

# One-Day Seminar on Pile Foundation

GEOTECHNICAL ENGINEERING TECHNICAL DIVISION

reported by



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THE Institution of Engineers Malaysia's Geotechnical Engineering Technical Division (GETD) and the Malaysian Geotechnical Society (MGS) jointly organised a one-day seminar on Pile Foundation on 22 May, 2017, at Four Points Hotel in Puchong.

There were 7 speakers from different backgrounds, including a consultant, contractor and academician. A total of 96 participants attended the seminar. Below are summaries of the lectures.

**Lecture 1, by Ir. Neoh Cheng Aik:** Design and Construction of Driven RC Pile Foundations – Past and Present Experiences.

For most geotechnical works, including driven RC piles installation, design and construction are inseparable. In fact, the performance (capacity, settlement, structural integrity & durability) of driven RC pile is very sensitive to the way it is installed and to subsoil conditions. Ir. Neoh talked about the principles, design and construction requirements of Code of Practice in the past and present. He also presented case histories where construction of driven RC piles was defective and the necessary remediation steps. These were based on his recent experiences in several projects.

**Lecture 2, by Ir. S. Chandrasegaran Sundararaju:** Foundation Design and Construction of Barrette Piles.

First, Ir. Chandrasegaran gave an introduction to barrette piles and touched on several past projects, where barrette piles had been used successfully. He also talked about barrette design, installation process, new equipment developed to suit different geology & site conditions and techniques adopted to increase the carrying capacity of the barrette member.

**Lecture 3, by Ir. E.G. Balakrishnan:** Performance of Bored Piles Based on Instrumented Load Test Results.

Bored piles are widely used currently in all large infrastructure projects such as high-rise buildings in Klang Valley. The speaker talked about the basic design principles in practice, instrumentation details adopted in the field, instrumentation results and discussions on the findings covering the load distribution, shaft resistance, base resistance, correlation with SPT N values, rock quality designation (RQD), etc during the seminar.

**Lecture 4, by Ir. Assoc. Prof. Dr Dominic Ong Ek Leong:** Detrimental Effects of Lateral Soil Movements on Pile Behaviour.

Prof. Ong said deep excavation, tunnelling and river/tidal fluctuations are some activities which can induce lateral soil movements that can detrimentally impact nearby existing infrastructure. One major design concern, he said, is that the behaviour and mechanisms of complex soil-structure interactions that occur in such situations, are often still not well understood.

He presented on the latest developments in and the understanding of soil-structure interaction involving pile foundations subjected to lateral soil movements, with reference to successfully implemented projects or research outcomes based on finite element modelling, centrifuge experiments as well as field observations and interpretations.

**Lecture 5, by Ir. Wong Chen Jack:** Local Construction Practices and Geotechnical Performance of Rock Socketed Bored Pile in Sedimentary Crocker Formation in Sabah.

Ir. Wong said that, unlike drive-in or jack-in piles, the evaluation of pile performance in both capacity and deformation of bored pile, can be very subjective when it comes to deciding the required pile length or rock socket length during construction.

Dispute on technical requirements and, more often, on contractual issues arises during construction against the ideally designed cases. He shared his experiences in the bored pile construction in the local founding formation, namely Crocker Formation, along the west coast of Sabah.



Ir. Yee Thien Seng presents token appreciation to Ir. Neoh Cheng Aik



*Ir. Yee Thien Seng presents token appreciation to Ir. S. Chandrasegaran Sundararaju*

**Lecture 6, by Ir. Chow Chee Meng:** Jack-in Piles in Granite vs Limestone Formation.

Ir. Chow talked about recent experiences in design and construction of high capacity jack-in pile systems based on results of maintained load tests and settlement monitoring carried out on completed structures. He also shared the comparison between the performance of the piles in granite formation and limestone formation.

**Lecture 7, by Ir. Liew Shaw Shong:** Planning and Interpretation of Instrumented Lateral Pile Design Performance & Testing with a Semi-Restrained Pile Head Condition.

Ir. Liew described the planning of the instrumentation in a hollow circular spun pile, with an intended structural frame setup to attain a fixed head connection for a lateral load test. The purpose of this lateral pile validation test is to establish the lateral stiffness response of the high free standing pile group with gigantic pilecaps to support the bridge deck with high demand of operational accuracy of support deformation.

Later, he presented the procedures of devising the methodology of the testing scheme and interpretation for in-drection validation with testing constraints at site. He also discussed pile head connection fixity problem and the quantified theoretically in compliance with the assumption made.

After the talks, the seven speakers fielded a number of questions from the audience and GETD and MGS presented souvenirs to the speakers as a token of appreciation. ■