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The Institution of Engineers, Malaysia

# PRESS RELEASE

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**FOR IMMEDIATE RELEASE**

## "THE INSTITUTION OF ENGINEERS, MALAYSIA (IEM) ADDRESSES THE LONG-DISTANCE EFFECTS OF MAJOR EARTHQUAKES, AFTER THE MYANMAR EARTHQUAKE AFFECTING THAILAND"

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**April 11th –** The Institution of Engineers Malaysia (IEM) expresses its concern and extends its professional assessment regarding the recent 7.7 magnitude earthquake in Myanmar and its long-distance effects experienced in Thailand.

**Understanding the Seismic Event**

According to the United States Geological Survey (USGS) and regional seismic monitoring agencies, the earthquake's epicenter was located in Mandalay, Myanmar, at a depth of 10 km. Given the significant 7.7 magnitude, seismic waves traveled across long distances, causing tremors in Thailand despite being hundreds of kilometers away from the epicenter.
Reflecting on the Myanmar-Thailand case, the earthquake risk in Peninsular Malaysia is known from long-distance Sumatran earthquake sources and the sporadic local earthquakes that can hardly be gauged, for example the 2007 small magnitude Bukit Tinggi earthquake. For Sabah, it is a known risk, evidently after the 2015 magnitude-6 Ranau earthquake and perhaps the forgotten 1976 magnitude-6.2 Lahad Datu earthquake. For Sarawak, historically some magnitude-5 earthquakes have taken place near Tubau and Miri. Let's not forget that the rest of the connected lands in Borneo (Kalimantan) have recorded some magnitude-5 earthquake events.

For a stable plate like Malaysia, being away from the Ring of Fire, does give people a false sense that either there are no earthquakes, or the earthquake risk is so low to the point of being negligible. It is worth to note in Australia, which is tectonically similar to Malaysia, there is on average one potentially destructive earthquake event occurring every year somewhere within the continent. The reason of not seeing earthquakes occurring locally in Malaysia at such a rate is simply because of the much smaller landmass. The underlying rate of activity between the two places may well be of the same order. In the latest Australian building standards, areas with seismic hazard levels below 0.08g (for a 500-year return period) have been removed from the official hazard maps. This means that all buildings in Australia must now be designed for at least 0.08g, even in places where no earthquakes have ever been recorded.

Extremely low earthquake risk estimates can be misleading, especially in regions like Australia and Malaysia, where earthquakes are rare but still possible.

**Structural Implications**

Seismic waves from distant earthquakes can have varying effects depending on the geological and structural conditions of affected areas. In Malaysia, high-rise buildings, particularly those built on softer soils or reclaimed land, are more susceptible to experiencing long-distance tremors due to resonance effects. On the contrary, lower and mid-rise buildings, are more susceptible to experiencing local earthquakes. It is noted that the Malaysian building structures are generally designed to withstand wind actions, which in some forms, buildings can resist low acceleration tremors caused by long-distance seismic waves.

**Institution of Engineers Malaysia's Role and Recommendations**

As the leading professional learned society for engineers in Malaysia, IEM underscores the importance of continuous assessment and preparedness in Malaysia's engineering and construction sectors, advocating engineering excellence and public safety. Thus, for the past two decades, IEM has been actively engaging with the engineering community, before and after the draft and release of the first Malaysia seismic design standard MS EN1998-1.

The IEM urges for the following actions:

1. **For Code Drafters**: A state-of-the-art earthquake engineering philosophy is crucial, especially for regions with low-to-moderate seismic activity. Directly adopting methods from high-seismic areas is excessive and impractical. Requiring medium or high levels of earthquake-resistant detailing is not always suitable. However, it is crucial to set a minimum design standard for earthquake hazards—at least 0.07g for a 500-year return period—nationwide to ensure basic safety.
2. **For Policymakers**: Earthquake risk management is inherently a socioeconomic and political decision, requiring broad consensus. For lawmakers, enforcing seismic design regulations is only effective through legal mandates—without enforcement, compliance remains unlikely.
3. **For Design Engineers**: It is essential to move beyond traditional designs that consider only gravity and wind forces. The core principle of seismic design is ensuring buildings can dissipate energy effectively without collapsing. The goal is not to create earthquake-proof structures—which is both costly and unrealistic—but to enhance resilience.
4. **For Other Stakeholders**: Expecting improved building safety without any initial cost implications is an unrealistic assumption. The real cost of inadequate seismic design lies in casualties, repair expenses, and building downtime.

**Conclusion**

While Malaysia is not located within an active seismic zone, the recent Myanmar earthquake serves as a reminder of the potential impact of distant tremors (not forgetting the local earthquakes). Continued vigilance, proactive planning, and public awareness are crucial in ensuring safety and resilience against seismic risks.

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*For further information on this Press Release or*
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*at 03-78900130 or email to sec@iem.org.my.*

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**About the IEM**

*The Institution of Engineers of Malaysia (IEM) is a civil society organisation established to promote the science and profession of engineering in any of its disciplines and to facilitate the exchange of information and ideas related to engineering. Founded in 1959 and with a membership of over 40,000 today, IEM constitutes one of the largest professional organisations in the country. Amongst its many roles, the Institution plays an active part in supporting various sustainable socio-economic development of the country and in nation building. It represents the aspirations of its members, acts in the best interests of the public of whom its members serve whilst upholding the standing and image of the profession.*