

Characterization, Modeling, and Performance of Geomaterials



*Edited
by*

Xiong Zhang, Ph.D
Xiong Yu, Ph.D, P.E.
Hongyuan Fu, Ph.D
Jie Zhang, Ph.D, P.E.

ASCE

**GEO
INSTITUTE**

Geo-Environmental Engineering

Large Direct Shear Test Apparatus for In Situ Testing of Municipal Solid Waste Landfill Sites.....	86
Liaqat Ali, Sarfraz Ali, and Ammar Maqbool	
Feasibility Analysis for the Ecological Sustainability of Engineering Construction of the Express	92
Tung-Tsan Chen, Yao T. Hsu, and Chun-Yuan Wang	
Ant Colony Optimization Algorithm for Vertical Alignment of Highways.....	99
Kun Miao, Liang Li, Xiao-Li Yang, and Yuan-Yuan Huo	
Application of Analytic Hierarchy Process to Slope Greening Design	109
Fang Wang, Fei Chen, and Yingying Cheng	

NDT Testing of Infrastructure Materials

Using Ground Penetration Radar Techniques for Roadway Structure Safety Evaluation	116
Dar-Hao Chen, Andrew Wimsatt, and John Bilyeu	
Visualizing 3-D Internal Soil Deformation Using Laser Speckle and Transparent Soil Techniques.....	123
Jinyuan Liu	
Experimental and Theoretical Studies on (Relative) Permittivity of the Tunnel Lining	129
Yan-xi Gao and Xia Li	
A Review on GPR Applications in Moisture Content Determination and Pavement Condition Assessment	138
Can Chen and Jie Zhang	
Non-Destructive Impedance Spectroscopy Measurement for Soil Characteristics	144
Sarah E. Pluta and John W. Hewitt	
Ultrasonic Pulse Velocity Tests on Compacted Soil.....	150
David M. Weidinger, Louis Ge, and Richard W. Stephenson	
Characterization of Early Stage Concrete by Ultrasonic Method.....	156
Yan Liu, Bin Zhang, Xinbao Yu, and Xiong (Bill) Yu	
Measuring Dielectric Constant in Highly Conductive Soils Based on Surface Reflection Coefficients.....	166
Renpeng Chen, Wei Xu, Yunmin Chen, and Wei Chen	
Comparison of Surface Wave Tests for Pavement System Thicknesses/Moduli.....	174
Larry D. Olson and Patrick Miller	

Bridge Approach Embankment

Solving the Problems of Differential Settlement of Pavement Structures in the Bangkok Area.....	180
Titi Paveenchana and Manoon Arayasiri	
Contribution of Loamy Soil Treatment to Improve Embankments Performance.....	186
Régis De Bel, Antonio Gomes Correia, and Jean-Claude Verbrugge	