

# Focus on

## Ultra-thin, continuously-reinforced concrete technology

### Impacting on community roads and housing



Labour-intensive construction of a low-volume road

Ultra-thin (50 mm thick), continuously-reinforced concrete technology was successfully developed and tested by the CSIR and its partners. This technology, aimed at low-volume roads, has also been applied as a single foundation slab for the CSIR low-income demonstration house, in place of conventional foundations, to prevent walls cracking.

The ultra-thin concrete technology passed stringent testing with flying colours. The CSIR, in collaboration with the University of Pretoria and the Gauteng Department of Roads and Transport (DRT) evaluated an experimental road using the CSIR-developed heavy vehicle simulator (HVS) and other equipment and tests.

The HVS is used to determine the effects of traffic on roads, simulating the results of 20 years of traffic within three months.

### Low-volume roads

Following the successful research results, the Gauteng DRT decided to use the ultra-thin concrete technology for its roads upgrading programme. A few roads have already been constructed in Soshanguve, Mamelodi and Atteridgeville. The construction of these concrete roads is labour-intensive and requires light equipment, creating job opportunities for small contractors and local communities.

Such roads provide an all-weather surface and improve the lives of communities along the roads by curbing dust and reducing damage to vehicles. Research established that these roads will require minimal maintenance—indications are that they have a life span of more than 20 years, resulting in reduced life cycle costs and disruption to road users.

### Applications:

- **Single foundation slab for low-income housing**
- **Ideal for use in construction of low-volume roads**

Contrary to the high construction costs of normal concrete roads in the past, the ultra-thin continuously-reinforced concrete technology compares favourably cost-wise with conventional roads.

Authorities in KwaZulu-Natal have also shown an interest in piloting this road technology in the province, with another ultra-thin concrete road currently being piloted in Umtata.



The heavy vehicle simulator used for testing the ultra-thin, continuously-reinforced concrete technology

### Enquiries

CSIR Built Environment  
**Theuns Knoetze**  
Tel +27 12 841 4985  
Email [tknoetze@csir.co.za](mailto:tknoetze@csir.co.za)  
[www.csir.co.za](http://www.csir.co.za)