STRENGTHENING STRATEGY APPLIED FOR REINFORCED CONCRETE (RC) FRAME STRUCTURE USING STEEL BRACES AFTER LOMBOK EARTHQUAKE (CASE STUDY: PARKING-LOT OF MALL BALI GALERIA-MBG)

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Abstract

Lombok Earthquake 2018 was very rare and interesting phenomenon to be taken into consideration due to its behavior. The pattern of seismicity was up and down which gives panic and confusion, especially to the public who live in Lombok, Bali and Sumbawa. There were at least six earthquakes with magnitudes of 5.5 to 6.9 ML in a short interval between 29th July to August 25, 2018. The earthquake caused structural damages in Lombok as well as in Bali region. The case study has been taken to cover 4-storey RC frame of MBG building which located in Kuta, Bali. Damage occurs on columns, beams. Beams and pre-printed reinforced concrete plates and reinforced concrete columns in place. Analysis has been applied into existing structure and stress ratio analysis check has also been taken in order to find failures. Over-stresses has been found at the columns and beams, therefore, the strengthening is needs. Strengthening strategy using braces of Wide Flange-IWF, typically a cross bracing (X) method has been taken into account in order to find out the structural behavior as well as the performance level of building. Braces has been invoked for both: transverse and longitudinal directions of buildings and most of the beams and columns were reinforced by using Fiber. This strengthening has been done very nicely and the parking-lot building has been tested and it can be used regularly as it is.

Keywords: reinforcement, bracing structure, Lombok earthquake.