

Estimation on amount of steel reinforcement for six storey hospital building with seismic design consideration in Malaysia

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ABSTRACT:

A series of earthquakes such as Sumatra-Andaman earthquake on 26 December 2004, Nias earthquake on 28 March 2005, and Bengkulu earthquake on 12 December 2007 had influences to a series of subsequence local earthquake in Peninsular Malaysia. Recently, East Malaysia especially Sabah has become earthquake prone region due to local fault. Hence, Malaysia is not totally free from seismic activities. Therefore, in 2009 Malaysian Public Work Department had concluded that it was worthwhile to consider seismic design input in new building which are located in medium to high risk earthquake zone. The effect of seismic design implementation on cost of materials has become an interesting topic to discuss. This study presents the estimation of steel reinforcement required for six storey hospital building in Malaysia with seismic design consideration. Two parameters namely as reference peak ground acceleration and class of ductility has been considered as variable. The result shows that the total amount of steel reinforcement is increased from 6%, 116%, 257%, and 290% for peak ground acceleration equal to 0.04g, 0.08g, 0.12g, and 0.16g, respectively compared to the non- seismic design counterpart. Beside, total amount of steel reinforcement is increase around 6% and 145% for ductility class medium and ductility class low, respectively compared to its non- seismic design counterpart.