



DEVELOPMENT OF DISASTER RESISTANT SCHOOL BUILDINGS

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Abstract

This study quantifies the seismic vulnerability of typical three storied classroom building located in Sri Lanka. A significant feature of this reinforced concrete frame building is that this has been not designed even for wind forces. Besides, there are some infill masonry brick walls, which are not arranged effectively to resist horizontal loads.

At the inception of this study, a literature review was carried out to get general knowledge on seismicity around Sri Lanka, behavior of reinforced concrete frame structures at seismic loadings, contribution of masonry infill walls to resist seismic effects.

Subsequently Shortcomings of this existing school building were investigated. In order to eliminate some of the shortcomings a existing building was modified to and also designed a new building to have more disaster resistance features.

The performance of all the three models was investigated at probable earthquake according to Australian Standard AS 1170.4. The static analysis and response spectrum analysis was used for investigation of performance. It was observed that substantial damage can be occurred to the existing three storied classroom building due to probable earthquake.

Besides, a cost analysis was carried out to evaluate probable cost increases associated with new building.