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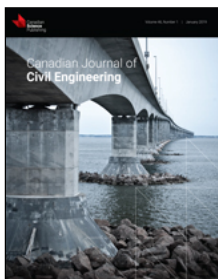
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Investigating Performance of Superpave through Mechanistic-Empirical (ME) Approach, Field Evaluated Performance, and Laboratory Test Results: A Case Study on Ontario Highways

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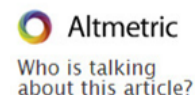
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ABSTRACT

In North America, highway agencies have started using Superpave as it incorporates a performance-based asphalt binder specification and a mix design analysis system. However, in a pavement management system (PMS), the performance of the pavement structure significantly influences the management decision. In this regard, accurate prediction, and evaluation of performance is a very important aspect. With this in mind, this study investigates the performance of Superpave through the Mechanistic-Empirical (M-E) approach, field evaluated performance and laboratory performance tests. It considers 15 highway sections from Ontario highways. From the investigation, it is found that IRI and permanent deformation are over-predicted in the M-E approach than those in field observations. Additionally, to better understand the performance, dynamic modulus on the asphalt mixtures and binder rheological testing are also performed. The master curve developed for the surface mixtures suggests a lower level of fatigue resistance that justifies the bottom-up fatigue failure in the field observed scenarios.



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