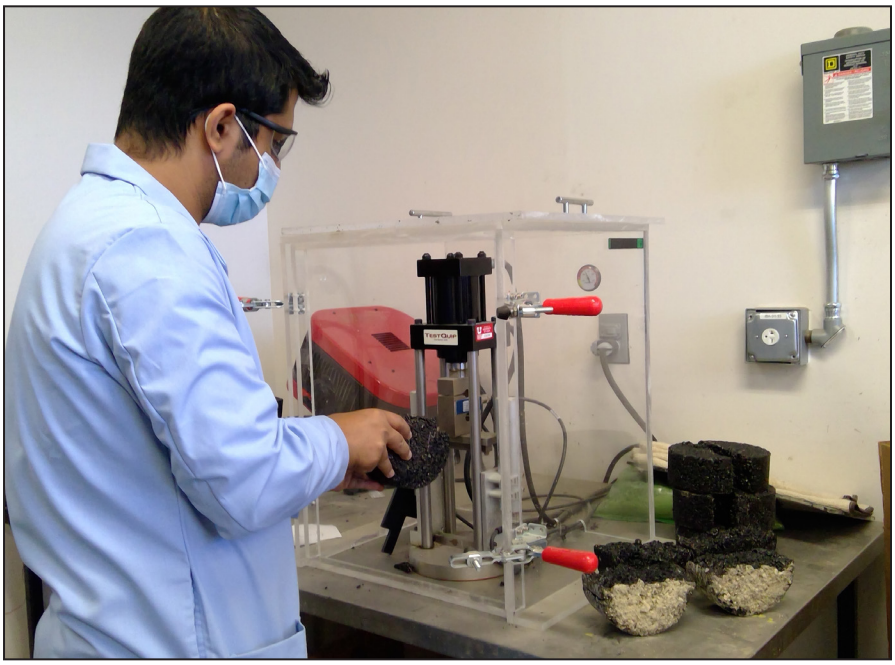
MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 22-467 (project 640) | July 2022

Testing of Field Cores to Determine Performance of Asphalt Mixtures



the ISSUE

Pavement cracking is a major issue that decreases the life of asphalt pavements. Cracking occurs as the material ages and loses flexibility. However, the amount of aging that occurs in the field is not well understood.

the RESEARCH

A study was conducted in which cores were taken from pavements three years after construction. The flexibility index of the cores, a parameter that relates to intermediate temperature cracking, was measured in the lab and compared to the known values of the same material obtained during construction. A comparison was done between two tests that are designed to predict asphalt mixture performance at intermediate temperatures.

MOUNTAIN-PLAINS CONSORTIUM REGION 8

A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

Colorado State University
North Dakota State University
South Dakota State University
University of Colorado Denver
University of Denver
University of Utah
Utah State University
University of Wyoming

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Project Title

Testing of Field Cores to Determine Performance of Asphalt Mixture Performance Parameter

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the **FINDINGS**

The results indicate that after three years of field aging, the flexibility index of the mixtures can decrease by as much as 50% or more. The change was affected by the temperature where the pavement was located.

It was found that both tests can predict the mixtures with the worst performance, but there was little agreement in other mixtures. Furthermore, high variability was observed on both tests evaluated.

the **IMPACT**

Development and adoption of performance-related tests will reduce the number of early failures observed in many pavements, thus significantly reducing maintenance costs. The findings of this research are limited to the specific pavement sections evaluated under the specific testing conditions. A larger database can provide more precise information regarding the relation between mechanical testing and pavement performance.

For more information on this project, download the main report at https://www.ugpti.org/resources/reports/details.php?id=1092

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.