Collapse simulation of ammu hawu traditional timber house in Nusa Tenggara Timur, Indonesia

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Abstrak

This study aims to analyze the collapse mechanism of an Ammu Hawutraditional Indonesian house, which has palm wood (Borassus flabellifer) as its main material, by using Wallstat program and extended distinct element method. Wallstat is a collapse analysis program used to determine a building’s damage status and likelihood of collapseduring an earthquake. A total of 10 models were generated for numerical simulation. Among them, 1 represented the original structure, 4 were bracing reinforced models, and 5 were shear-wall reinforced models. These models were observed under the conditions of the ElCentro (1940) and Kobe (1995) earthquakes. Results showed that the models reinforced with diagonal bracings used at the first story of the Ammu Hawu house were significantly more effective in collapse prevention than the shear wall reinforcement at the second story.