

***Webinar talk on
Introducing ‘Geobamtile’, A Well-Tried
Technique of Malaysia Origin
for Deep Softground Treatment***

3 April 2021 (Saturday)

2.30pm - 4.30pm

Organised by: Highway and Transportation Engineering Technical Division



Speaker: Ir. Dr. Low Kaw Sai

**BEM Approved CDP: 2 Hours
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**Registration fee
Student Member: Free
IEM Member: RM15.00
Non-Member: RM70.00**

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SYNOPSIS

Due to its well-trying record in Malaysia construction scene Bamboo Grid Frame-Geotextile Buoyant System coined as 'GEOBAMTILE' has gradually become an acceptable green and sustainable ground treatment method among public and private sectors for application in heavy construction over deep soft subgrade consists of materials like peat, marine clays, mangrove swamp, ex-mining slimes etc. Objectively, any expedient ground treatment method deems satisfactory for soft ground must fulfil, among others, must effectively refrain the development of significant post-construction settlements; may it be of total and/or differential nature. Principle-wise 'GEOBAMTILE' relies on its great minimisation of possible vertical stress that may otherwise be applied onto the soft subgrade below through the creation of large plane area inexpensively. Buoyancy effect derivable from large number of bamboo culms deployed in soft subgrade usually of high moisture content would help in further stress reduction. As a result, weak soft subgrade would be in a better position to sustain the significantly reduced vertically stresses which can be caused by high concentrated load. Additionally, effective distribution of stress applied via large plane surface area created would result in smaller stress difference shown between any two points. This in practice would mean minimisation of differential settlement produced. It should be realised that any construction may it be building platform and embankment etc. that build directly over soft subgrade represents a pure geotechnical problem where it depends solely on the mechanical properties of subgrade for support and the settlement that might entail which is in compliance with Terzaghi's 1-dimensional consolidation theory in arriving at its primary consolidation stage. While the amount of settlement is an important issue but it is found in practice that the real problem facing construction over soft ground lies in its heavy time dependency nature of achieving the expected settlement in subgrade. In the case of GEOBAMTILE technique it is found that by interfacing/interlayering the soft subgrade below and heavy construction above by one or more tiers/layers of bamboo-grid-frame/geotextile i.e. 'GEOBAMTILE' it would instantly transform the problem from that of pure geotechnical to that of soil-structure interaction type. The main disparity is the latter no longer succumb to time-dependency limitation. Instead, being a soil- structure interaction problem it would comply to Newton's First Law where the settlement caused by vertical load applied upon GEOBAMTILE and the subgrade in contact with it would at any time occur immediately without delay and will cease when action due to load applied equals to the reaction provided by GEOBAMTILE and soft subgrade combined i.e. when an equilibrium state is reached. In fact it is the non-time dependency which constitutes a most desirable requirement for construction over soft ground has often rendered GEOBAMTILE an attractive method for adoption. Apart from great time-saving, simplicity in construction technique and process coupled with the use of natural materials like bamboo and industrial wastes have all make it a very cost effective, green and sustainable approach very receptive within construction industry in Malaysia. Moreover, the use of large quantity of bamboos has inadvertently impart significant positive social impact by offering direct financial benefit to rural and indigenous population who harvest the materials.

SPEAKER BIODATA

Born in Kuala Lumpur, Malaysia in 1954, Ir. Dr. Low Kaw Sai has been a Professional Engineer over the past 30 years. He is also a Fellow of Institution of Engineers Malaysia, a member of American Society of Civil Engineers and ASEAN Chartered Professional Engineer. After having received his B.Sc.(Hons.) and Ph.D. degrees in Civil Engineering from University of Sunderland, U.K. he worked in the UK for a period of time before returned to Malaysia in 1986 where he assumed a myriad of positions in construction, consultancy and research organizations in both private and public sectors alike where he has acquired a wealth of engineering experiences in excess of 40 years in a number of fields ranging from highway, structural to geotechnical, just to name a few. In 1989 He attended a Post-doctoral attachment at Universities of Oxford and Cambridge in England under the British Council Fellowship programme. Thereafter, he continued with his engineering practice till 2006. In between he was elected a member of International Who's Who Professionals, USA in 2001. Memberships- wise, he is a member of Standards Institution, Creativity & Innovation Association, Senior Scientists Association, an Editor, Reviewer, Technical Expert and Assessor, etc. in Malaysia. In 2006, he joined Universiti Tunku Abdul Rahman(UTAR) as an academic with the appointment of Associate Professor to teach and conduct R&D with an aim to provide green, sustainable and cost effective solution(s) for contemporary engineering problems. During his tenure a number of Masters/Ph.D. postgraduates were successfully supervised. On publication, some 28 technical papers were published while at least 11 National and International awards are accrued to date. Additionally, he has created 5 patented-inventions and a trademarked product with some of them being successfully commercialized e.g. Bamboo Grid-frame Geotextile system (or GEOBAMTILE) for soft ground treatment, scrapped tyres wall for earth retaining etc. and have imparted some positive contributions towards Malaysian construction industry and society in general. At present, a modest plan is drawn up with the hope to introduce those proven invented systems of construction of Malaysia origin to venture out beyond Malaysian shore.