



# RECENT ADVANCES IN RIGID INCLUSIONS

## WS 5

### ORGANIZATION

TC211 | Ground Improvement

### DATE

25 August 2024 / 9:00 - 18:30

### LOCATION

Altice Arena, Lisbon

### WORKSHOP FEES

Delegates ECSMGE 24: EUR 100

Non-delegates: EUR 185

## INTRODUCTION / SUMMARY

Within the framework of the XVIII European Conference on Soil Mechanics and Geotechnical Engineering held in August 2024 in Lisbon, TC211 board is organizing a Workshop dedicated to the theme: Recent advances in rigid inclusions.

Rigid Inclusions (RI) have been developed and used in the second half of the twentieth century all over the world, mainly on an empirical basis. The beginning of this millennium witnessed the rise of RI projects and their complexities. Recently, numerous actions such as full-scale or reduced-scale experiments, numerical modelling and feedback from on-site projects have led to a better understanding of the rigid inclusions behavior.

The short course presents the recent advances in RI as outlined by contractors, consultants, and academics across the World. The course will cover learnings of different countries or universities in terms of design approaches, methods, and quality control for a variety of project applications.

### PROGRAMME

#### 9:30 – 9:45 Opening

Fanny Maucotel and Jérôme Racinais (Menard Group)

#### 9:45 – 10:25 Use of Rigid Inclusions for Foundations of Container Yards

Jian Chu (Nanyang Technological University)

#### 10:25 – 11:00 Origin and development of rigid inclusions in Portugal. Main challenges and perspectives for the future

Antonio Cristovao (Keller Portugal)

#### 11:00 – 11:20 COFFEE BREAK / NETWORKING

#### 11:20 – 11:55 Overview of rigid inclusion design in Germany. Focus on the LTP interaction and on the CO2 consumption

Christopher Tinat and Birthe Knabe (Menard GmbH)

#### 11:55 – 12:55 Polish Recommendations for Ground Improvement with Rigid Inclusions - Design, Execution, Quality Control

Michal Topolnicki (Keller Polska)

#### 12:55 – 14:45 LUNCH TIME

#### 14:45 – 15:25 The use and codification of Rigid Inclusions in the US

Sonia Swift (Menard USA)

#### 15:25 – 16:15 Learnings (in static and seismic conditions) from the French national ASIRI+ project

Jesus Perez Herreros and Fahd Cuirra (Terrasol)

#### 16:15 – 16:35 COFFEE BREAK / NETWORKING

#### 16:35 – 17:20 New Insights on the Seismic Response of Rigid Inclusions considering Strength and Stiffness Degradation of Grout and Improved Numerical Boundary Conditions

Armin W. Stuedlein (Oregon State University)

#### 17:20 – 18:00 Overview of future Eurocode 7

Cyril Plomteux (Menard Group)