

Sustainable Pavement Materials, Designs and Performance Data

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ABSTRACT: Canada spends billions of dollars every year for construction and maintenance of road pavements. In the recent years, the highest percentage of the spending goes to re-construction, repair and maintenance of old pavements, as most of the pavements built decades ago exhibiting severe functional and structural distresses. For example, coastal provinces such as, Newfoundland and Labrador, and British Columbia, which experience unique weather climates, spend more than \$200M and \$300M every year, respectively, according to their latest yearly expenditure reports. In the reconstruction process, the design of pavement is conducted following the 1993 American Association of State Highway and Transportation Official (AASHTO) guideline. Evidences exist in the literature that the AASHTO guideline is not adequate for the design of overlay and rehabilitated pavements, since this guideline was not developed from the performance observations of composite pavement structure of multiple layers built in different times. Additionally, this design guideline developed is based on a few pavement test sections in US climatic conditions, on mostly empirical observations, and does not consider the benefit of usage of materials with enhanced mechanistic and structural performance. Furthermore, today's pavements experience heavier traffic, variable tire pressures, different tire widths and different axle load configurations than those experienced during the AASHTO road testing. Therefore, there is a need to generate advance data for sustainable pavement design for Canadian context. This presentation gives an overview on the pavement design process and research projects focused on obtaining advance data for sustainable pavement designs.

Bio: Dr. Hossain is an assistant professor of pavement engineering at the Memorial University. Previously, Dr. Hossain worked as a postdoctoral researcher at the advance pavement research center (ICT) of the University of Illinois at Urbana-Champaign, and at the center for pavement and transportation technology of the University of Waterloo. He holds a PhD in Civil Engineering from the University of Waterloo.

Dr. Hossain's research interests include pavement engineering, asphalt, polymers, laboratory characterization, performance modeling, pavement maintenance and management. He has published more than 30 journal articles, conference papers and technical reports. Dr. Hossain holds several prestigious awards including NSERC postdoctoral fellowship.

ALL ARE WELCOME!