Piling and Deep Foundations

Edited by
DEEP FOUNDATIONS INSTITUTE
Sparta, N.J., USA

VOLUME I
Table of contents

Preface

**Special topic on EUROCODE 7 and standardization**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probabilistic evaluation of bearing capacity of drilled piles in clays</td>
<td>3</td>
</tr>
<tr>
<td>C. Cherubini</td>
<td></td>
</tr>
<tr>
<td>Design values for bearing capacities of piles derived by use of statistical methods</td>
<td>9</td>
</tr>
<tr>
<td>H. E. Eriksson</td>
<td></td>
</tr>
<tr>
<td>EUROCODE safety approach as applied to single piles</td>
<td>13</td>
</tr>
<tr>
<td>E. Franke</td>
<td></td>
</tr>
<tr>
<td>Risk model for pile capacity analysis</td>
<td>19</td>
</tr>
<tr>
<td>V. R. Greco &amp; F. Politi</td>
<td></td>
</tr>
<tr>
<td>Hazards and safety in piling and drilling</td>
<td>29</td>
</tr>
<tr>
<td>K. Waninger</td>
<td></td>
</tr>
</tbody>
</table>

1. **Recent technological developments in deep foundations with soil excavation**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and construction of drilled shafts in coarse gravel and cobble deposits</td>
<td>33</td>
</tr>
<tr>
<td>G. H. Beckwith &amp; A. Hirany</td>
<td></td>
</tr>
<tr>
<td>Quality aspects of reinforced augercast piles</td>
<td>41</td>
</tr>
<tr>
<td>M. Bottiau &amp; K. R. Massarsch</td>
<td></td>
</tr>
<tr>
<td>Earth pressure distribution on diaphragm wall during excavation</td>
<td>51</td>
</tr>
<tr>
<td>Chin-Su Ting, Xin-Jie Wang &amp; Qi-Shun Wang</td>
<td></td>
</tr>
<tr>
<td>Testing and analysis of preliminary test piles in very weak chalk</td>
<td>57</td>
</tr>
<tr>
<td>S. P. Corbet, D. S. Culley, D. E. Sherwood &amp; J. E. M. Cockcroft</td>
<td></td>
</tr>
<tr>
<td>The deep foundation of the extension of the ‘Nederlandsche Bank building’ in Amsterdam</td>
<td>65</td>
</tr>
<tr>
<td>H. J. Everts, E. Janse &amp; J. Kruizinga</td>
<td></td>
</tr>
<tr>
<td>Construction debris landfill offers challenge for foundation support</td>
<td>73</td>
</tr>
<tr>
<td>J. H. Gould &amp; T. F. Mullin</td>
<td></td>
</tr>
<tr>
<td>Diaphragm walls, load bearing piles and piled soil reinforcement for a deep top down basement construction</td>
<td>79</td>
</tr>
<tr>
<td>J. R. Hollingsworth</td>
<td></td>
</tr>
<tr>
<td>Strengthening the foundation of the church at Skien, Norway by the Root-filling method</td>
<td>85</td>
</tr>
<tr>
<td>B. E. Lundahl</td>
<td></td>
</tr>
<tr>
<td>The performance of bored piles, used as foundation and retaining walls,</td>
<td>89</td>
</tr>
<tr>
<td>in the Middle Coal Measures</td>
<td></td>
</tr>
<tr>
<td>H. Mirzabaigian &amp; D. C. Curtis</td>
<td></td>
</tr>
<tr>
<td>Large diameter, rock socket, base grouted piles in Bristol</td>
<td>97</td>
</tr>
<tr>
<td>M. Mojabi &amp; M. J. Duffin</td>
<td></td>
</tr>
<tr>
<td>Analysis of CFA-pile-behaviour with DMT-results at Geel test site</td>
<td>101</td>
</tr>
<tr>
<td>H. Peiffer, W. F. Van Impe, G. Cortvrindt &amp; M. Van den Broeck</td>
<td></td>
</tr>
</tbody>
</table>
Establishing an island and a dry excavation in the sea bottom for a tunnel crossing
M. Porsvig & L. Løvgren

Post Office Square garage, Boston, USA: A challenging ‘top down’ project in a congested urban area
A. Ressi di Cervia & G. J. Tamaro

Construction of pile foundation of the ‘Postal Cittadel’ in the direction center of Naples
M. Santusossu, G. Rizzi & L. Diamanti

Circular slurry wall sets record in Africa
J. M. Seitz

Messe Turm, foundations for the tallest building in Europe
H. Sommer, G. Tamaro & C. DeBenedittis

