

**COMPARISON OF PRESTRESSED  
AND REINFORCED CONCRETE GROUND RESERVOIRS**

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This dissertation was submitted in requirements for the Master of Engineering degree Master of  
Engineering

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December 2008

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## **ABSTRACT**

There is a great demand for new pipe borne water supply schemes as well as expansion of existing pipe borne water supply schemes due to rapid urbanization, industrialization and host of other reasons demanding construction of more and more ground reservoirs to feed water to meet these water supply needs. Traditionally, ground water storage reservoirs have been built out of reinforced concrete and most of them are rectangular in shape with a few being circular. In Sri Lanka only two pre stressed ground reservoirs have been constructed, one in Galle Water Supply Scheme in Beak and the other one is for Greater Colombo Water Supply Scheme in Maligakanda having capacities of 2.0 and 3.0 million gallons respectively (9000 m<sup>3</sup> & 13,500 m<sup>3</sup>).

The land and space available for construction of ground reservoirs in urban areas becoming less and less and construction materials such as cement, aggregates, reinforcing steel and skilled labor etc becoming scarce and construction of prestressed ground reservoir could offer a solution to these problems.

Based on data collected on some of the ground reservoirs already constructed in Sri Lanka it could be seen that the prestressed concrete reservoirs could offer economical solutions when compared with reinforced concrete construction with respect to the usage of land and construction materials due to structural configuration and the ability of prestressing to reduce concrete sections.

A major draw back in the prestressed reservoir design is its inability to adapt to the land shape due to shape restriction to circular only and also lack of experienced contractors in prestressed construction presently in Sri Lanka. The selected structural arrangement for the dome roof consists of spherical dome roof with shell structure with prestressed ring beam resting on a rubber pad which is resting on the top of the wall.