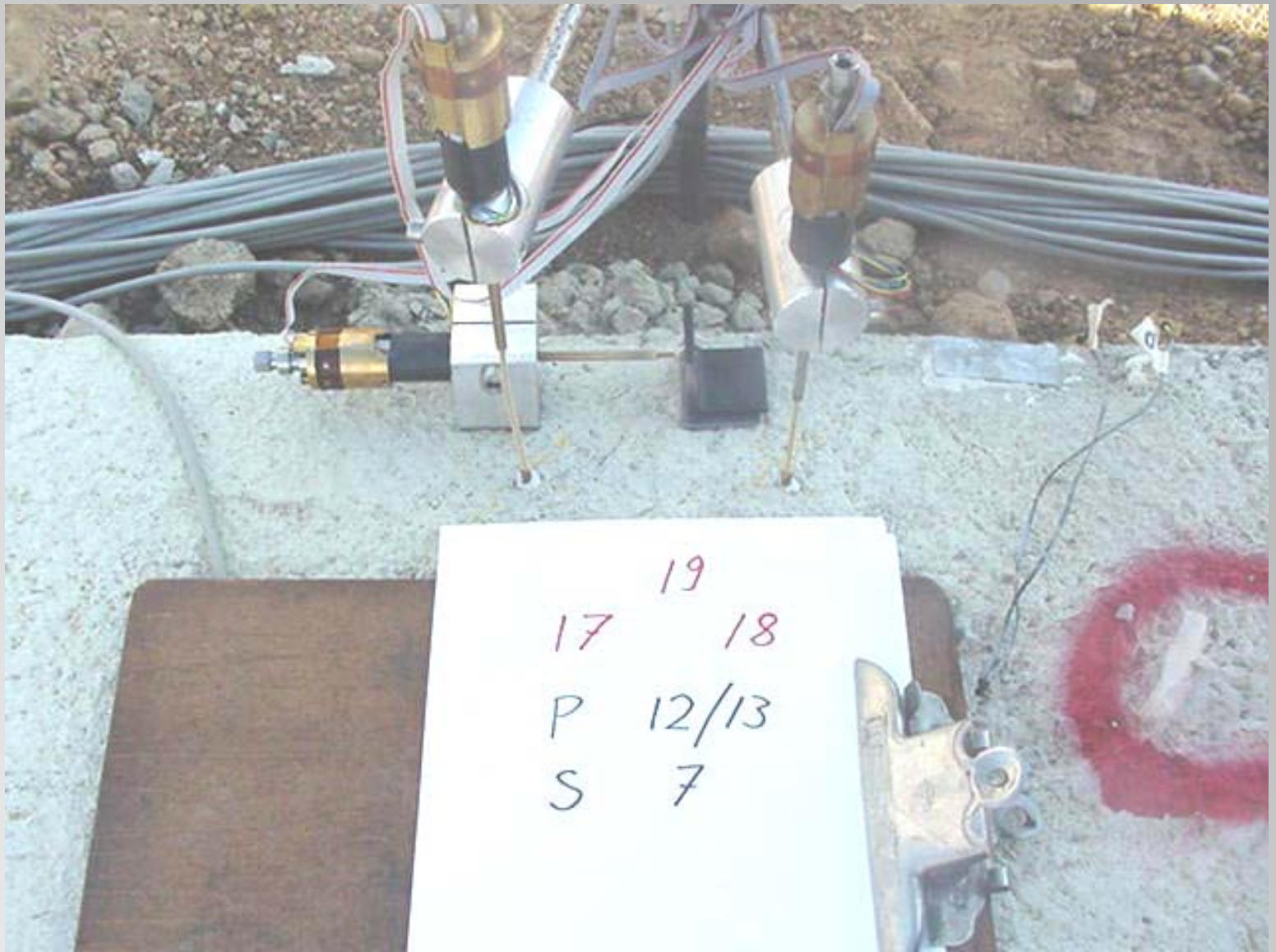
- Short sections of thin concrete pavements of different designs
- Loading through heavy trucks transporting gravel material from a quarry (WIM equipment to be used)
- Monitoring by visual surveys, non destructive testing and instrumented measurements

Pavement Sections

- Three steel fibre reinforced sections
- Three mesh reinforced sections
- Five plain jointed sections
- Different types of subbase layers
- Different thicknesses & joint spacing

Mesh Reinforced Concrete (MRC)

- 50mm MRC on 50mm ETB followed by a 125mm C4 subbase
- 75mm MRC on 25mm ETB followed by a 125mm C4 subbase
- 100mm MRC on a 125mm C4 subbase







Traffic

- Design traffic 40 000 to 60 000 E80s
- Actual traffic by May 2008
 - 70 months
 - 900 000 E80s
 - 35% overloaded (10% : 400% overloaded)
 - 4 E80s per vehicle
 - 1.4 E80s per axle
 - 8 wet seasons



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Future

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- Stopped traffic capture
- Open day and rating early in 2009
- Contact bryan@cnci.org.za



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Thank you for listening!