

INTISARI

Gempa bumi merupakan bencana alam yang tidak terhindarkan di Indonesia. Pada rumah sederhana, keruntuhan dinding dapat menimbulkan korban jiwa. Untuk mencegah keruntuhan, diperlukan perkuatan dinding yang efisien. Dalam penelitian ini digunakan perkuatan anyaman *strapping band* dengan perlakuan pilin. Pengujian bertujuan mengetahui pengaruh *strapping band* dengan perlakuan pilin terhadap kapasitas momen, kuat lentur, pola keruntuhan, dan kesesuaian jenis perkuatan di lokasi tinjauan, yaitu Kabupaten Klaten.

Benda uji dibuat sebanyak 12 buah: 3 dinding plesteran, 3 dinding anyaman *strapping band* dengan plesteran, 3 dinding anyaman *strapping band* dipilin tiap 20 cm dengan plesteran, dan 3 dinding anyaman *strapping band* dipilin tiap 10 cm dengan plesteran. Pengujian dilakukan dengan pembebanan statis satu arah tinjauan lentur tegak lurus dinding untuk arah retak horisontal hingga benda uji mencapai keruntuhan, kemudian dilakukan analisis parameter kekuatan. Kapasitas momen benda uji dibandingkan dengan momen akibat gempa untuk menentukan tingkat keamanan dinding. Momen akibat gempa diperoleh melalui pemodelan SAP 2000 berdasarkan lokasi tinjauan.

Penggunaan anyaman *strapping band*, baik dipilin maupun tidak, cenderung mengurangi kapasitas momen, kuat lentur, dan kekakuan dinding. Namun perkuatan *strapping band* dapat mencegah keruntuhan mendadak karena membuat dinding memiliki *residual strength*. Pola keruntuhan dinding dengan dan tanpa perkuatan *strapping band* pilin tidak menunjukkan pola tertentu. Perkuatan yang aman digunakan di Kabupaten Klaten adalah *strapping band* tanpa perlakuan, sedangkan perkuatan *strapping band* dengan perlakuan pilin tidak dianjurkan untuk digunakan.

Kata kunci: dinding, *strapping band*, pilinan, *residual strength*

ABSTRACT

Earthquake is an unavoidable natural disaster in Indonesia. Masonry wall is vulnerable during earthquake, resulted in a large number of casualties due the collapse of the wall. Reinforcement is needed to provide seismic resistance of the structure. Twisted strapping band mesh was used in this project as a retrofitting material. The tests were carried out to examine the effects of twisted strapping band mesh on moment capacity, flexural strength, cracking pattern, and to determine a suitable retrofitting method for masonry houses in Kabupaten Klaten.

In this project, 12 masonry walls were made as specimens: 3 stuccoed walls, 3 stuccoed walls retrofitted with strapping band mesh, 3 stuccoed walls retrofitted with twisted strapping band mesh (twisted every 20cm length), and 3 stuccoed walls retrofitted with twisted strapping band mesh (twisted every 10cm length). Out-of-plane static loads were applied until the wall collapsed. The suitable retrofitting methods for masonry houses in Klaten were determined by comparing moment capacity of the specimens and the modeling results using SAP2000.

The results showed that the use of strapping band mesh, twisted or not, tends to reduce moment capacity, flexural strength, and stiffness of the masonry wall, but prevents immediate collapse as it gives residual strength to the wall. There was no exact pattern of the cracking caused by static load tests. The suitable retrofitting method for masonry houses in Klaten is the non-twisted strapping band mesh as it provides adequate strength compared to the modeling results, and better ductility. Meanwhile, twisted strapping band mesh is not recommended to be applied in Klaten.

Keywords : masonry wall, strapping band, twist, residual strength