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Validation and Correlation of Pavement Profiling Devices for Quality Assurance

Massachusetts Transportation Research Program

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16. Abstract

In an effort to further implement the Quality Assurance specification for paving projects in Massachusetts, the Massachusetts Highway Department and the University of Massachusetts Dartmouth undertook a research project aimed at establishing an inertial profiler certification test site and a certification procedure suitable to the Pavement Management Section at MassHighway. A certification test site was setup on a taxiway of the New Bedford Regional Airport. Six test sections were laid out. Each test section was 528 feet in length as required in the American Association of State Highway and Transportation Officials (AASHTO) Provisional Specification PP49.

A certification protocol for MassHighway was developed utilizing the current AASHTO Provisional Specifications, the Pavement Smoothness Expert Task Group proposed changes to the current AASHTO specification, and the Maryland Department of Transportation Profiler Verification Procedure. The final protocol consisted of pre-certification testing, verification of ride statistics, equipment repeatability tests and equipment accuracy tests. The repeatability and accuracy portion incorporated the use of cross correlation to establish agreement scores between profiles.

Results from certification in 2006 and 2007 show that only one of five profilers successfully completed the entire certification procedure on the first attempt in each year. The remaining profilers failed for varying reasons including failure to agree within ±6 in/mile of the reference device, failure to meet the equipment repeatability cross correlation score of greater than 90%, and failure to have an equipment accuracy cross correlation score greater than 80%.

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