

Analisis kinerja dinding bata yang diperbaiki dengan plester dan kawat anyam terpaku

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Abstrak

Kerusakan yang paling sering terjadi pada bangunan sederhana non engineered seperti bangunan ruko akibat gempa bumi adalah pada dinding bata. Salah satu metode perbaikan yang dapat digunakan adalah metode kawat anyam terpaku dengan plester. Penelitian ini bertujuan untuk mengetahui efek perbaikan dengan plester dan kawat anyam terpaku terhadap kinerja dinding bata. Perbaikan dengan plester dan kawat anyam terpaku diharapkan mampu mengembalikan kekuatan dan kekakuan dinding bata yang retak akibat beban lateral.

Penelitian berdasarkan analisis elastis linier dengan continuum model menggunakan perangkat lunak SAP2000 v14.1. Model yang digunakan adalah satu panel dinding bata dengan beban lateral in-plane dan ruko tiga lantai dengan beban gempa statik ekuivalen sesuai SNI 03-1726-2002.

Elemen link digunakan sebagai penghubung antara portal dengan dinding bata. Kekakuan portal dan dinding bata dianalisis berdasarkan evaluasi periode getar alami dan simpangan sedangkan kekuatannya dianalisis berdasarkan evaluasi tegangan. Efek separasi antara portal beton dan dinding bata dianalisis dengan melepas elemen link. Hasil analisis menunjukkan bahwa perbaikan dengan plester dan kawat anyam terpaku mampu mengembalikan kinerja dinding bata retak seperti kondisi utuh.

.....The most common damage due to earthquake on simple non-engineering building such as store-house is the crack on its masonry wall. Plaster and nailed low grade wire mesh can be used as one of the retrofitting method. The aim of this study is to investigate the effects of retrofitting using both plaster and nailed low grade wire mesh to the performance of masonry wall. The usage of plaster and nailed low grade wiremesh has been expected to restore strength and stiffness of cracked masonry walls due to lateral load.

This study is based on linear elastic analysis with continuum models approach using SAP200 v14.1. The model used in this study was one panel of masonry wall with lateral in-plane loading and a three stories three bays store-house building with static equivalent earthquake loading based on SNI 03-1726-2002.

The Rigid link element was used as a connector between the frame and the masonry wall. Stiffness of both the frame and masonry wall has been analyzed by fundamental period and deflection evaluation, and the strength has been analyzed by stress evaluation. The effect of separation between the frame and masonry wall has been analyzed by releasing the rigid link element. The results of the analysis indicated that retrofitting method using plaster and nailed low grade wire mesh was capable to restore the performance of cracked masonry wall as its initial condition.