Research Article

Effects of Using Silica Fume and Polycarboxylate-Type Superplasticizer on Physical Properties of Cementitious Grout Mixtures for Semiflexible Pavement Surfacing

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Abstract

Semi-flexible pavement surfacing is a composite pavement that utilizes the porous pavement structure of the flexible bituminous pavement, which is subsequently grouted with appropriate cementitious materials. This study aims to investigate the compressive strength, flexural strength, and workability performance of cementitious grout. The grout mixtures are designed to achieve high strength and maintain flow properties in order to allow the cement slurries to infiltrate easily through unfilled compacted skeletons. A paired-sample t-test was carried out to find out whether water/cement ratio, SF percentages, and use of silica fume influence the cementitious grout performance. The findings showed that the replacement of 5% silica fume with an adequate amount of superplasticizer and water/cement ratio was beneficial in improving the properties of the cementitious grout.