## American Society of Civil Engineers

# Contemporary Issues in Deep Foundations 2007

Geotechnical Special Publication No. 158

February 18-21, 2007 Denver, Colorado, USA

Printed from e-media with permission by:

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

ISBN: 978-1-60423-769-6

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

## **Notices**

Any statements expressed in these materials are those of the individual authors and do not necessarily represent the views of ASCE, which takes no responsibility for any statement made herein. No reference made in this publication to any specific method, product, process or service constitutes or implies an endorsement, recommendation, or warranty thereof by ASCE. The materials are for general information only and do not represent a standard of ASCE, nor are they intended as a reference in purchase specifications, contracts, regulations, statutes, or any other legal document.

ASCE makes no representation or warranty of any kind, whether express or implied, concerning the accuracy, completeness, suitability, or utility of any information, apparatus, product, or process discussed in this publication, and assumes no liability therefore. This information should not be used without first securing competent advice with respect to its suitability for any general or specific application. Anyone utilizing this information assumes all liability arising from such use, including but not limited to infringement of any patent or patents.

Copyright © 2007 by the American Society of Civil Engineers. All Rights Reserved.

Manufactured in the United States of America.

American Society of Civil Engineers ASCE International Headquarters 1801 Alexander Bell Drive Reston, VA 20191-4400 USA

Call Toll-Free in the U.S.: 1-800-548-2723 (ASCE) Call from anywhere in the world: 1-703-295-6300

Internet: http://www.pubs.asce.org

### American Society of Civil Engineers

#### Contemporary Issues in Deep Foundations Geotechnical Special Publication No. 158 2007

## **TABLE OF CONTENTS**

Application and Interpretation of CSL Data: Some Common Errors	1
Crosshole Sonic Logging of South Carolina Drilled Shafts: A Five Year Summary  William Camp	12
Defect Analysis for CSL Testing	23
Turning Crosshole Sonic Logs into Crosshole Velocity Tomograms  Larry Olson	33
Capacity of Rock Socketed Drilled Shafts in Mid-Atlantic Region	41
Parametric Study of Open Core-hole on the Behavior of Drilled Shafts Socketed in Soft Rock  Cumaraswamy Vipulanandan	51
Statnamic Load Testing of Large Diameter Piles at Rigolets Pass Bridge Replacement Project  Donald Robertson	61
Behavior of Cylinder Piles During Pile Installation	72
Concrete Cylinder Piles at Oregon Inlet, North Carolina	85
Design and Installation of Concrete Cylinder Piles  Jan Hartman	95
Recent Experiences with Concrete Cylinder Piles in Florida	109
Development of the UWA-05 Design Method for Open and Closed Ended Driven Piles in Siliceous Sand	120
Skin Friction of Piles Coated with Bituminous Coats	130
Non-linear Analysis of Piled Raft Foundations  J.C. Small	140
Evaluation of Resistance Bias Factors for Load and Resistance Factor Design of Driven Steel Pipe Piles	149
A Point of Fixity Model for Pile and Shaft Bents	159

Use of Soil-cement Piles for Bridge Support	170
Challenges and Solutions to Model-Scale Testing for Composite Deep Foundations for Existing Foundation Enhancement  Debra Laefer	180
Project Experience in Assessment and Reuse of Old Foundations  Bernard Hertlein	190
Drivers Affecting Frequency of Foundation Reuse and Relevance to U.S. Cities  Jessica Strauss	200
Development of Compressive Pier Force in Expansive Soils	210
Failure of Drilled Piers in Denver Due to Formation of Softened Claystone	220
Heave Distress of a Manufacturing Building  Daniel Overton	231
A Comparison of Three Projects Utilizing Auger Cast Piles	241
Monitoring the Installation and Curing of a Large Diameter ACIP Pile in Very Dense Sand	251
Quality Control Of Drilled Displacement Piles Through An Integrated Automatic  Data Acquisition System Œ A Case History	261
Case Histories of Micropiles in Karst: The Influence of Installation on Design and Performance  Timothy Siegel	274
Micropile Load Testing and Installation Monitoring at Cats Vehicle Maintenance Facility  David Lipka	282
Micropiles in Karst: Interstate 70, Frederick County, MD	292
Concrete Temperature Reduction via Voided Drilled Shafts	302
High Performance Concrete and Drilled Shaft Construction	314
Load Test Program to Validate Model for Post Grouted Drilled Shafts	326
Post-Grouting of Drilled Shaft Tips on the Sutong Bridge: A Case History	337
Underwater Concrete in Drilled Shafts: the Key Issues and Case Histories	347
An Investigation Of The Effect Of Partial Plugging During Installation On The Shaft Capacity Of Open-Ended Piles In Soft Clay	357
Effect of Wall Thickness on Plugging of Open Ended Steel Pipe Piles in Sand	365

Prediction and Reliability of Pipe Piles Response to Lateral Loading	
Experiences with Open Ended Pipe Pile Plugging in the Atlantic Coastal Plain	
Performance of Open-ended Pipe Piles in Cretaceous Soils	
Scale Effects in Lateral Load Response of Large Diameter Monopiles	
Author Index	

Author Index