

# DESIGN OF AN EARTHQUAKE RESISTANT BUILDING WITH EFFECTIVE MITIGATION SYSTEM

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## ABSTRACT

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The title of this project is 'Design of an Earthquake Resistant Building with Effective Mitigation System'. Every time an earthquake followed by its aftershocks occurs, many lives and properties are lost. At the worst, a whole city is wiped out. Rescue and clean-up operations take several months to complete. Looking at the devastating effects of the earthquake, it is imperative to design residential buildings which can withstand the destructive force from an earthquake with minimal distress or damage. The building should be designed to provide not only safety to inhabitants, but also to protect the household items.

The scope of this project includes study of the earthquake behavior and determination of earthquake for and wind load. Besides, the architectural drawing and structural drawing of the building are also produced. Furthermore, the calculation and detailing drawing of the structure and its reinforcement are produced to reduce the damage during earthquake. The structure design consists of slab, staircase, beam, column and foundation and all of these are designed based on British Standard Code, BS8110 and the swimming pool which is design by water retaining structure according to the BS8007. Moreover, according to IBC 2006, the magnitude of the earthquake force (EQ) can be resisted by this bungalow is also calculated.

Besides, the design methods of all of the structure are discussed in this report. On the other hand, the materials used in the earthquake proof building is also one of the important means to reduce the damage of earthquake are also mentioned in the body of the report.

Furthermore, this report also documents an earthquake mitigation system on two levels (Government and home owner). Moreover, the different methods of damping or isolating a building, the protection of building elements and measures to protect fixtures in the building are included in this report. In addition to that; some eco-friendly alternatives and risk analyses are added to protect our earth.