

MIX DESIGN AND PERFORMANCE OF CONVENTIONAL AND MODIFIED EMULSION BASED ASPHALTIC PAVING MATERIALS

HUSSAIN A. KHALID and **KWAME E. ETA**,
Civil Engineering Dept., Liverpool University, U.K.

SUMMARY

Bituminous Emulsion Macadams (BEMs) have been used in this work as permanent reinstatement materials for the wearing and basecourse layers of road types 2, 3 and 4 which take up to 10 million standard axles. A laboratory sample preparation and mix design procedures have been developed. The development encompasses criteria governing the mixing, compaction, curing, strength development and moisture sensitivity aspects, adopting non-destructive testing techniques. Wearing course and basecourse mix compositions were established using the proposed design procedure, and were used to study the effect of polymer type and level on the stiffness and permanent deformation characteristics which were by dynamic testing techniques. The addition of Ordinary Portland Cement in small quantities to the BEMs was also investigated. The performance of conventional and modified BEMs was compared to that of hot-applied mixtures with a view to achieving equivalency measures. The site performance of related BEMs was monitored through undertaking pilot-scale field trials involving the acquisition of cored specimens which were evaluated and compared to laboratory-prepared specimens. Analyses of the results and inferences on the performance of BEMs are presented in the paper.