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DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
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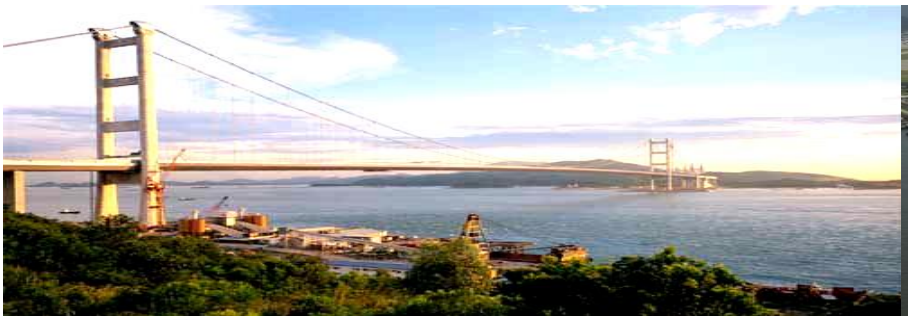

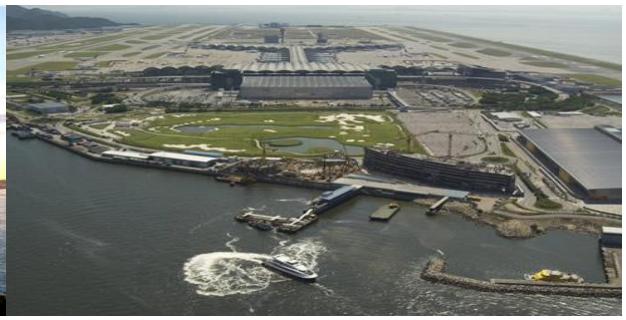

Risk of Infrastructure with Changeable Geological Environment in Subsiding Region

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ABSTRACT

Coastal cities are enriched with Quaternary soft soil and water and are subjected to different kinds of natural disasters. Construction of underground infrastructures in soft soil stratum will change geological environment in long-term operation, thus inducing geological disasters. Prediction of long-term consolidation, seepage, and structure leakage induced geological disasters has been investigated by Shen et al (2006-2018). The content of the presentation is as follows:

(1) The blocking effect of underground structure on groundwater seepage is considered as the main reason of the land subsidence in downtown area of Shanghai. Calculation method of seepage and consolidation settlement considering water blocking effect of underground structures is proposed.

(2) Mechanism of shear stress generated in stratum is discovered, law of continuous deformation of stratum and underground structures is clarified. Calculation model of soft soil layer and underground structure deformation considering shearing effect is proposed.

(3) The mechanism of the deformation caused by groundwater seepage in soil and leakage in underground structure is discovered. A unified calculation model of soft soil consolidation-tunnel seepage-settlement deformation with drainage pass is proposed. Internal force distribution under the condition of tunnel joint leakage is determined.

(4) The disaster types of Shanghai metro system are analyzed. Methods of risk assessment of natural disasters and countermeasures of disaster prevention are proposed.

Date: **7 December 2018 (Friday)**

Time: **10:30 am - 12:30 pm**

Venue: **Room Z406, 4/F, Block Z,**
The Hong Kong Polytechnic University,
181 Chatham Road South, Hunghom, Kowloon,
Hong Kong

SPEAKER'S BIOGRAPHY

Prof. Jack Shui-Long Shen received his BSc. in Underground Space Technology from Tongji University in 1986 and his MPhil in Structural Engineering from the same university in 1989. He obtained his Ph.D. in Geotechnical Engineering from Saga University, Japan, in 1998.

Prof. Shen's research interests focus on Hazards Prevention Plan of Coastal Cities especially on the urban underground infrastructural system, smart maintenance of urban underground facilities. He published/edited six books, of which three conference proceedings published by ASCE. Prof. Shen published more than 300 technical papers in Journals and International conferences, in which over 180 papers were published in International Journals with total citation over 4800 times and **18 papers have been cited with top 1% (ESI)**. Prof. Shen's H-Index in Google Scholar is 41, in SCOPUS is 40, in Web of Science is 35 with total citation over 4700 in SCOPUS and over 5700 in Google Scholar.

Prof. Shen also serves as an Editor/Editorial board member of four International Journals, e.g. ***Canadian Geotechnical Journal, Geotextiles and Geomembranes***, ***Computers and Geotechnics, Elseveir; Marine Georesources and Geotechnology***, Taylor and Francis, ***Lowland Technology International***, and **Geotechnical Engineering** – SEAGS etc. and domestic journals.

***** All Interested Are Welcome *****

For further information, please contact Dr Zhen-Yu Yin at Tel. 34008470
Free Admission. Please reserve your seat with Ms Connie F.Y. Lam by email: fyc.lam@polyu.edu.hk.
Certificates of attendance will be provided to participants if they attend the whole lecture.