IAS Distinguished Lecture

Research and Practice in Engineering
The Rion-Antirion Bridge Foundation Design

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Date: 15 November 2017 (Wednesday)
Time: 10:30am – 12:00nn (Light refreshments will be served from 10:00am to 10:30am)
Venue: Connie Fan Multi-media Conference Room, 4/F, Cheng Yick-chi Building,
City University of Hong Kong

Abstract

Until the late eighties nonlinear behaviour of foundations had received little attention from the earthquake engineering community whereas their cyclic behaviour had been extensively studied with the development of impedance analyses in the early seventies. The situation changed after the 1985 Michoacán Guerrero earthquake: observations of foundations failures in Mexico City made during the post earthquake investigations were the starting point of a vast research program whose goal is to develop a full understanding of the seismic behavior of shallow foundations and to establish practical guidelines for their seismic design and assessment. This thorough understanding of seismic behaviour of shallow foundations served as a basis for the development of a new innovative concept required by the design of the RION-ANTIRION Bridge (Greece). The foundation design of this multiple spans cable stayed bridge is mainly controlled by the seismic demand imposed to the foundations and its concept combines the simplicity of capacity design, the conceptual facility of construction and enhances the foundation safety. On June 8, 2008, the bridge was shaken by the ACHAIA-ILIA earthquake (moment magnitude 6.5). Although significant motions occurred at the bridge location (approximately 30km away from the epicentre), no serious damages were observed, thereby validating the adopted solution.

(Joint work with Professor Jean Salençon, Senior Fellow, Institute for Advanced Study, City University of Hong Kong)

Biography

After few years, at the Laboratory of Solid Mechanics at Ecole Polytechnique and in a geotechnical engineering company, Alain Pecker founded his own design office Géodynamique et Structure in 1981 and remained President and CEO of the company until his retirement in 2015. He is now consultant. In parallel to his design activities, Alain Pecker is presently Professor at the Ecole des Ponts et Chaussées in Paris, where he has been teaching since 1974, and at the School for Advanced Study (IUSS) at the University of Pavia in Italy. He is the president of the National Committee for Seismic Codes, expert for the European Committee of Normalisation on Seismic Design and member of the Scientific Committee of the International Seismic Safety Center (ISSC) of the International Atomic Energy Agency (IAEA). He is a member of the French National Academy of Technology.

Most of his professional career has then been dedicated to Soil Dynamics and Earthquake Engineering. He has been involved in the seismic design of worldwide important civil engineering structures. He was the first to introduce the notion of capacity design for foundations, allowing the implementation in geotechnical earthquake engineering of a new concept, borrowed from structural analysis. Recently, he focused on a formulation of nonlinear soil structure interaction analysis for seismic loading allowing to move from force based design to displacement based design of foundations.

Professor Alain Pecker has been keynote speakers in many international conferences. He is the author or co-author of seven books on Soil Dynamics and Earthquake Engineering and has written 48 publications in international peer reviewed journals and 85 communications in international conferences and symposia.

Online registration: www.cityu.edu.hk/ias/events

All are welcome
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