

# Talk on “Recent Advances in Column Technologies to Improve Soft Soils”

GEOTECHNICAL ENGINEERING TECHNICAL DIVISION



by Ir. Dr Ooi Teik Aun

**THE** public lecture on “Recent Advances in Column Technologies to Improve Soft Soils” was delivered by Prof. Jie Han on the evening of 21 July 2010 at the Prof. Chin Fung Kee Auditorium, Wisma IEM, Petaling Jaya, at 5.30 p.m. (see Figure 1) under the auspices of the Geotechnical Engineering Technical Division (GETD).

Prof. Jie Han is a professor in geotechnical engineering at the Department of Civil, Environmental and Architectural Engineering at the University of Kansas, United States. The talk was attended by more than 100 participants (see Figure 2).

Prof. Jie Han also conducted a 2-day short course in Petaling Jaya from 21 to 22 July 2010 on “Principles and Practice of Ground Improvement” under the auspices of AGSSEA and supported by the GETD. The event was attended by 75 participants.

During the lecture, Prof. Jie Han presented on the various methods of the installation of stone columns, deep mixed columns, low-strength concrete columns and composite columns. The load transfer mechanisms between columns



Figure 1: Prof. Jie Han delivering his lecture on “Recent Advances in Column Technologies to Improve Soft Soils”



Figure 2: Partial view of the participants during discussion time



Figure 3: Presentation of memento to Prof. Jie Han by Ir. Dr Ooi

and soils, and the design methods for the settlement, consolidation and stability of column-treated foundations were highlighted during the lecture. The concluding remarks of Prof. Jie Han in his lecture are:

- A variety of column technologies have been developed and successfully adopted for different applications
- Based on column stiffness, columns can be classified into flexible, semi-rigid and rigid columns
- Composite columns or combined technologies with columns have been increasingly used to combine their advantages
- Columns have functions of densification, pile effect, drainage and/or reinforcement
- Columns can fail not only due to bulge, crushing, shear and/or punching under compressive load, but also under shear, bending, tension and/or rotation under a combination of vertical and horizontal load
- Columns can be used to increase bearing capacity, reduce settlement, accelerate consolidation, increase stability and increase liquefaction resistance
- Theoretical or approximate solutions are available to design individual columns or composite foundations with columns
- Combined technologies with columns have complicated problems, posed challenges to design and provided opportunities for future research and applications

The talk ended at 7.30 p.m. with many interesting questions from the floor. Dr Ooi, on behalf of the GETD, thanked Prof. Jie Han for his most informative lecture and presented a certificate and token of appreciation to him (see Figure 3). ■