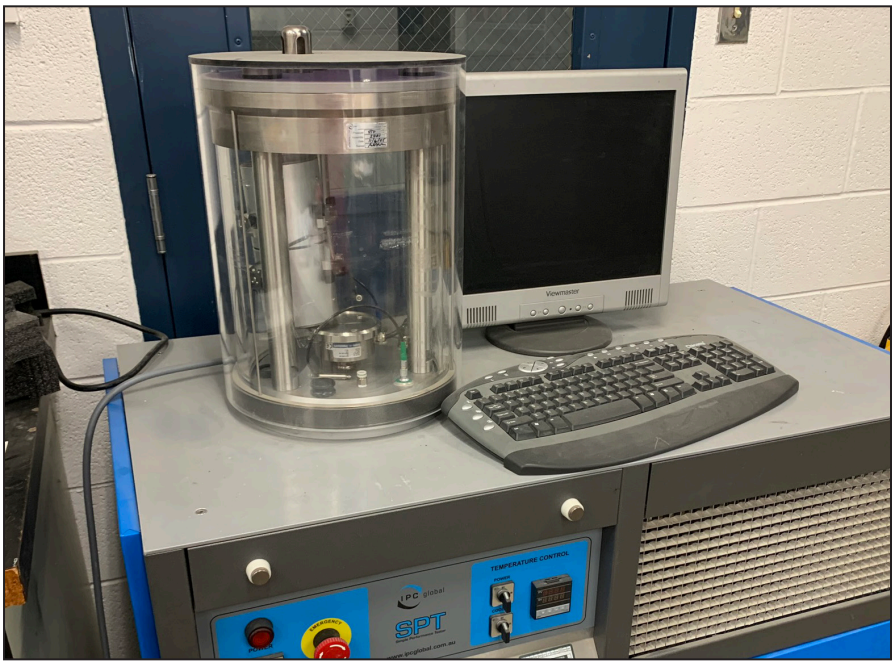
MOUNTAIN-PLAINS CONSORTIUM

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.

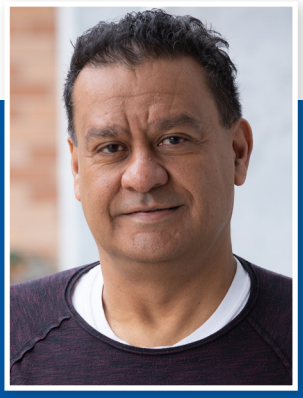
the **RESEARCH**

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.

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



Lead Investigator(s)

Pedro Romero, Ph.D., P.E.
pedro.romero@utah.edu

Research Assistant(s)

Abdulah Al Mamun, GRA, PhD
Carlos Hermoza, GRA, MSc

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, 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.