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CSIR, 11 November 2009

18th Road Pavement Forum

Implementation of Ultra-Thin Continuously Reinforced Concrete Pavements (UTCRCRP)

GAUTENG FREEWAY IMPROVEMENT PROJECT

NATIONAL ROUTE 12 SECTION 19:

N3 Gillooly's Interchange - R21 Interchange



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Project Duration **30 months**

Start Date **May 2008**

End Date **November 2010**

Award Value **R 1.25b**



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CONTRACTOR

Joint Venture :



CMC di Ravenna South Africa Branch – G4 Joint Venture



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CONSULTANT

Joint Venture :



GOBA



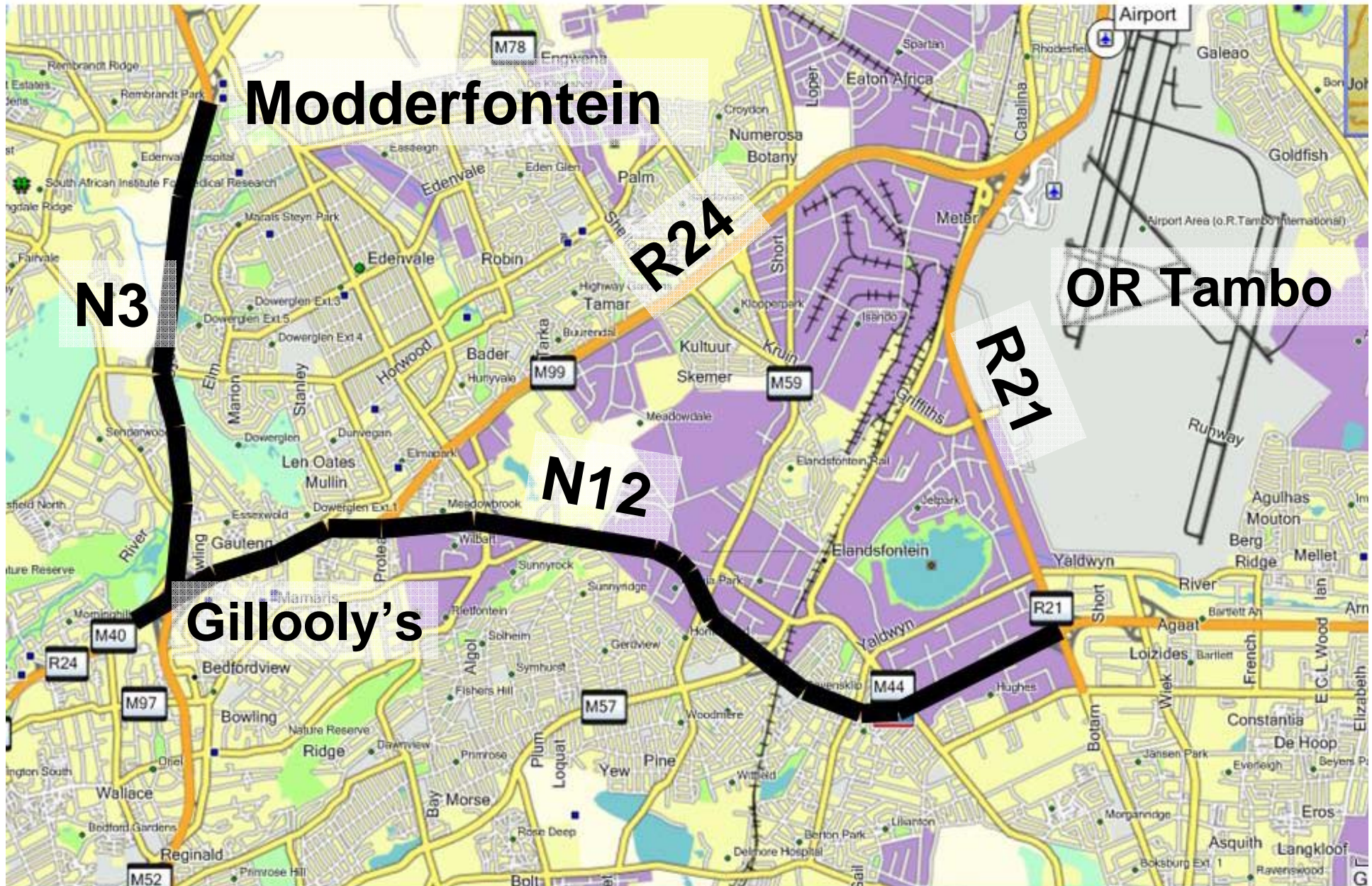
A DHV COMPANY

Linking People
Promoting Growth

**Pieter
Strauss cc**



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PROJECT OBJECTIVE

Rehabilitation of N12/19 pavement to:

- Provide long term pavement
- Which requires minimum maintenance

=> Concrete (CRCP)

Improvement of Capacity

- Which includes additional lanes on freeway.
- Interchange upgrading

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Existing Cross-section



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Upgrade to four-lanes
with shoulders



