# REFINEMENT OF MEASUREMENT TECHNIQUES OF ROAD PROFILE AND INTERNATIONAL ROUGHNESS INDEX (IRI) TO SUPPORT THE KDOT PAVEMENT MANAGEMENT SYSTEM (PMS) ANNUAL ROAD-CONDITION SURVEY RESEARCH

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RESEARCH

## Introduction

The standards for instrumentation used to measure and reduce road profiles are not sufficiently defined to produce a highly repeatable measure of road roughness such as the International Roughness Index (IRI). According to KDOT, estimates from oversampled data from its spring 1997 road condition survey show the variability of the measure to be on the order of 15% (one standard deviation), whereas the calibration data would indicate an expected variability of less than 2%. The source of the variation is not known. It could be equipment malfunctions, natural variability of the road surface, or some other factor(s).

## Project Objective

This is the first phase of a proposed larger research effort whose goal is twofold:

1). To determine effective guidelines for collecting and processing road profiles.

2). To determine, insofar as possible, the specific causes of the poor repeatability in the data obtained by the present KDOT Pavement Management System

## Project Description

It was undertaken subsequent to the realization that the standards for instrumentation used to measure and reduce road profiles are not sufficiently defined to produce a highly repeatable measure of road roughness such as the International Roughness Index (IRI).

## Project Results

The principal outcomes of the work on this project include:

1.) An initial version of analysis-and-simulation software, written principally in C++, developed to simulate inertial profilers and perform various calculations on sample profile data.

2.) A set of recommendations regarding (1) additional information needed from the manufacturer of the profilers that KDOT uses, and (2) the profile-acquisition procedure employed by KDOT.

## Report Information

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