MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 22-466 (project 611) | July 2022

Field Performance of Asphalt Mixtures Based on Flexibility Index Results

the ISSUE

Pavement cracking continues to be an issue that affects the durability of highway infrastructure. While tests have been proposed, no threshold or limit has been developed.

the RESEARCH

This research is part of a continuous effort to develop mechanical tests that relate to the expected performance of asphalt mixtures once placed in the field. During a previous research project, asphalt mixtures of different compositions were collected from various locations across the state of Utah. The mixtures were brought to the lab and tested to determine their intermediate temperature performance using the Illinois Flexibility Index Test based on AASHTO TP-126. Based on the tests, it was found that asphalt mixtures sampled at the plant had a flexibility index (FI) between 3 and 20. This means that some mixtures were likely to show premature fatigue cracking.

To verify if the laboratory predicted performance matched the field performance, the locations where five different mixtures were placed were surveyed and their level of distresses was documented.

MOUNTAIN-PLAINS CONSORTIUM REGION 8

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University of Wyoming

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Project Title

Field Performance of Asphalt Mixtures Based on Flexibility Index Results

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the FINDINGS

Researchers found that, out of the five sections surveyed, the one that had the lowest FI showed premature fatigue cracking. A different section also showed significant low-temperature cracking.

Based on these results and previous laboratory work, they concluded that the proposed mechanical testing at intermediate temperatures can be used to identify mixtures that might have poor cracking performance in the field. The tests can be used during the mix design process to prevent poor-performing mixtures from being placed in the field. However, because no other section showed any distresses, it is not known if a specific minimum FI can be developed at this time.

the IMPACT

Transportation agencies make significant investments to maintain highway infrastructure. Development of tests to eliminate materials with potentially poor performance can result in significant savings.

For more information on this project, download the Main report at https://www.ugpti.org/resources/reports/details.php?id=1087

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.