

Advancements in Mechanistic–Empirical Design of Jointed Concrete Pavements in the U.S.

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Concrete pavements need to be designed to carry any tire pressure, weight, and volume of heavy traffic for extended periods of time. Over the last three decades, significant advancements have been achieved in the mechanistic–empirical design of concrete pavements. Realistic modeling of jointed plain concrete pavements (JPCP) requires extending the classical Westergaard model to better capture actual slab behavior, improving mathematical modeling, and integrating machine-learning techniques to obtain computationally efficient performance predictions. This talk discusses the major milestones in the development of the models incorporated into the latest version of AASHTOWare Pavement ME Design (version 3.0), as well as ongoing research in the United States aimed at improving these procedures. The presentation will also highlight how international cooperation has contributed to advancing the state of the art in rigid pavement design and the importance of strengthening this cooperation in the future.

Lev Khazanovich is the Anthony Gill Chair Professor of Civil Engineering at the University of Pittsburgh and an



internationally recognized expert in the structural modeling, evaluation, and performance prediction of concrete pavements. Dr. Khazanovich was a member of the rigid pavement leadership team that developed the Mechanistic–Empirical Pavement Design Guide adopted by the American Association of State Highway and Transportation Officials (AASHTO). He has served as Principal Investigator or co-Principal Investigator on numerous high-profile research projects sponsored by organizations such as the Federal Highway Administration, the Department of Energy, the National Cooperative Highway Research Program, the Strategic Highway Research Program, and various state transportation agencies. He served as Principal Investigator for NCHRP project 01-51, “A Model for Incorporating Slab/Underlying Layer Interaction into the MEPDG Concrete Pavement Analysis Procedures,” which resulted in the development of the rigid pavement performance models implemented in AASHTOWare Pavement ME Design. He was a lead developer of the finite element program, ISLAB2000. He is currently serving as Principal Investigator for NCHRP project 01-64, “Development of Longitudinal Cracking Models for Concrete Pavements.”

Dr. Khazanovich serves as an Associate Editor of the International Journal of Pavement Engineering. He is a founding member and a member of the Board of Governors of the Academy of Pavement Science and Engineering. His papers received awards from the Transportation Research Board and International Society for Concrete pavements.