

ACCELERATED TESTING FOR STUDYING PAVEMENT DESIGN AND PERFORMANCE (FY 2003)

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By: Stefan Romanoschi, Ph.D., P.E., Paul Lewis, Octavian Dumitru, Sathish
Banda, Kansas State University

Introduction

The Midwest States Accelerated Pavement Testing Pooled Fund Program, financed by the highway departments of Missouri, Iowa, Kansas and Nebraska, has supported an accelerated pavement testing (APT) project to compare the performance of stabilized clayey embankment soil when Portland cement, fly ash, lime and a commercial product were used as stabilizing agents.

Project Objective

The project aimed to improve the practices related to the design of flexible pavements when the top of the subgrade is improved by chemical stabilization.

Project Description

The experiments were conducted at the Civil Infrastructure Systems Laboratory (CISL) of Kansas State University. The test program consisted of constructing four flexible pavement structures and subjecting them to full-scale accelerated loading test.

Project Results

The study indicated that cement and lime are the most effective stabilizers for the studied soil. These stabilizers resulted in lower vertical compressive stresses at the top of the subgrade and lower rut depth at the pavement surface than the fly ash-treated soil. After more than two million axle load repetitions, the pavement with cement stabilized embankment soil exhibited much less surface cracking than the pavement with fly-ash stabilized embankment. The commercial product proved not to be effective in stabilizing the non-sulfate clayey soil used in this experiment, when the embankment is constructed at the same moisture content and compaction level as for the other three chemicals. The unconfined compression strength measured on laboratory prepared samples of soil stabilized with the commercial chemical compound was very similar to that of the untreated soil.

Report Information

For technical information on this report, please contact: Stefan Romanoschi, Ph.D., P.E., Kansas State University, 2112 Fiedler Hall, Manhattan, Kansas 66506; Phone: 785-532-1594; fax: 785-532-7717 e-mail: stefan@ksu.edu.

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