

Assessment of seismic vulnerability in reinforced concrete buildings in Tawau, Sabah: A study on damage potential

ABSTRACT

Tawau located in Sabah is deemed to possess a moderate level of seismic activity, primarily because previous earthquakes were concentrated in the Lahad Datu-Tawau region due to the existence of an active fault. Regrettably, a significant number of reinforced concrete (RC) buildings in this area lack awareness and comprehension of earthquake-resistant construction practices, which necessitate the evaluation of building vulnerability in high-seismic hazard zones. The goals of this study are to conduct fieldwork for the evaluation of the damage potential on 105 existing RC buildings and develop a building damage map in the Tawau area. This entails employing Rapid Visual Screening (RVS) surveys in accordance with the FEMA P-154 guidelines, employing a scoring system to assess the potential for damage in buildings, and subsequently presenting the results on a map. The results of this survey reveal that most buildings in this study exhibit plan irregularities and vertical irregularities in their beams do not align with columns and weak or/and soft story, respectively. This survey concludes that the most prevalent damage potential among the surveyed buildings in this area is Grade 3, followed by Grade 4, with the least prevalent being buildings with a Grade 2 damage potential.