

STRUCTURAL INTEGRITY ANALYSIS OF GOR UNY BY USING 3D NON-LINEAR DYNAMICS FOR NATURAL DISASTER MITIGATION

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ABSTRACT

This research aims to determine (1) level of building vulnerability based on rapid visual screening (RVS) using FEMA 154, (2) the structural capacity (beams and columns) of GOR UNY, and (3) the ultrasonic pulse velocity at peak conditions. The research method is a combination of laboratory experiments and analysis using finite element programs. Experiments were carried out by external and internal observations of the GOR UNY, which included structural and non-structural segment. Non-destructive testing using ultrasonic pulse velocity (UPV) and 3D non-linear dynamic analysis applied to evaluate the capacity of the structure (beams and columns). The analysis results show that (1) GOR UNY is included in the safe category with a score of 3.4, which means that the building structure is safe against earthquake loads; (2) beam analysis shows under-reinforced failure, and the column damage is compression with the safe category at interaction diagram (2-Dimension). Meanwhile, in the peak load NDT test, the ultrasonic wave propagation speed in the column decreased due to excess capacity.

Kata Kunci: *RVS, beam, column, NDT*