US-69 SURFACE TEXTURE AND NOISE STUDY

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RESEARCH

Introduction

The components of noise generated by roadways comprise of noise from the engine, exhaust and tires. Changing the surface texture will impact the noise generated by the tire/pavement interface.

Project Objective

The objective of this study was to study the effects of different surface textures on the noise generated by the roadway and the effects of the surface texture on surface friction and smoothness.

Project Description

The surface textures investigated in this study are Astroturf drag, Carpet Drag, Longitudinal tining, and Grinding sections with groove widths of 0.110", 0.120", and 0.130". In addition to these surface textures the effects of single saw-cut joints vs. normal saw-cut joints and changing the effective wheelbase of the 0.130" grinding sections were also investigated.

Tests were performed in each section to evaluate the sections performance in Sound, Friction and Surface Profile. The Sound tests consisted of a Close Proximity Test and a Pass-by Test. The Friction tests consisted of the Skid Test and Sand Patch Test. The Surface Profile tests consisted of a South Dakota Profilometer, a Model 6000 lightweight profilometer, and a California type profilograph.

Project Results

The results from the Pass-by test with a truck indicated that the engine noise was the dominant component of noise emitted from a roadway when the grade is uphill. These uphill sections had the highest noise levels and the surface texture had little impact. The results from the Pass-by test with a car were all within 3.0 dBa. In the results from the Close Proximity test with a car the longitudinal section was 4.2 dBa greater than the noise from the grinding sections. This indicates that the additional engine noise that is measured in the Pass-by test negates some of the effects of surface texture on lowering the sound level.

The test sections were ranked based on the results of the tests and the grinding sections with 0.120" groove spacing performed the best. The longitudinal tining sections were ranked the lowest.

Report Information

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