The Institution of Engineers, Malaysia

Bangunan Ingenieur, Lots 60/62, Jalan 52/4, Peti Surat 223, 46720 Petaling Jaya, Selangor Darul Ehsan
Tel: 03-79684001/2 **Fax**: 03-79577678 **E-mail**: sec@iem.org.my **IEM Homepage**: http://www.myiem.org.my

EVENING TALK ON TEST STUDY ON THE PULLOUT RESISTANCE OF SOIL NAILS USING TWO LARGE PULLOUT BOXES WITH INSTRUMENTATION

(Organised by the Geotechnical Engineering Technical Division, IEM)

BEM Approved CPD/PDP Hours: 2.0 Ref No: IEM17/HQ/242/T

Day/Date : Wednesday, 6th September 2017
Time : 5:30 pm – 7:30 pm
Venue : Auditorium, Wisma IEM, PJ
Presenter: Professor Jian-Hua YIN

Abstract:

Soil nails have been widely used for the stabilization of slopes, retaining walls, and excavations. The interface shear strength between a soil nail and the surrounding soil is a critical parameter required in the design analysis and safety assessment of a soil nailed structure. It has been found that a number of factors may influence the interface shear strength, such as the normal stress, soil properties, soil nail surface roughness, degree of saturation, and grouting pressure. This talk will focus on the influences of overburden pressure, grouting pressure, and the degree of soil saturation on the pullout resistance of a soil nail in a compacted completed decomposed granite (CDG) soil. The speaker first introduces the design and setup of two large-size pullout boxes with instrumentation for studying these influences. The two boxes have three features: (a) the normal stress on a soil nail in the box was kept as uniform as possible, (b) back water pressure could be applied to the CDG in the box to ensure a higher degree of water saturation, and (c) a special small-size tank was used to do pressure grouting. The test steps and instrumentation are explained in details, including placement of earth pressure cells, drilling, and installation of a soil nail. A series of tests on different overburden pressures, different grouting pressures, and different values of degree of saturation were carried out. From the test data analysis, the following observations and conclusions are summarized:

(a) The pullout box with instrumentation is suitable for studying the mechanism of the soil nail interaction with soil and the influences of certain factors.
(b) It is observed that stresses in the drill hole region were released, the stresses might be recovered a little, and the normal stress on the nail surface was increased due to confined dilation.
(c) The overburden pressure has little influence on the pullout resistance; but has certain influences when grouting pressure (GP) is large (the influence increases with the GP).
(d) The grouting pressure will increase the pullout resistance.
(e) The degree of saturation will weaken the soil strength and reduce the pullout resistance.

Profile of Speaker:

Professor Yin received a BEng degree in 1983 in Chinese Mainland, an MSc degree from Institute of Rock and Soil Mechanics of the Chinese Academy of Sciences in 1984, and a PhD from The University of Manitoba, Canada in 1990. Dr Yin has a mix of industrial and academic experiences. He joined Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University in 1995 as an Assistant Professor. He was promoted to an Associate Professor position in 1999, to a Professor position in 2002, and recently to the position of Chair Professor of Soil Mechanics in 2014. Professor Yin has a good track record in research and has played a leading role in development of advanced soil testing equipment, innovative fiber optical sensors, establishing a large-scale multi-purpose physical modeling facility for studying geo-hazards, organization of regional and international conferences. His research interests include (i) testing study of properties and behaviour of soils, (ii) elastic visco-plastic modeling, (iii) soft soil improvement, (iv) soil nails and slope analysis, (v) development and applications fiber optical sensors, (vi) soil-structure interface, and (vii) development of advanced/special lab test apparatus. Currently, Professor Yin serves as a Vice-President of International Association for Computer Methods and Advances in Geomechanics (IACMAG), Co-Editor of International Journal of Geomechanics (ASCE), and Co-Editor of Geomechanics and Geoengineering (UK). He has received the honours of the prestigious "JOHN BOOKER Medal" in 2008, "Chandra S. Desai Excellence Award" in 2011 from IACMAG, and delivered the high-status 2011 "Huang Wenxi Lecture" in Chinese Mainland.

Ir. Yee Thien Seng
Chairman, Geotechnical Engineering Technical Division, IEM

ANNOUNCEMENTS TO NOTE

- **Non-IEM members** may also attend the talk but will need to pay a registration fee of **RM50** and an administrative fee of **RM15.** GST is inclusive.
- Limited seats are available on a "first come first served" basis (maximum 100 participants). **To secure your seat, kindly register online at www.myiem.org.my.**

ADMINISTRATIVE FEE

- Kindly be informed that an administrative fee of **RM15** is payable for talks organized by IEM. GST is inclusive.
- IEM Student Members are however exempted.

PERSONAL DATA PROTECTION ACT

I have read and understood the IEM's Personal Data Protection Notice published on IEM's website at http://www.myiem.org.my and I agree to IEM's use and processing of my personal data as set out in the said notice.

CPD/PDP HOURS CONFIRMATION

Name:
.....

.....
Membership No/Grade:

.....
Signature:

.....