Median
Barrier &
Lighting



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BRIDGE VERTICAL CLEARANCE

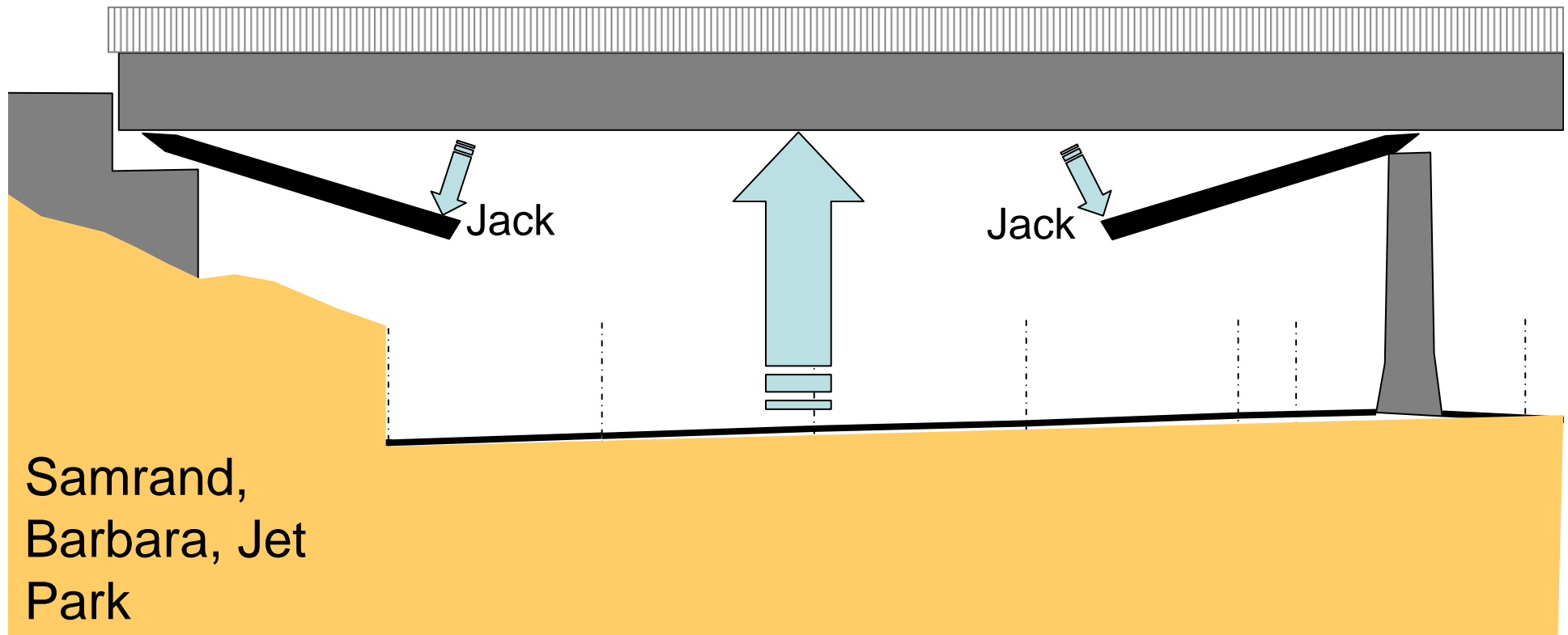


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IMPROVE VERTICAL CLEARANCE

By Jacking



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Structures

Widening Existing Structures





Gillooly's Interchange



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**NEW STRUCTURES: Directional Ramp at Gillooly's
7 spans / 20 sections incrementally launched (250m).**





