
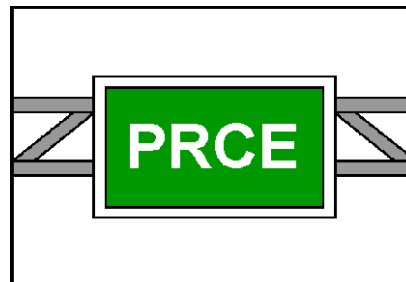


<b>Michigan Department of Transportation</b>	
<b>Michigan Asphalt Paving Association</b>	

# **DETERMINING THE CAUSES OF TOP-DOWN CRACKS IN BITUMINOUS PAVEMENTS**

**Michigan State University  
Pavement Research Center of Excellence  
Department of Civil and Environmental  
Engineering  
East Lansing, Michigan 48824-1226**



August 2003

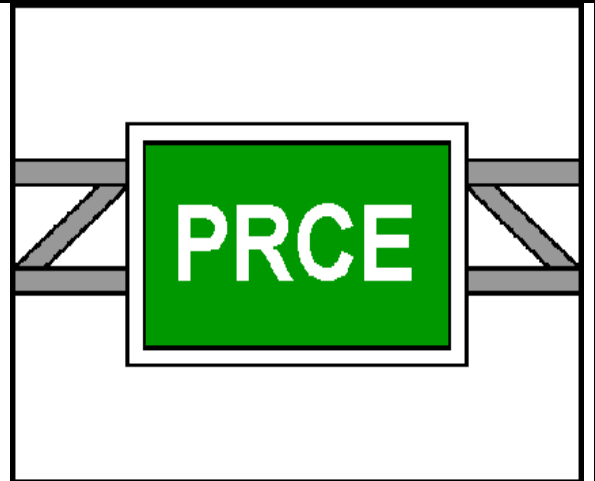
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**PAVEMENT RESEARCH  
CENTER OF EXCELLENCE**

Michigan State University  
Department of Civil and Environmental  
Engineering  
East Lansing, Michigan 48824-1226  
(517) 355-5147  
Fax (517) 432-1827  
[baladi@egr.msu.edu](mailto:baladi@egr.msu.edu)



Final Report

Report Number MDOT - PRCE - MSU -2003 -110	Contract Number )
Title and Subtitle <b>DETERMINING THE CAUSES OF TOP-DOWN CRACKS IN BITUMINOUS PAVEMENTS</b>	Report Date  June 2002
Authors Gilbert Y. Baladi, Ph.D., P.E. Michael Schorsch Tunwin Svasdisant	TAG Chairperson Vernon T. Barnhart
Sponsoring Agencies Michigan Department of Transportation Construction and Technology Division Michigan Asphalt Paving Association	
<p><b>Abstract</b></p> <p>Top down cracks (TDC) are longitudinal or transverse cracks that initiate at the pavement surface and propagate downward and outward. They have been observed with increasing frequency on roads in Michigan. In this study, field and laboratory investigations were conducted to determine the factors that affect the load-induced tensile stresses at the pavement surface and the tensile strength of the AC mixes, and hence, affect the susceptibility of the pavement surface to TDC potential. Results of laboratory testing indicate that the AC mixtures used as surface courses in Michigan may be weakened by moisture damage. Further, segregation increases the susceptibility of the AC mixtures to moisture damage, and hence, increases TDC potential. Finally, a crack propagation model was developed as a function of pavement age and degree of segregation based on distress survey data.</p>	
<p>Key Words: asphalt pavements, top-down cracks, asphalt mix, nondestructive deflection tests, segregation, and moisture damage.</p>	

## **ACKNOWLEDGEMENTS**

The authors wish to thank the Michigan Department of Transportation, and the Michigan Asphalt Paving Association for their financial supports, which made this study possible.

The comments made by the Technical Advisory Group members throughout the study are greatly appreciated.

Many thanks are due to MDOT personnel for their efforts in data collection, including Kurt Bancroft for FWD testing, Frederick Carian for his near encyclopedic knowledge of MDOT bituminous mixtures and Gerald Sweeney for his unique insights and assistance with laboratory testing.

The countless efforts and contributions of personnel of the Pavement Research Center of Excellence (PRCE) at Michigan State University are highly appreciated.

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