

# Airfield and Highway Pavements 2019

Innovation and Sustainability in Highway and Airfield Pavement Technology



Papers from Sessions of the International Airfield and Highway Pavements Conference 2019



Chicago, Illinois



July 21–24, 2019



Edited by

Imad Al-Qadi, Ph.D., P.E.; Hasan Ozer, Ph.D.;  
Andreas Leizes, Ph.D.; and Scott Murrell, P.E.



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SPONSORED BY  
The Transportation & Development Institute  
of the American Society of Civil Engineers

EDITED BY  
Imad Al-Qadi, Ph.D., P.E.  
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# Preface

Increasing demand on freight transport puts pressure on the existing and aging transportation infrastructure. Challenges and needs for a durable, sustainable, and cost-efficient transportation-infrastructure system in the 21st century have changed. In addition, funding is more limited than ever. Rigorous approaches are required to prioritize projects based on the most value while minimizing maintenance and rehabilitation needs. The theme of the conference was “Efficient and Sustainable Pavements” and it was dedicated to the state-of-the-art and state-of-practice design, construction, preservation, and rehabilitation technologies, as well as sustainable materials and life cycle assessments for airfield and highway pavements.

This international conference provided a chance to network, interact, and exchange information with worldwide leaders in the fields of highway and airfield pavements. This conference brought together transportation infrastructure researchers, consultants, designers, project/construction managers, academics, and contractors from around the world.

The proceedings of the 2019 International Conference on Airfield and Highway Pavements have been organized into three publications and are described as follows:

## **Airfield and Highway Pavements 2019: Design, Construction, Condition Evaluation, and Management of Pavements**

This volume includes papers concerning mechanistic-empirical pavement design methods and advanced modeling techniques for highway and airfield pavements, construction specifications and quality monitoring, accelerated pavement testing, rehabilitation and preservation methods, pavement condition evaluation, and network-level management of pavements.

## **Airfield and Highway Pavements 2019: Testing and Characterization of Pavement Materials**

In this volume papers address laboratory and field characterization of asphalt binders, modifiers and rejuvenators, asphalt mixtures and modification, recycled and waste materials in asphalt mixtures, unbound base/subgrade materials, layer stabilization, and recent advances in cementitious materials characterization and concrete pavement technology.

## **Airfield and Highway Pavements 2019: Innovation and Sustainability in Highway and Airfield Pavements Technology**

This volume features the most recent technologies used for construction quality monitoring of highway pavements, innovative technologies used in the design of pavements, sustainable materials, interaction of pavements and environment, and life-cycle methods used in decision making. This volume also includes papers on recent advances in the area

of airfield pavement design technology and specifications, modeling of airfield pavements, use of accelerated loading systems for airfield pavements, and airfield pavement condition evaluation.

The papers have gone through stringent peer review by international highway pavement and airfield technology experts, including scientific committee members. Each paper was reviewed by three to five reviewers.

The conference had a poster session, four technical podium tracks, and two plenary sessions. The first plenary session featured presentation of industry awards, followed by a keynote speech. The second plenary featured the Carl Monismith Lecture by Gary Hicks of California State University (CSU), followed by a moderated panel discussion on the ASCE Grand Challenge.

Two technical tours were offered and included the O'Hare International Airport Modernization Project as well as Illinois Department of Transportation's Highway Construction project. Preconference workshops included Federal Aviation Administration's (FAA) hands-on FAARFIELD software, and Performance Engineered Mixtures as a cooperative activity of the Federal Highway Administration and the American Concrete Pavement Association.

The editors would like to thank the scientific committee members, who volunteered their time to review submitted papers and offered constructive critiques to the authors. We are grateful to the steering committee members, including Rick Boudreau, Audrey Copeland, Jeffrey Gagnon, Tom Harman, John Rushing, Geoffrey Rowe, Luis Loria-Salazar, and Leif Wathne, for planning and organizing the conference. We offer additional thanks to the local organizing committee members, including Ross Anderson, Kevin Burke III, Darren Olson, Dan Gallagher, Cindy Williams, Matthew Kirby, and Anne Kiernan, as well as Chair George Houston for their help with the technical tours and the participation and contribution of local attendees and organizations. Finally, we would like to especially thank the staff of the American Society of Civil Engineers (ASCE) and its Transportation & Development Institute (T&DI), including Muhammad Amer, Deborah Denney, Neal Sweeney, Rachel Hobbs, and Drew Caracciolo, for helping put the conference together.

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