

# MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 23-499 (project 671) | May 2023

## Development of Dynamic Modulus Parameters from Single Point Tests



### the ISSUE

There is a disconnect between asphalt mixture tests and the inputs for the structural design of pavements. Due to its complexities, the dynamic modulus required as input to the structural design is seldom measured, resulting in average or default values being used. Consequently, cost optimization opportunities are being lost.

### the RESEARCH

The work evaluated existing dynamic moduli for 34 different asphalt concrete mixtures to determine the range of the dynamic moduli that can be expected; it then developed a theoretical relation between parts of the dynamic modulus and the cracking tolerance index. This relation was then verified using field material.



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

Development of Dynamic Modulus Parameters from Single Point Tests

### Sponsors | Partners

Utah Department of Transportation

USDOT, Research and Innovative Technology Administration

### the **FINDINGS**

The results indicate that it is feasible to incorporate the results from tests used for asphalt mixtures into the structural design of asphalt pavements, thus allowing for actual material properties to be used in the analysis.

### the **IMPACT**

The ability to incorporate the material properties obtained during the design of asphalt mixtures into the structural evaluation of asphalt pavements will result in better use of site-specific materials, the ability to conduct life-cycle analysis, and more robust pavement designs.

For more information on this project, download the Main report at <https://www.ugpti.org/resources/reports/details.php?id=1126>

For more information or additional copies, visit the Web site at [www.mountain-plains.org](http://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.



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