

ABSTRACT

Aditya Chelievan, *Department of Civil Engineering, Faculty of Engineering, Brawijaya University, April 2018, Dynamic Analysis Clay Brick Masonry Wall of One Storey House in Malang City, Academic Supervisor: Wisnumurti, dan Achfas Zacoeb.*

The geological location of Indonesia which is at the meeting of 3 plates of the earth makes Indonesia as an area prone to earthquakes. The earthquakes cause damage to the buildings, especially house (non-engineering structure) and oftentimes take many victims due to crashing ruins from clay brick walls. On confined masonry buildings, walls become elements of shear wall structures during the earthquake. Moreover, the city that has many residents such as Malang is the dominant object against the collapse of the clay brick house. Construction of clay brick masonry wall in Malang City can not be separated from the clay brick around. The different characteristic of the materials also give the difference seismic capacities and impacts as well. Clay brick is the main boundary of the collapse of walls. In this research, the researcher get the shear stress value of one-storey house clay brick masonry wall in Malang city.

The wall of the house with clay brick from Tulungagung is analyzed using response spectrum data from Research and Development Center of Indonesia Settlement in 2011. The earthquake force use 100% X and 100% Y direction to get the shear stress. The center point of the mass and the center of the stiffness that is not meeting each other, cause torque moment which is provides a greater force than the pure force from earthquake.

In the previous research, the average shear stress that the clay brick wall can hold is 1.69 kg / cm^2 . In this research, the largest shear stress as a result of the earthquake in Malang City amounted to $1,529 \text{ kg/cm}^2$, 90,47% of the maximum stress limit to reach the collapse.

Keywords: *earthquake, clay brick, house, shear stress, eccentricity, single degree of freedom*

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