

## **ASPHALT PAVEMENT DENSITY VARIATION: INSIGHTS FOR PREVENTIVE MAINTENANCE**

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### *ABSTRACT*

This study investigates how density varies along longitudinal paving joints, and compares density along the joint to densities measured within the mat interior. The feasibility of routinely mapping variations in asphalt density as a basis for developing proactive preventive maintenance programs is presented and discussed. Data from two case study locations are analyzed first using basic descriptive statistics, then with respect to spatial variability. Two-dimensional plots are developed to show how density varies along longitudinal and transverse sampling lines. Hypothesis testing is used to confirm that the observed differences in mat and joint density are statistically significant. It is determined that at both case study locations, density is more variable along the longitudinal joint than within the mat. It is concluded that current density-measuring devices are not suitable for full-scale spatial density mapping. However, at least two promising sensing modalities can be identified, and research on enhancements is currently in progress.

*KEY WORDS:* density, spatial variability, asphalt, pavement, joint