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Overview of Airport Developments in South Africa

Road Pavement Forum – CSIR, Pretoria

Presented by

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Introduction

- Current status of airports in South Africa
- Design standards
- Software packages
- Pavement structures
  - Concrete pavements
  - Flexible pavements
- Runway surfaces
- Construction specifications
- Innovation and development needs.

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Current status of airports in South Africa

- Roll players
  - South African Civil Aviation Authority (SACAA)
  - Air Traffic and Navigation Services (ATNS)
  - National airports operator - ACSA (Airports Company south Africa)
  - Other airport operators include regional, provincial, municipal and private
- Maintenance projects
  - ACSA
- Expansion projects – improve capacity
  - OR Tambo International Airport (ORTIA)
  - Cape Town
  - Lanseria

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Design standards and guidelines

- SACAA – implementation of functional and safety requirements
- International Civil Aviation Origination (ICAO)
  - Aerodrome design manual part 3 – Pavements
  - Annex 14 to the Convention on International Civil Aviation
- Local authorities and agents of the state
- ICAO pavement design manual references
  - Federal Aviation Authority (FAA) of the US
  - United Kingdom practice
  - Canadian practice
  - French practice

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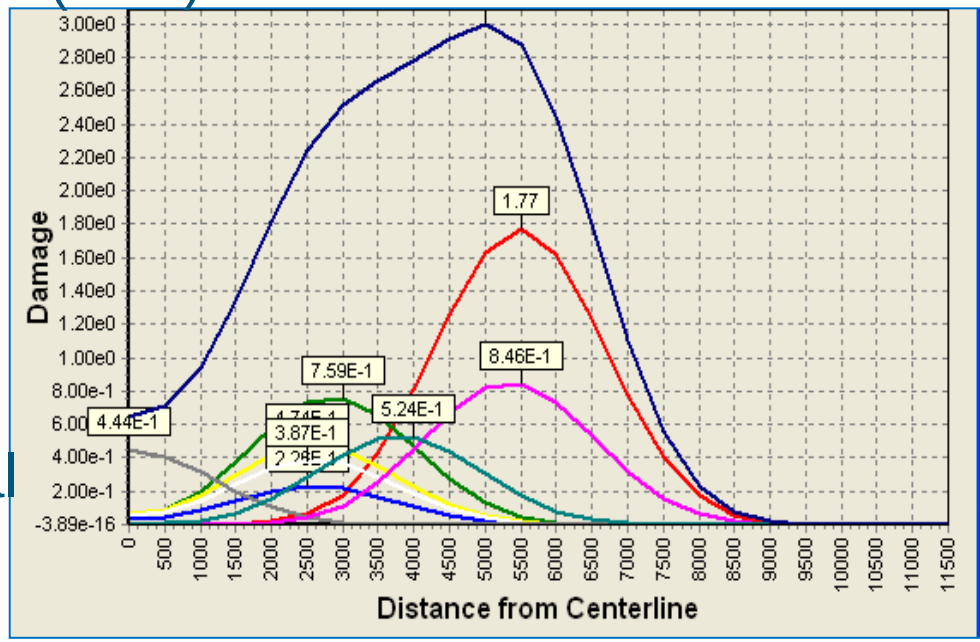
Software packages

- Design concepts
  - Design fleet
  - Cumulative Damage Factor (CDF)
  - Lateral wander
  - Semi empirical
  - Finite element
  - Mechanistic
- FAARFIELD
- Airport Pavement Structural Design Systems (APSDS)
- Pavers
  - UEC-Slab



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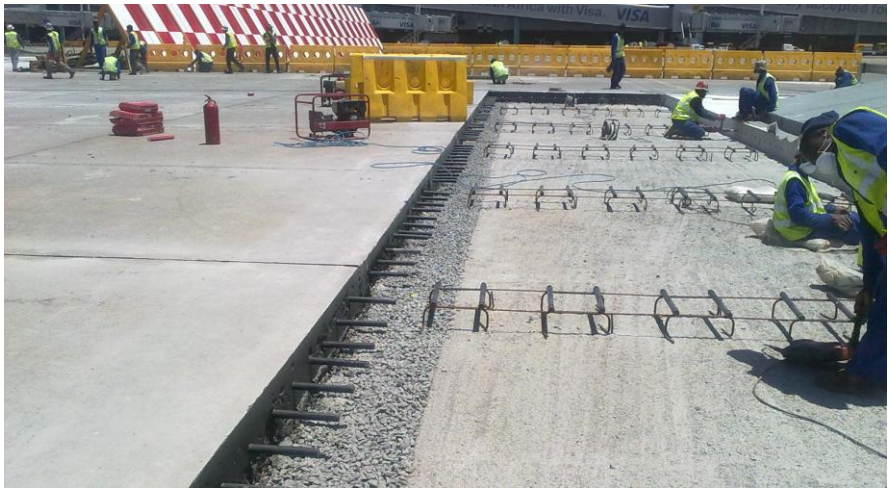
Pavement structures - Concrete

