THE RESPONSE OF CONVENTIONAL STRUCTURES IN SRI LANKA TO ADVERSE FORCES OF NATURE

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DECLARATION

I, Kuruneruge Samantha Mangala Silva, hereby declare that the content of this thesis is the output of original research work carried out at the Department of Civil Engineering, University of Moratuwa. Whenever others' work is included in this thesis, it is appropriately acknowledged as a reference.

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ABSTRACT

With the experience of minor earthquakes in deferent areas in Sri Lanka recent times, structural adequacy of existing structures has been questioned. Since a lot of research has already been carried out on buildings in related to their behavior in seismic loads, this research focus on Special structure such as “Kalutara Dagaba”, Dagaba at Colombo port and Elevated water towers.

Due to unavailability of required data for detailed analysis of first two structures this study has mainly concentrated on elevated water towers.

Since the "Intze" type is the most common type of the water tower for more than $500m^3$ capacities, the scope of this study has further reduced to study of “Intze” type water towers.

Since the effect of wind as well as earth quake would be acting horizontally; there is a general belief among the engineers that those structures design to resist wind forces can withstand minor earth quakes as well.

In this back ground, this study has concentrated on the impact of wind and earthquakes on “Intze” type water towers of deferent capacities.

Analysis shows that exiting water towers which have designed for wind loads are not adequately strong for the resisting earthquakes. It is hoped that this study will shed light some structural deficiencies available in existing structures with respect to lateral loads of dynamic nature.

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