

Friction Management on Kansas Department of Transportation Highways

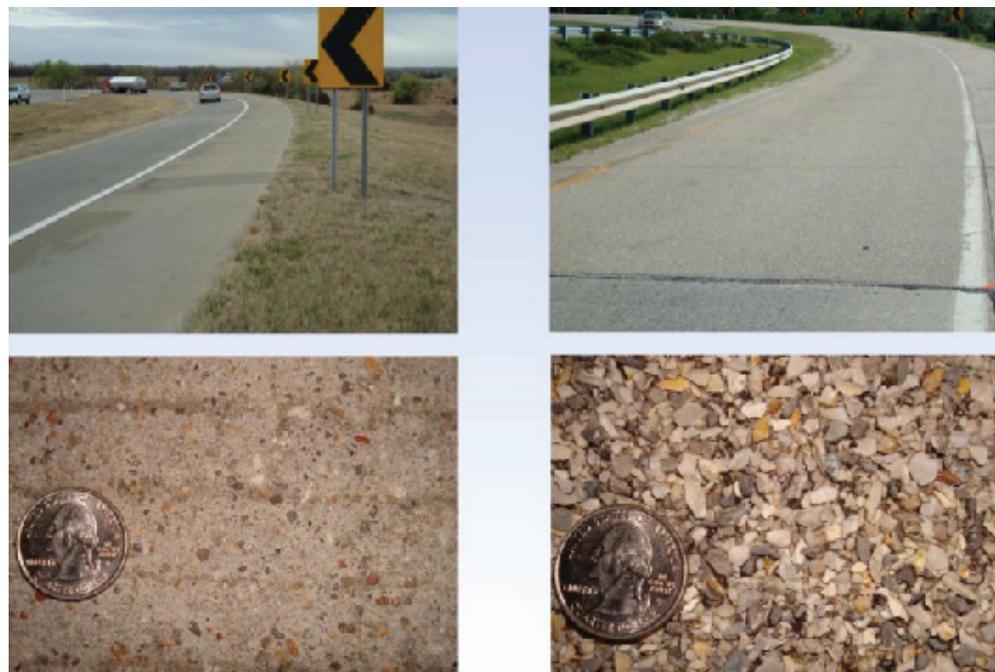
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Introduction

The Federal Highway Administration (FHWA) estimates that about 70% of wet pavement crashes can be prevented or minimized by improving pavement friction. High Friction Surface Treatment (HFST), a specially-designed thin surface application of hard aggregates and thermosetting resins like epoxy, has been proven to be an effective method to increase road surface friction. Calcined bauxite has been predominantly used in the United States as the hard aggregate in combination with an epoxy binder for HFST. However, this treatment is expensive since the calcined bauxite is imported.



*Before and After High Friction Surface Treatment on K-96/
US-54 Ramp in Wichita (Concrete Pavement)*

Project Description

The objectives of this study are to evaluate the performance of a local aggregate in HFST and to evaluate the 3-dimensional laser profiler for measuring pavement texture. Slab specimens of hot-mix asphalt (HMA) were compacted in the laboratory and treated with HFST systems incorporating both calcined bauxite and a local, hard flint aggregate from Picher, Oklahoma. The treated HMA specimens were then tested with a Dynamic Friction Tester (DFT) and a Circular Track Meter (CTM) to determine the frictional coefficient and texture depth, respectively. Also, Hamburg Wheel Tracking Device tests were conducted on these HFST systems to evaluate wearing resistance under repetitive wheel load. Field measurements of texture depths on HFST were also done. Statistical analysis was performed to compare the performance of high friction surfaces prepared with different aggregate epoxy combinations.

Project Results

The results show that flint aggregate can be a suitable substitute for the calcined bauxite in HFST. Field measurements also showed marked improvements in texture depth with HFST. Texture depth and skid number determined by the ASTM skid trailer vary with pavement surface types and treatments. Mean Texture Depth (MTD) of high friction surface treatment is generally greater than 1 mm. A good correlation between skid number and MTD was found for the MTD range of 0.5 to 1.5 mm.

Project Information

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