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Geotechnical Engineering

by ***Ir. Lee Eng Choy,*** *MIEM, P. Eng.*
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GEOTECHNICAL engineers have been facing intense challenges in the last decade, particularly within the last couple of years, with respect to public safety during occurrences of natural hazards such as the instability of slopes and the consequences of earthquakes. Public opinion in the area of safety of slopes had not been very encouraging. The ability of engineers to ensure the safety of slopes is increasingly being questioned. There is an urgent need to raise engineering standards of practice and improve public liaison in order to address this concern.

The recent spate of earthquakes in neighbouring Sumatra has attracted much public concern with regards to the stability of building foundations and slopes. Whilst Malaysia is not classified as an active earthquake region, we cannot discount the far-field effects of earthquakes occurring in neighbouring countries. The hazards of slope instability and soil liquefaction cannot be totally discounted. Conditions of loose earthfill can contribute to the instability of foundations sited above these soil strata. Earthfill slopes constructed by end-tipping methods result in loose soil conditions which present high risks during incidences of seismic loads.

The list of engineering hazards in the face of seismic loads does not end there as there are several other situations which warrant our attention. Engineers need to take cognisance of these hazards and their associated risks in the race to ensure the safety of our structures. Public perception of the engineer's role and competencies with respect to the above should remind us to revisit the safety aspects of our slope design and construction practices. Engineers need to continually revisit and reinforce their fundamentals in order to allow them to draw sound conclusions backed by quantitative analysis.

Positive steps have been taken by the Institution of Engineers, Malaysia, to produce guidelines, policies and procedures for engineering control of hill-site development. This Position Paper, which has been recently updated, is necessitated by numerous incidences of landslides around the country impacting residential and commercial buildings, resulting in fatalities and loss of properties. Several recommendations were put forward for the effective control of hill-site development after detailed study of geotechnical control systems for slopes implemented internationally, including the Hong Kong Geotechnical Engineering Office. At the same time, legislators, particularly in the state of Selangor, have moved ahead and developed a set of guidelines for the development on hill slopes. Engineers will need to work very closely with these legislators to ensure sufficient engineering input is incorporated in the implementation of projects on hill-site.

In the past, geotechnical engineering practice in Malaysia has been largely based on the British Standards. Although some aspects of ground engineering, particularly on site investigation, has been written as a Malaysian Standard, international developments largely influence the practice of engineering in Malaysia. The progressive withdrawal of the British Standards beginning in 2010 necessitates the development of the Eurocode and IEM is actively participating in the development of National Annexes, in particular EC7 for Geotechnical Works.

Engineers must continue to marshal their efforts towards promoting good engineering practices particularly in slope engineering and in improving public liaison. This will certainly go a long way in promoting a positive public perception of the engineering profession. ■