Farmers Avenue Road Crossing, Castle Mall development, Norwich
D. Twine & R. H. Wright

Measures on the application of concrete filling pile in the cold areas of China
Wang Li-hua

Bearing capacity of large diameter piling by the Internal Boring and Bottom Enlarging Installation Method: NAKS
I. Yanashima

2. Recent technological developments in deep foundations without soil excavation

Deep mixing technology to improve the bearing capacity of a very soft clayey soil under an earth embankment
A. Balossi Restelli, M. Bertero & E. Lodigiani

The development of a new type precast concrete pile
R. A. Bullivant

Predicting the bearing capacity of sheet piles under vertical load
M. G. Bustamante & L. Gianeselli

The effect of bitumen slip coating on the driveability of precast concrete piles
G. A. Chapman, J. P. Seidel & J. P. Wagstaff

Some limits to the use of jet-grouting
A. Chiari & P. Croce

Steel bottom/driven piles in coral formations problems: Skin friction improvement method
F. Danese & G. Botto

A monitoring system for the quality assessment of the jet grouting process through an energy approach
B. De Paoli, C. Stella, A. Perelli Cippo & L. Locatelli

Reinforcement of subsoil under the foundations of historical buildings in Cracow using deep injection techniques
J. J. Domski

Example applications of a new type of steel, driven pile: ‘Multiton’
A. Fioruzzi, P. Ceretti, L. F. Albert & S. Marchetti

Measurement and analysis on the bearing behaviour and driving effects of piles in Shanghai region
D. Z. Gao & H. L. Xu

The gravel piles as an alternative method of deep foundations
Z. Grabowski & Z. Zwech

Field tests of soft clay stabilized by stone columns in coastal areas in China
Jie Han & Shulin Ye

The use of high strength H bearing piles in Hong Kong
J. Ho & L. Weber

Increased project economy by field monitoring of deep soil compaction
B. Lindberg & K. R. Massarsch

P-y curves from DMT data for piles driven in clay
S. Marchetti, G. Totani, M. Calabrese & P. Monaco
Bearing capacity of precast concrete piles with step tapered base
H. Murakami & A. Ohshima

Construction of piled raft foundation for high rise building using precast concrete piles
K. Nishio & K. Maehara

Founding in dolomitic formations in Southern Africa with a history of the development of the design and installation of predrilled precast piles
H. G. Norton & G. S. Paterson

A new deep foundation composed of soil-cement mixture and steel tubular pile
T. Okamoto, T. Tamura, K. Takano, M. Hayashi, H. Shimaoka, T. Homma & S. Chida

Tubex grout injected pile: loading test
E. Revoort & E. Janse

Instrumented loading tests to failure on a very long, steel, driven, cast in situ multiton pile
G. F. Rocchi, L. F. Albert, O. Vacca & G. Totani

Bearing capacity of precast nodular piles in Tianjin soft clayey soil
Xu You-zai & S. Yabuuchi

3. Recent developments in pile design
Analysis of seawalls on pile foundations subject to dynamic breaking wave forces
A. F. Abouleid, H. H. Elmamlouk & T. M. Hassan

Use of highly stressed piles to control settlement
C. N. Baker, Jr, B. E. Smith & H. Nielsen

Oslo City: Deep basement with permanent sheet pile walls. High strength concrete piles
O. Bruskeleland

A study on compression of shaft of individual pile
Chen Zhuchang & Song Rong

Reinforced concrete pile design for lateral loading
T. G. Davies & M. Budhu

Construction of a deepwater buoy terminal in the Port of Rotterdam: Pile installation aspects
J. G. de Gijt, C. N. van Schaik & R. E. Roelsema

Solution methods for deep foundations in the Vistula River delta
E. Dembicki & F. Loska

Analysis of changes in the state of the capacity of soils consolidated by injections in the light of numerical studies
W. Domski

Channel Tunnel: Foundation engineering at the UK Portal
J. C. Duggleby, P. J. Avgherinos & A. J. Powderham

Behaviour of driven piles estimated from stresswave measurements on dynamic probes
H. E. Eriksson

Royal Christianina Hotel: Basement with permanent sheet pile wall, ‘up-and-down’ method
J. A. Finstad

Plastoeleastic analysis of bearing capacity for soil anchor
Hui Yongning & Xu Ronglie

Prediction of load-settlement curve of pile groups in Egyptian soils
M. M. Kurkur

