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Pavement Mechanics and Performance

EDITED BY Baoshan Huang
Roger Meier
Jorge Prozzi
Erol Tutumluer

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Preface

This special publication contains 36 technical papers cover a variety of topics in mechanistic modeling for highway and airfield pavements, pavement materials characterization through advanced technology, and pavement performance prediction. Advances in pavement materials characterization include the use of imaging analysis, non-destructive testing, and some innovative laboratory and field testing techniques. The materials being characterized include the subgrade soil, pavement base, and hot-mix asphalt paving mixtures. Mechanistic modeling of pavement structures includes the dynamic analysis of pavement responses under falling weight deflectometer (FWD), non-linear analysis of stress-dependent pavement foundation through general finite element (FE) program, and analysis of airfield pavement response under critical gear configurations. Several papers concentrate on evaluating pavement performance through various accelerated loading testing (APT) facilities around the world.

Each paper published in this ASCE Geotechnical Special Publication (GSP) was evaluated by two or more reviewers and the editors. The authors of the accepted papers have addressed all the reviewers' comments to the satisfaction of the editors. All published papers are eligible for discussion in the Journal of Geotechnical and Geoenvironmental Engineering, and are also eligible for ASCE awards.

The papers in this publication were presented during the GeoShanghai International Conference held in Shanghai, China, June 6–8, 2006. This conference was hosted by Tongji University and the Shanghai Society of Civil Engineering, China in cooperation with ASCE Geo-Institute, the Georgia Institute of Technology, the University of Kansas, The University of Tennessee, International Association of Foundation Drilling, Deep Foundation Institute (USA), Saga University (Japan), Delft University of Technology (Netherlands).

A total of three pavement-related sessions were chaired by the following individuals:

- Pavement Mechanics – chaired by Professors Roger Meier and A. Tom Scarpas;
- Accelerated Pavement Testing and Performance – chaired by Professors Jorge Prozzi, Gregers Hildebrand, and Hechter Theyse;
- Pavement Foundation – chaired by Professors Erol Tutumluer, Andrew Dawson and Virgil Ping.

We are thankful to Professor Imad Al-Qadi from the University of Illinois at Urbana-Champion, who gave the keynote speech in pavement technology on the use of geosynthetics to control pavement cracking. Thanks are extended to Professor Yongsheng Li, conference chair for GeoShangai, and Professors Hehua Zhu, Paul W.

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Baoshan Huang
The University of Tennessee, Knoxville, TN
January 6, 2006

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