- FAARFIELD
- UEC-Slab
- Plain Jointed Concrete Pavement
- Load transfer devices – dowels
- Thickened edge
- Drainage and erosion resistant subbase



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Pavement structures - Flexible

- FAARFIELD
- APSDS
- PAVERS
- FAA standards apply
  - Thick surfacing
  - Bound base
  - Cemented granular subbase (reflective cracking)
- Rethink the use of crushed stone base and thin surfacing (sandwich layer)
- Modified binders – plastomers and elastomers
- SMA surfacing

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Runway surfaces – safety first.

- ICAO requirements
  - Rapid surface drainage – transverse slope (1-1,5%)
  - Macro texture – dissipating water between tire and surface 1mm
  - Friction – function of micro texture Gripnumber 0,64 – 0,74
- US practice – grooving the surface (also asphalt surfacing)
- South African practice since 2006
  - UTFC 25 and 20mm surfacings
    - Also proprietary products
  - SMA at King Shaka Int Airport
  - BRASO at East London airport

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Construction specifications

- Africa north of the Limpopo
  - British specifications
  - FAA specifications
- In South Africa
  - 1998 COLTO Standard specification for Road and Bridge works for State Authorities.
  - Project specifications address specific airport needs
  - Standardisation of working off-peak hours under operational conditions (ACSA initiative)

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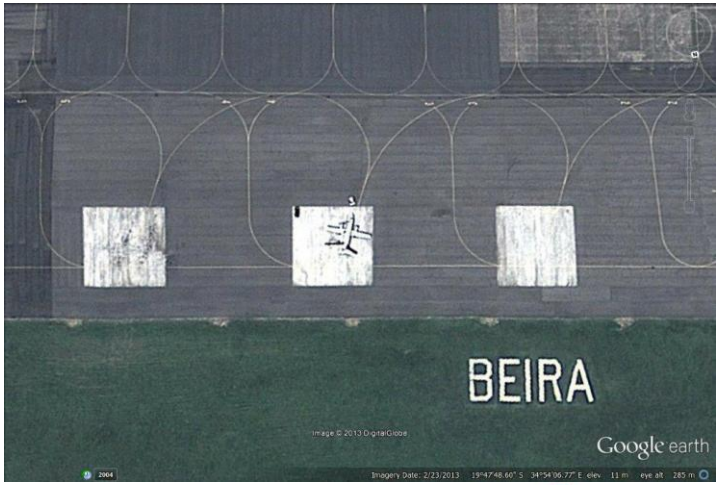
Innovation and development needs

Asphalt pavements

- Ultra Thin Friction Course (UTFC)
- BRASO friction course
- Surface dressings
- Cement grouted porous asphalt
- Asphalt reinforcing



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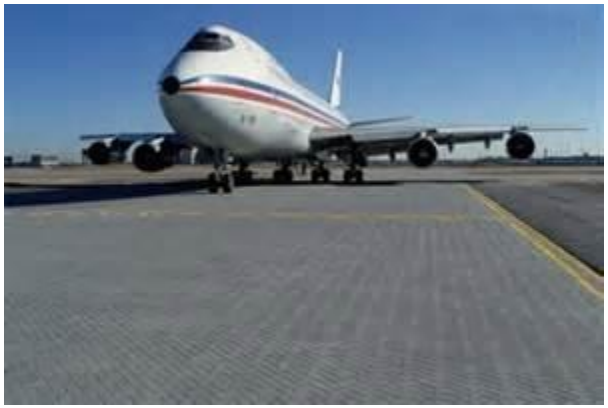
Innovation and development needs

Concrete pavements

- Ultra Thin Continuously Reinforced Concrete slabs
- Recycling existing concrete pavements
  - Cemented subbase
- Concrete block pavement



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Innovation and development needs (cont)

- Runway maintenance needs:
  - Safe preventative maintenance including rejuvenation
- Airport specifications:
  - Comprehensive airside civil works.
  - Include latest material types
  - Environmental protection for large non-trafficked surfaces
  - Runway safety requirements

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Thank you for your attention

Questions