Load-displacement behavior of laterally loaded rigid drilled shafts in clay
P. W. Mayne & F. H. Kulhawy

Steel sheet piling used in the combined role of bearing piles and earth retaining members
G. McShane

A three dimensional model for single piles in sand
T. Q. Nguyen & A. M. Hanna
Laterally loaded pile under large deflection
M. Okahara, S. Nakatani, T. Asama, M. Miki, S. Koyama & R. Ueno
431

The effect of wall stiffness on bending moments
D. M. Potts & R. A. Day
435

Quay walls for deep water
H. H. Sass
445

Pile bearing capacity prediction with cone penetration test and dynamic loading test
G. Strniša & L. Ajač
451

A finite element model for the design of pile foundations
M. Tantini
457

Settlement behavior of the raft foundation with friction piles
K. Tamashita & M. Kakurai
461

4. Equipment installation: Recent developments

The use of ‘bounded fluid’ preloading cells for the foundation piles of a viaduct on the high-speed freeway in Naples
A. Bellini, R. De Domenico, L. Gagliardi & P. Polenghi
469

A new model of LPC removable extensometer
M. G. Bustamante & B. Doix
475

Pile load test results using the Statnamic Method
M. Janes, P. Beringham & B. Horvath
481

Geotechnical instrumentation for a full-scale study of negative skin friction in soft clay
J. A. Little, G. Price & K. Ibrahim
491

Ground vibrations caused by pile installation
A. R. Selby
497

Drilling equipment for large diameter bored piles
E. Stötzer, M. Beyer & S. Schwank
503

Underwater bracing without submergible maneuvers of driven piles
M. B. Wechsler
517

The world’s largest hydraulic vibratory hammer/extractor
R. H. Whisler Jr
521

5. Pile testing

Simplified modelling of the dynamic behaviour of berthing structures
A. Alem & J. G. Steffert
525

A new method for determining the yield load of piles: P - ΔK/AP² method
Shen Baohan & Niu Dongsheng
531

Study of the load bearing capacity of a pile of considerable length bored using bentonite mud
M. Bustamante, L. Gianeselli, M. Bertero & A. Paviani
535

Behaviour of large diameter bored piles in overconsolidated cohesive soils
V. Cotecchia & L. Monterisi
543

Load-deflection prediction for laterally loaded piles based on N-SPT values
L. Décourt
549

Stress-wave analysis of large steel pipe piles and construction of underwater pile caps for bridge piers
K. Fujita, Y. Fuse, Y. Yamaguchi, A. Uchida & I. Sandanbata
557

Stress development in sand due to installation and uplifting of screw anchors
A. Ghaly & A. Hanna
565

Determination of the bearing capacity of screwed-in piles by dynamic pile testing
P. Gilles, E. Tancre, E. Lousberg & F. De Cock
571

Short and long term shaft resistance of driven instrumented pile in soft clay
M. M. Hamza
579
Stansted Airport vertical and lateral load tests on bored pile elements to be used in a retaining wall
S.Hope, K.Ho, G.Price & I.F.Wardle

Shape estimation method for cast-in-situ piles based on the stress wave theory

Prediction of bearing capacity of piles by pile dynamics
N.Kawabata, T.Sakai, S.Kondo, H.Kanai, Y.Kobayashi, T.Oki & S.Nishimura

Bearing capacity of driven piles from tests on site
D.Levacher & J.P.Levillain

Centrifugal modelling of stress-reducing piled foundations on sand
A.Lyndon, J.G.Turner & M.J.Wei

Dynamic pile tests on in-situ concrete displacement piles
K.Meier & H.Meseck

Faults detecting in foundation piles and sheet pile walls with ultrasonic investigations
G.Mor

Negative skin friction on coated and uncoated model piles
V.K.Puri, B.M.Das & U.Karna

Interpretation of Sonic Coring results: A research project
R.T.Stain & H.T.Williams

Some practical experiences with low strain integrity test on driven and bored piles
G.Strnisa & I.Lesjak

Model pile tests to determine the effects of installation method and form on load transfer under static load
L.Stuckrath & F.Descoeudres

Optimal pile driving
H.v.Koten

Bearing capacity of large diameter steel pipe pile determined by static loading test and dynamic testing
G.Vogrinčič & G.Strniša

Dynamic testing of H-piles and HDB sites
J.Wei, Y.S.Heng, C.S.Lok & M.K.Chong

The prediction of load-displacement characteristics for axially loaded piles
Xu He & Chen Zhuchang

587
595
601
605
611
617
625
627
633
641
647
655
659
665
673