

The design, construction and first-phase Heavy Vehicle Simulator testing results on full scale Ultra-thin Reinforced Concrete test sections at Rayton, South Africa

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Abstract

Ultra-Thin Reinforced Concrete Pavements (UTRCP) are successfully being used in residential streets and low-volume road applications in South Africa. Due to its popularity in this domain the Gauteng Provincial Department of Roads and Transport (GPDRT), in conjunction with CSIR Built Environment, started a research project to determine whether this type of technology can be used in higher-order roads such as collector roads (bus routes) or secondary and tertiary provincial roads where the traffic loading is significantly higher than what is found on residential streets. The research project consists of the testing of full-scale test sections with the Heavy Vehicle Simulator just outside Rayton in the Gauteng Province. The bulk of this paper deals with the structural design and construction of the various test sections. Four sections were constructed using different types of substructure support and different configurations of steel reinforcement. The paper also includes a summary of the results of the first HVS test conducted at the Rayton testing site.