### TENTH EUROPEAN CONFERENCE ON SOIL MECHANICS AND FOUNDATION ENGINEERING

## Firenze 1991

# ITALIAN CONTRIBUTION TO THE CONFERENCE THEME

Deformation of soils and displacements of structures

The Associazione Geotecnica Italiana (AGI) and the companies TERRA ARMATA, METROROMA and SELM are pleased to offer the present Volume to all the participants in the Tenth European Conference on Soil Mechanics and Foundation Engineering (X ECSMFE - Florence, May 1991). Special thanks must go to all the Authors for their cooperation, and to A.A. Balkema Publishers for having granted permission to reprint the papers which have been included in the Proceedings of the Conference.



## metroroma



#### **FOREWORD**

When AGI proposed the other European Member Societies of the International Society of Soil Mechanics and Foundation Engineering the theme "Deformation of Soils and Displacements of Structures" as a title for the X ECSMFE, it was aware that the Italian contribution would be of remarkable quality both from a technical and scientific point of view.

However, the response of the Italian colleagues was all beyond expectations, and the papers submitted were so numerous that they largely exceeded the number of pages assigned to the Italian Member Society within the proceedings of the Conference.

Therefore, a Scientific Committee was appointed to prepare a special Volume - edited by AGI - in which all Italian papers regarded as valid would be collected and, among them, to select for publication in the proceedings of the X ECSMFE those which could be representative of the Italian activities in the field even with the limited space assigned.

The Associazione Geotecnica Italiana hopes that the present Volume will be considered as a further contribution to the success of the Conference.

A.G.I A. Burghignoli - L. Cavalera - V. Chieppa - M. Jamiolkowski - C. Mancuso - S. Marchetti - V. Pane - P. Paoliani - F. Silvestri - F. Vinale - E. Vittori: Geotechnical characterization of Fucino clay	pag.	1
U. Amagliani - A. Balossi Restelli - G. Canetta - A. Colombo - R. Nova: Settlement of a tall building induced by a tunnel excavation	"	15
L. Belloni - D. Morris - M. Tanzini: Stress variations during construction in a rockfill dam	"	21
M. Beomonte - A. Lupo: Control Measurements in a Tunnel Excavated in Rock	"	25
G. Berardi - L. Caroti - G. Giunta - M. Jamiolkowski - R. Lancellotta: Mechanical properties of Upper Pisa Clay	"	29
R. Berardi - R. Passalacqua: Rigid circular plate on sand. An Experimental investigation	"	33
E. Bilotta - V. Caputo - C. Viggiani: Analysis of soil-structure interaction for piled rafts	. "	37
M. Borsetto - F. Colleselli - P. Colombo - G. Corti - D. Faiella - G. Giuseppetti - G. La Barbera - G. Mazzà - L. Tripiciano - P. Varagnolo: Settlement analysis of main buildings in power plants by means of 2-D and 3-D models	"	41
G. Calabresi - C. Tamagnini - S. Rampello: Influence of a soil nailing application on tunnel excavation in slightly overconsolidated clays	"	47
V. Caputo - A. Mandolini - C. Viggiani: Settlement of a piled foundation in pyroclastic soils	"	53
C. Cherubini: Compressibility characteristics of the Matera Blue Clays as determined by means of statistical correlations	**	59
E. Chouali - A. Fruguglietti - J.J. Sevestre - R. Tornaghi: Fondation à puits réalisée par jet grouting dans un sol veseux		63
V. Cotecchia - A. Salvemini - N.A. Ventrella: Ground movements and engineering structure damage caused by the November 23, 1980 earthquake (Italy)		69
T. Crespellani - A. Ghinelli - G. Vannucchi: Site monitoring for deep excavation in the historic centre of Florence		· 77
G. Dalerci: Analysis and interpretation of axial load tests on not instru- mented piles		' 81
G. Dalerci: The beam of finite length on elastic subgrade and the Wink ler's hypothesis		· 87
P. De Simone - A. Ghersi - R. Mauro: Statistical approach to beams of Winkler foundation		. 93
L. Esposito - A.P. Ferrante: The swelling behaviour of compacted classis		" 99

F. Federico - A. Musso: Pore pressure dissipation in highly fissured clays	"	103
V. Fioravante - R.N. Taylor: Centrifuge Modelling of Embankment Construction on Soft Clay Foundations	"	109
G. Gatti - A. Cividini - G. Galloni: Characterization of soil properties from large scale load tests	"	113
V.N. Georgiannou - S. Rampello - F. Silvestri: Static and dynamic measurements of undrained stiffness on natural overconsolidated clays	"	119
V.N. Ghionna - M. Manassero - V. Peisino: Settlements of large shallow foundations on a partially cemented gravelly sand deposit using PLT data	"	125
R. Meriggi - M. Soranzo - A. Tondolo: Analysis and control of settlements under a railway embankment	"	131
R. Nova - L. Montrasio: Analysis of settlements of shallow foundations on sand	"	135
A. Paviani - G. Pagotto: New technological developments in soil consolidation by means of mechanical mixing, implemented in Italy for the ENEL Power Plant at Pietrafitta	"	141
F. Pelli - R. Vanzini: Seismic stability of offshore structures on sloping seabed	"	147
G. Sembenelli - P. Sembenelli: Displacements and Strain Measured on a High Reinforced Soil Structure	"	153
TECHNICAL CONTRIBUTIONS		
TERRA ARMATA  F. Fiorentini - F. Spiti - A. Tibaldi: Reinforced Earth on poor soil	"	163
METROROMA		
<b>A. Nardocci - L. Albert:</b> Geotechnical problems related to the widening of rail-track embankments without discontinuing the service	"	167