

TECHNICAL TALK ON SHARING SOME NOTABLE EXPERIENCES ON SUCCESSFUL USE OF BAMBOO-GEOTEXTILE BUOYANT SYSTEM IN HEAVY CONSTRUCTION OVER VERY SOFT SUBGRADE OF GREAT DEPTH

(Organised by Geotechnical Engineering Technical Division, IEM)

BEM Approved CPD/PDP Hours: 2 Ref No: IEM18/HQ/315/T

Day/Date : 16 August 2018 (Thursday)
Time : 5:30 pm – 7:30 pm
Venue : Tan Sri Ir. Prof. Chin Fung Kee Auditorium, Wisma IEM, PJ
Presenter : Ir. Associate Professor Dr. Low Kaw Sai

Abstract:

After some 20 years of strenuous research and development this invented Bamboo-Geotextile Buoyant System has to date being successfully commercialized and being accepted and received reasonably well by the local construction industry from private and public sectors alike. It is essentially an expedient, green and sustainable system of construction designed to solve a critical contemporary civil engineering problem of supporting safely very heavy construction e.g. tall embankment and building platforms etc. safely over deep soft subgrade without attracting severe post-construction problems particularly excessive settlements. The method is founded on simple but established principles of creating a large but affordable surface area for efficient stress minimization and distribution which together with exceptional bending and buoyancy capabilities of bamboo culms acted as 'beams' on soft subgrade would significantly attenuate and reduce original vertical applied stress on soft subgrade below. Consequently, it avoids stress concentration on soft subgrade and thus preventing failure of the supporting structures due to punching shear and excessive ground settlement in the weak compressible layer. As both the area and amount of buoyancy and thus the attenuation effect on the entire system can be increased by doubling or even tripling the same arrangement of bamboo-geotextile system in subsoil foundation readily during construction, the extent of improvement to achieve too can be controlled at ease. This invention is truly green and sustainable that it overcomes not just an unresolved engineering problem but its large usage of bamboos will generate positive social impact by imparting considerable financial benefits to rural and indigenous population, an advantage rarely realizable in most major projects anywhere. The formal recognition of this system of construction came with its inclusion in "Guidelines for Construction on Peat and Organic Soils in Malaysia" issued jointly by the Ministry of Works of Malaysia and CIDB in October 2015. This has since witnessed more ready acceptance this method of construction among the construction fraternities from all sectors in Malaysia. It is believed that the many successes recorded for this system prior to and after the issuance of the above Guidelines together with continuing experimental research cum theoretical development will eventually permit this 'creation, design and product' (ciptaan, rekaan and buatan) of Malaysian origin will eventually opportune to venture beyond Malaysian soils.

Profile of Speaker:

Born in Kuala Lumpur, Malaysia, in 1954, Dr. Low Kaw Sai is currently an Associate Professor at the Civil Engineering Department of Universiti Tunku Abdul Rahman since 2006. Professionally, he is a registered Professional Engineer (P.Eng.) with the Board of Engineers Malaysia (B.E.M.), a Fellow of Institution of Engineers Malaysia (F.I.E.M.) and an ASEAN Chartered Professional Engineer (ACPE), Member of American Civil Engineers (M.ASCE) and so on. After receiving his B.Sc.(Hons.)(Civil Engineering) and Ph.D. degrees in Civil Engineering from University of Sunderland (U.K.) he worked in the British Department of Transport, Highway Section, for a period before returned to Malaysia in 1986. Thereafter, he assumed myriad positions in different organizations and accumulated varied engineering experiences. He then went for a Post-doctoral Program at Universities of Oxford and Cambridge, England in 1989 and subsequently owned his modest engineering consultant firm between 1996 and 2006. Since becoming an academics at Universiti Tunku Abdul Rahman(UTAR) to teach and conduct R&D with particular emphasis to provide green, sustainable and cost effective solutions for a number of contemporary civil engineering-related problems. Other notable works at UTAR include successful on-going supervision of a number of Masters/Ph.D. postgraduates where a number of them are working professionals. To date, more than 30 technical papers are published and at least 13 National and International awards are bestowed.

Ir. Lee Peir Tien
Chairman, Geotechnical Engineering Technical Division, IEM

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