

RUTTING BEHAVIOUR OF WEARING COURSE MIXTURES IN SEVERE TEMPERATURE AND LOADING CONDITIONS

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ABSTRACT

Following the construction of a major motorway pavement in Northern Africa, relevant rutting phenomena were observed after opening to traffic. Preliminary investigations showed that permanent deformations were limited to the upper wearing course layer which was designed according to set requirements.

In order to define the most appropriate rehabilitation strategy, investigations were carried out by focusing on the volumetric and mechanical properties of the employed wearing course mixture. Compaction properties were assessed by making use of a gyratory shear compactor and of a rubber-wheeled roller. Moreover, simulative wheel-tracking tests were carried out in severe temperature and loading conditions. Additional tests were performed on an alternative bituminous mixture containing polymer granules.

Based on the obtained results the possible causes of the above described distress phenomena were identified and the use of the alternative bituminous mixture as a technical solution to adopt for rehabilitation was considered.

KEY WORDS: Wearing course, compaction, rutting, wheel-tracking, polymers.