Book Review

Soil Mechanics, by Roberto Nova, ISTE/Wiley, 2010; ISBN: 978-1-84821-102-5 (hardcover)

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Knowledge of soil mechanics and soil behaviour is essential for prognostic estimates of the displacements and internal actions and stresses of a structural system founded on the soil. Thus the feasible knowledge of soil mechanics is very important from different engineering points of view, e.g. geotechnical engineering, land use and urban planning, foundations design and construction, earthquake engineering, soil-structure interaction modelling and analysis, even building and structures insurance companies.

The book consists of seven chapters that help the reader to pass different levels of abstract thinking related to soil modelling. The text, written on 395 pages, follows consistent transient logic. It starts with some basic concepts, which are necessary prerequisites to pass from discrete nature of the soil to its continuum representation.

Applicable mathematical formulations are developed, based on the concept that soil is a special medium obtained by “overlapping” of a solid and fluid continuum. Solid continuum is introduced by modelling the “soil skeleton”, composed of mineral particles, and the fluid continuum is introduced by modelling the fluid or the fluid mixture, seeping through the voids. Once mathematical models, describing the mechanical behaviour of the soil skeleton, and a conceptually equivalent law ruling the motion of the fluid with respect to the skeleton are formulated, the author proceeds further with some

tests and experimental results. Latter are used for verification of the proposed mathematical models and to make them reproduce reliably the soil behaviour for different engineering applications. The last chapter deals with numerical approaches, which can be used for solving the system of differential equations, of the soil mechanical problem with relevant boundary conditions, by means of computers.

Comprehensive bibliography on the state-of-the-art is supplied at the end of each chapter respectively. Thus, about 150 references are appointed for further reading and clarifying by those, who are interested in soil mechanics problems.

The book is useful and pleasant reading, addressed to all, students of civil engineering, geotechnical engineering and geology, and practicing civil and geotechnical engineers. It's price makes the book suitable for the university, research institutes and public libraries, and of course it can be a really valuable part of any private library.

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