PHYSICAL POWER TALK INCONJUCTION WITH ENGINEERS 2025

THE ADVANTAGES OF USING HIGH DAMPING NATURAL RUBBER BEARING UNDER SEISMIC ACTION FOR INFRASTRUCTURE PROJECT IN MALAYSIA

The Institution of Engineers, Malaysia

Organised by :

Civil and Structural technical Division, IEM

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DETAILS

9TH SEPTEMBER 2025
(TUESDAY)
11.00am - 12.30pm

SPACE 5, HALL 5, KLCC

Speaker:
Ir. Dr. Tzyy Wooi Teh

BEM Approved CPD Hours : 1.5
Ref No. : IEM25/HQ/363/T

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Synopsis

The incorporation of seismic considerations into structural design became mandatory in Malaysia following the publication of the National Annex (NA) to MS EN 1998 in 2017. This shift was prompted by the devastating 2004 Indian Ocean earthquake and tsunami on December 26. Despite its proximity to the epicenter, Malaysia experienced relatively minimal damage—thanks to the shielding effect of Sumatra. However, northern coastal areas such as Penang and Langkawi, and parts of Perak, were impacted. Later, the 2015 Ranau earthquake in Sabah further emphasized Malaysia's vulnerability, revealing the limitations of reinforced concrete and timber structures in seismic zones.

In response, High Damping Rubber Bearings (HDRB) have gained traction as a robust solution in seismic design, significantly improving structural resilience and reducing dynamic response. Research and global case studies—including seismic retrofitting of multi-span bridges—demonstrate HDRB's effectiveness in minimizing deformation and enhancing occupant safety. Their integration is supported by international design codes, including guidelines from ASCE and JSCE, which advocate HDRB's use in seismic-prone regions.

Malaysia's Penang Second Crossing stands as a pioneering example of HDRB application, reinforcing the importance of adaptive design for long-term infrastructure durability. This study examines a seismic-prone infrastructure project utilizing HDRB, analyzing its structural behavior, mitigation strategies, and overall benefits. Through detailed evaluation, we aim to enhance understanding of HDRB's role in resilient construction and promote best practices for seismic preparedness in Malaysia.

In conclusion, HDRB remain essential in modern infrastructure, offering a proven, adaptive approach to safeguarding against seismic forces.

Speaker's Biodata

Tzyy Wooi has more than 25 years' experience in the design, construction and maintenance of bridgeworks, underground structures. He is responsible for the design and independent design check of many major road and rail bridges locally and abroad. He has designed some major long span stayed cable across other countries. His experience includes both concrete and steel composite bridge design, including superstructure and substructure, permanent works, temporary works design, erection engineering and casting engineering.

He has successfully carried out many courses in the industry and Universities. He has also published papers in the IEM Bulletin, journals and presented papers in conferences. Besides this, he is serving as industry Advisor Panel member for few local universities. He is also actively involved in Malaysian Standard Drafting Committee for MS EN in bridge related codes. He was being awarded "IEM Young Engineer Award 2009". He was working in construction company and consulting companies before joining as a Director of H&T Consulting Engineers Sdn Bhd.