

Project:

Development and Proposed Implementation of a Field Permeability Test for Asphalt Concrete

KTC-01-19/SPR 216-00-1F

A number of Kentucky superpave asphalt surfaces in Kentucky exhibit fairly high permeability. This allows water to migrate to the surface and freeze during cold weather. A safety hazard results along with a continual maintenance problem needing crews to spread salt in these areas.



For more information contact:
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Objectives:

- Review recent permeability research.
- Develop a rapid field test method.
- Define acceptable permeability rates.
- Develop a QC/QA specification and procedure for construction.



Results:

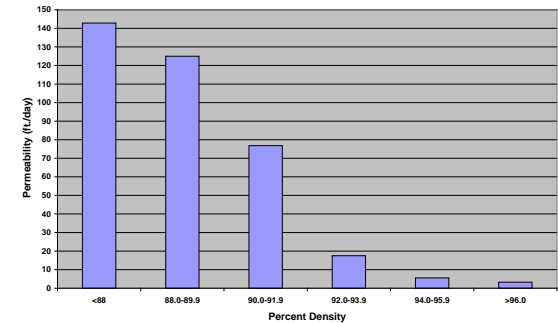
- A Kentucky test method was developed to measure the in-place permeability of asphalt concrete.
- A specification was written to assist the Cabinet in determining acceptable levels of asphalt pavement permeability.
- A mathematical model was developed to predict the permeability of an asphalt pavement, based on the mixture gradation.

Implementation:

- Several asphalt mixtures have been designed using the new design model.
- Significantly reduced surface permeability has resulted.

The proposed specification and model are being used during the 2005 construction season on several new asphalt surfaces.

Average Field Permeability as a Function of Percent Density
All Projects Combined



Benefits:

The benefits of this research are just beginning to accrue. With more surfaces designed to the new specification and tested for compliance both the safety hazards due to the previous asphalt pavement porosity and the maintenance requirement for increased salting will be significantly reduced.