- **Replace Asphalt base with Concrete**

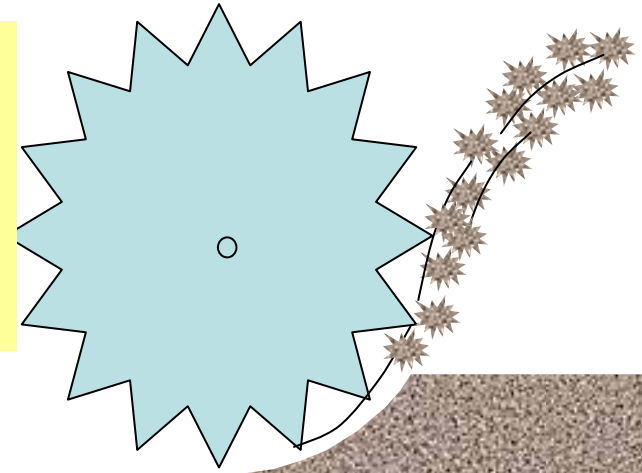
5 Completed Road

**Step 1: Mill
200mm Deep**



**Step 3 & 4:
Place
Concrete
and Asphalt**

**Step 2:
Place
Steel
Bars**



- a) **Short terms closures**
- b) **Long term closures**

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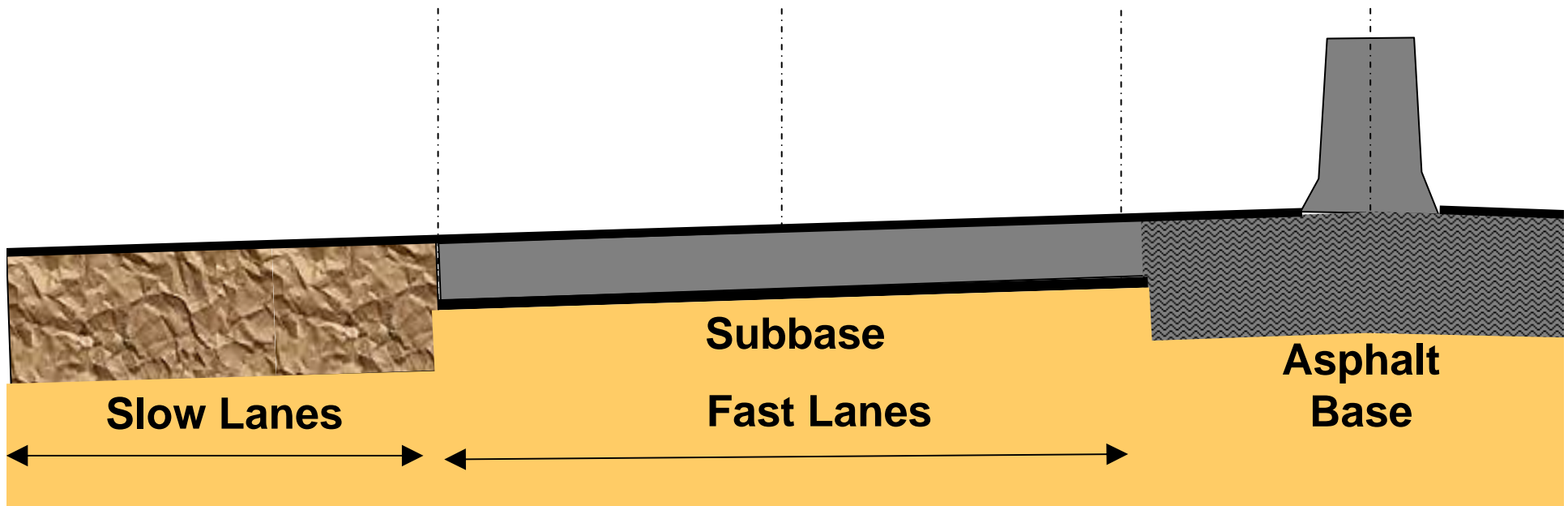
UTCRCRP

(Only long term closures)

200mm CRCP

50mm UTCRCRP

Concrete
Barrier



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UTCRCPC





UTCRCPC CHALLENGES

- General
- Concrete Mix Design
- Concrete manufacturing
- Testing
- Training



GENERAL

- Proven product
 - Constructed on a number of projects
 - HVS tested
 - Under heavy traffic at screener lanes
- However
 - Product that requires attention to detail in design and construction



UTCRCRP MIX DESIGN

- Guide for Contractor in Specification
 - Grading
 - Admixtures
 - Maximum aggregate size
- Reinforcement
 - 5,6mm (100 x 50mm) - 4mm (50 x 50mm)



MANUFACTURING

- Batch On Site – Not Commercial
 - Groceries
 - Control (Pre-batching)
 - Transport to site
 - Drum vs Pan Mixer



TESTING

- Understand and confirm testing methods
- Joint laboratories – Build confidence

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TRAINING

- Specialist work
- Specialist contractor
- Training



CONSTRUCTION DETAIL

- Joints
- Placing Reinforcing Steel
- Curing (Interface with Asphalt O/L)



CONCLUSION

- The standard specification is well developed
- Experience gained in recent big projects can add value to cover a number of challenges





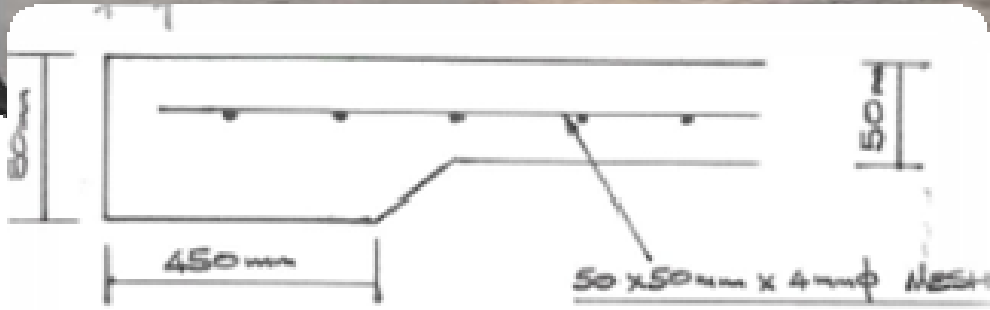
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EDGE THICKENING TO UTCRCP





04/15/2009



