

# **Structural Behaviour of Precast Reinforced Concrete Frames on a Non-engineered Building Subjected to Lateral Loads**

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Received 11 January 2016; received in revised form 22 February 2016; accepted 29 February 2016

## **Abstract**

Past earthquakes in Indonesia have caused loss of life and major damage to buildings and infrastructure. Most of the damage was experienced on non-engineered buildings, which were conventionally built with less consideration of earthquake resistant design. In this research, a precast system was introduced for non-engineered building structures to connect their practical beams and columns as a reinforced concrete frame. This paper presents experimental tests on precast reinforced concrete frames with and without infill masonry walls using local materials. All undamaged and repaired specimens were set up with the same loading arrangements where lateral loads were gradually applied to one side of the beam column joint until the ultimate load was reached. Simple retrofitting and strengthening techniques were applied to the damaged specimens were conducted. The results were compared based on the experimental tests, and showed that retrofitted and strengthened specimens significantly increased their strength, stiffness, and displacement ductility to improve the structural behaviour of non-engineered building structures.

**Keywords:** structural behaviour, precast reinforced concrete, retrofitting, strengthening, earthquake, ductility

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