

# Talk on "Tsunami and Slope Stability Practice in Malaysia"

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Engr. Dr Ooi Teik Aun presented an evening talk to an audience of 106 people at the IEM lecture Hall on 22 September 2006. Engr. Dr Ooi started by stating that Malaysia is generally considered as a non-seismic risk country and as such the Uniform Building Bye-Laws has no explicit guidelines for buildings to be designed for seismic effect. The recent big earthquake events which occurred in Sumatra on 4 June 2000 and 26 December 2004 with measured magnitudes of 7.9 and 9.3 respectively, on the Richter scale, resulted in people having to be evacuated from their homes and office buildings in Penang, Kuala Lumpur, Malacca and Johore Bahru. Most significantly, there was loss of lives during the tsunami that struck Langkawi Island and Kuala Muda in Kedah and Penang Island on 26 December 2004.

The public at large are beginning to wonder whether their buildings, such as high rise offices and condominiums, where tremors were felt and in some cases, cracks had formed are indeed safe. Some of these residents in effect moved out of their high rise condominium to two storey houses because they did not feel secure in such tall buildings.

Back in 1982, the Public Works Department, Malaysia stated in a Keynote Address delivered at the Conference on Tall Buildings held in Kuala Lumpur that "Malaysia is actually located in the 'ring of fire' that marked the areas affected or likely to be affected by earthquakes and cautioned that Malaysia will experience in the future severe earthquake arising from the Sumatra and Andaman fault that runs the length of Sumatra and the Andaman Sea to the north of the Straits of Malacca". The interest in earthquake design amongst Malaysian engineers in fact

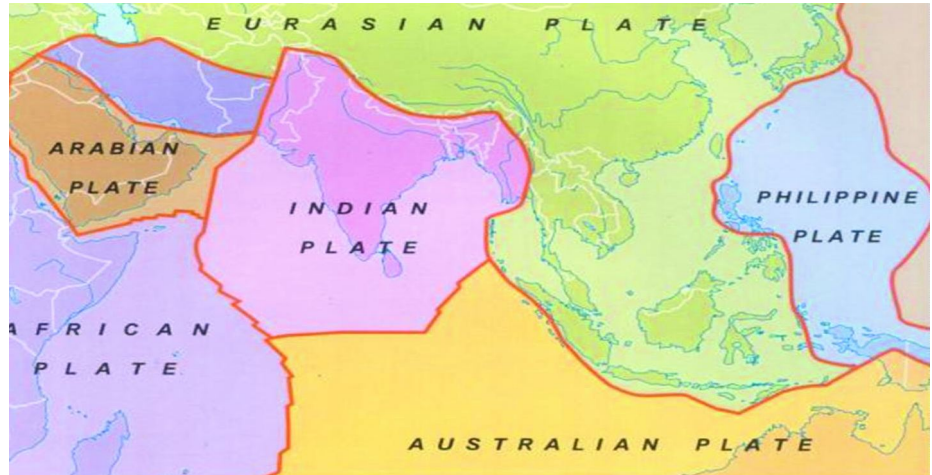


Figure 1: Plate boundaries

already started at that time. The Komtar Towers in Penang and the Penang Bridge built in the 1980s were in fact designed for seismic forces.

Malaysia is surrounded by two of the most seismically active plate boundaries namely the plate boundary between the India Plate which is part of the huge Indian-Australian Plate that underlies the Indian Ocean and the Bay of Bengal and the Burma Plate that is part of the Eurasian Plate on the west at the Sunda Trench off Sumatra and the plate boundary between Eurasian and Philippines Plates on the east (see Figure 1).

Large earthquakes originating from in and around these boundaries have resulted in tremors being felt in Malaysia. Prior to the December 2004 tsunami incident the maximum tremors felt on Modified Mercalli (MM) scale are VI for West Malaysia (see Figure 2) and VII for East Malaysia.

The lecture also reported briefly on the effect of the December 2004 Tsunami on

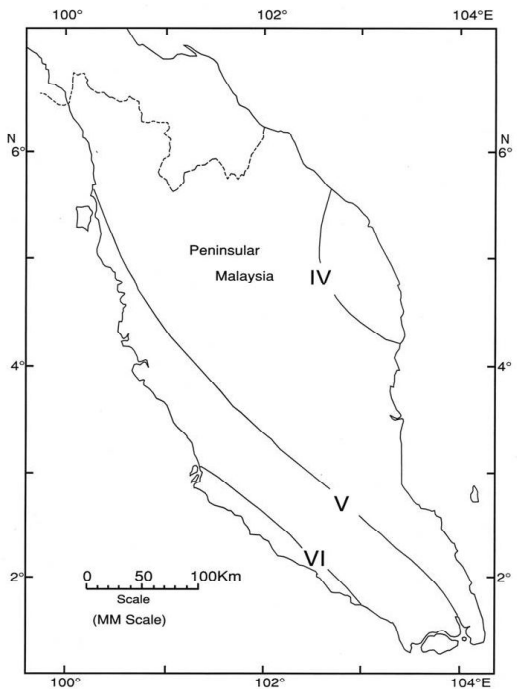


Figure 2: Modified Mercalli (mm) scale.

Penang Island and the Kuala Muda areas located at the Northern part of Peninsular Malaysia and not far away from the Bandar Aceh in Sumatra (where the whole town was destroyed during the December 2004 Tsunami). The lecture also presented the seismic design requirements in terms of different g values used in various dam slope stability design in Malaysia (see Table 1). ■

Dam Locations		Design g values
1	Gemencheh, Negeri Sembilan	0.10g
2	Sungai Selangor, Selangor	0.10g
3	Sg. Kinta, Perak	0.15g
4	Bakun, Sarawak	0.20g
5	Kelalong, Sarawak	0.30g