Road Pavement and Material Characterization, Modeling, and Maintenance

Selected Papers from the GeoHunan 2011 International Conference Geotechnical Special Publication No. 213

Hunan, China 9 - 11 June 2011

Editors:

Wynand JvdM Steyn Xueyan Liu Yusuf Mehta Zhanping You

ISBN: 978-1-61782-990-1

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2011) by the American Society of Civil Engineers All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the American Society of Civil Engineers at the address below.

American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191

Phone: (800) 548-2723 Fax: (703) 295-6333

www.asce.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: 845-758-0400 Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

GSP 213 Table of Contents

Recycled Asphalt Pavement

1 Gradation and Performance Research of Cold Recycled Mixture

Hui Yao, Liang Li, Hua Xie, Han-Cheng Dan, and Xiao-Li Yang

10<u>Development of Blending Chart for Different Degrees of Blending for Reclaimed Asphalt</u> Pavements in HMA

Prashant Shirodkar, Yusuf Mehta, Aaron Nolan, Khyati Sonpal, and Eric Dubois

Performance Evaluation, Performance Modeling, and Pavement Management

16Prediction of Resilient Modulus of Asphalt Pavement Material Using Support Vector Machine

Kezhen Yan, Honghui Yin, Huarong Liao, and Likui Huang

24Predicting the Pavement Serviceability Ratio of Flexible Pavement with Support Vector Machines

Kezhen Yan, Huarong Liao, Honghui Yin, and Likui Huang

33Grading Indexes of Recycled Coarse Aggregate

Jiusu Li

40Effect of Aircraft Gear Positions and Gear Configurations on Load Transfer Efficiency of Airfield Rigid Pavement Joints

Ashish Wadkar, Yusuf Mehta, Douglas Cleary, Alejandro Zapata, Laura Musumeci, and William Kettleson

49Evaluation of Micro-Climate Effects on Surfacing Seal Performance

Wynand JvdM Steyn and Riaan Briedenhann

57Research for Predicting Road Skid Resistance Based on Machine Vision

Kai Peng and Xing-lin Zhou

64Construction Performance Evaluation Model of Asphalt Concrete Pavement

Nai-Hsin Pan

72Assessment of Reflective Cracking Models for Asphalt Pavements

Luis Loria, Elie Y. Hajj, and Peter E. Sebaaly

80Pavement Performance Research on Fly Ash-Carbide Slag Residue Concrete

Zhaoyi He, Zhaofeng Lu, and Weirong Huang

Advances in Laboratory Characterization of Pavement Materials

89<u>The Reliability Analysis and the Probability Distribution of Wheel Tracking Test of Asphalt Mixture</u>

Xingye Zhou, Xudong Wang, Xiaotao Liu, and Lei Zhang

97Compaction of Noise-Reducing Asphalt Mixes in the Laboratory

Qing Lu, Sang Luo, and John Harvey

106Research on Structure and Properties of Embedded Gussasphalt

Min Wang, Hua Zhang, Mengliang Zhu, Zengheng Hao, and Xin Xue

115Research on the Mechanism of the Crumb Rubber Modified Asphalt Activated by the Additive

Minmin Xiao and Wensheng Ding

122<u>Influence of Adhesion on the Tire-Road Friction Process Regarding Asphalt Type and Sliding Speed</u>

Chaoen Yin and André Meyer

130Research on the Polishing Process of Aggregates on Pavement Surface on Basis of Mineral Characteristics

Dawei Wang, Chaoen Yin, and Xianhua Chen

Moisture Damage in Asphaltic Concrete Materials

140Effect of Unsaturated Flow on the Groundwater Table in Drainage Layer and Saturated Model Modification

Han-Cheng Dan, Liang Li, Hui Yao, and Su-Ping Luo

Pavement Foundations: Modeling, Design, and Performance Evaluation

149<u>Study on the Performances of the Mixture of High Calcium Fly Ash and Fly Ash in Highway Application</u>

Ji-shu Sun, Yuan-ming Dou, Chun-feng Yang, and Tian Xiao

155Research on Pavement Foundation Stability of Anhui Bozhou-Fuyang Expressway

Shengquan Zhou and Jianwei Li

164Applications of the PCI Data Collected from U.S. Airports Nationwide

Qingge Jia, Edward Guo, and Jeffery Gagnon

172Finite Element Analysis for Noise-Reducing of Double-Layer Porous Asphalt Pavement

Hongchang Wang, Xiaoming Huang, Gongyun Liao, and Guoqiang Xue

180Study on Performance for the Upslope Asphalt Pavement Structure under High Temperature

Xue-lian Li and Yu-liang Chen

Rehabilitation Strategy Selection and Preventative Maintenance Treatments

187<u>Study on Quantitative Evaluation Method of Treatment Effectiveness on Cement Concrete</u> Pavement Distress

Zhen Yuan and Chu ping Liu

195A Method of Determining the Preventive Maintenance Location

Zhen Yuan and Rui Zhang

Roadway Widening

204<u>Centrifuge Model Test and Numerical Analysis of Geosynthetic-Reinforced Embankments for a Road Widening</u>

Jun-hui Zhang, Jian-long Zheng, and Xiao-ming Huang