

**ABSTRACT****A STUDY OF RISKS TO EXISTING TRADITIONALLY BUILT  
STRUCTURES RESULTING FROM SEISMIC EVENTS AND THEIR  
POSSIBLE RETROFITTING SOLUTIONS**

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Within the last decade, natural hazards of record magnitude have visited the Caribbean.

Devastating hurricanes such as Gilbert (1988), Hugo (1989), and Andrew (1992), as well as an increasing frequency of earthquakes, Jamaica (1993), Tobago (1995), have resulted in an increased need for hazard mitigation and disaster preparedness awareness.

These hazards are not new to the Caribbean, but their costs, in terms of real dollar value, and lives lost have been increasing. Their impact on the island states has manifested itself in terms of: -

- Costly damage to infrastructure
- National economic stagnation and slow down.
- Lives lost
- Livelihood lost
- Loss of homes and resulting decrease of personal safety

With these issues facing the Caribbean leaders, a drive to reduce the impact of these evidently increasing number of costly natural phenomenon was launched.

Protection of the citizenry and infrastructure was a focal point in this drive. This project is a result of the increased awareness and concern

This project seeks to address the concept of seismic hazard mitigation through the idea of retrofitting. Private two-storey structures built using traditional design and construction techniques, specifically private dwellings were assessed. The writer believes that these are in fact the most poorly designed and constructed and yet they are the type which the majority of the population utilise and depend upon throughout their lives.

These two-storey structures typically comprise a reinforced concrete column and beam frame lower storey, supporting a 100mm thick un-reinforced masonry wall structure on a 100mm thick concrete slab.

Analysis of this building model has been performed in this project and deficiencies relating to moment strength, ductility, shear force discontinuities and element ties were identified.

These issues however were not considered sufficient to condemn the form of building as the seriousness and extent of the deficiencies varied with material strength, building size and use.

Recommendations for prevention and repairs/retrofitting of the deficiencies identified and the attitude to be adopted in developing the retrofitting methods were presented.

#### ACKNOWLEDGMENTS

Foremost among these recommendations is the funding of further research into assessing and quantifying the risk such that retrofitting systems can be accurately and efficiently produced to upgrade the building's capability to resist any likely earthquakes.

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