

MR Louw, FC Rust, AO Bergh and AH McKay

## **DEVELOPMENT AND IMPLEMENTATION OF ULTRA-THIN CONCRETE ROAD TECHNOLOGY FOR SUBURBAN STREETS IN SOUTH AFRICA**

MR Louw, FC Rust, AO Bergh and AH McKay  
CSIR, Republic of South Africa  
[rlouw@csir.co.za](mailto:rlouw@csir.co.za)

### **ABSTRACT**

There is a significant need in South Africa for the upgrading of suburban streets with a solution that performs well, is cost-effective and requires minimal maintenance. In addition, there is also a need for job creation in road construction, using local labour where possible. The ultra-thin reinforced concrete pavement (UTRCP) technology, one such solution, was developed by the Council for Scientific and Industrial Research (CSIR) in South Africa and has been implemented in a number of projects. The technology was developed for suburban streets and roads carrying less than 2500 vehicles per day and is constructed with labour using light plant. The UTRCP consists of a 50 mm thick 30 MPa concrete layer, lightly reinforced, generally constructed on shaped and compacted *in situ* material, which may need modification in cases where the *in situ* material has a high plasticity index (PI). Experimental work was conducted testing trial sections of UTRCP supported by various subbase layers. This included static testing, rolling wheel load testing with the Heavy Vehicle Simulator (HVS) and evaluation of the performance of trial sections under normal traffic. The results of the experimental work and the subsequent proposed structural designs used in implementation projects are described. The technology has been implemented in a number of projects in suburban townships in South Africa in the Gauteng province. The practical lessons learnt from these projects are described. Lastly, the paper proposes criteria for the subbase design of pavement structures containing the UTRCP layer and proposes further work to be done.