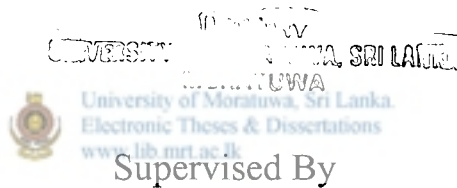


**DEVELOPMENT OF COST EFFECTIVE  
SWIMMING POOLS FOR SRI LANKA**

THIS THESIS IS SUBMITTED TO THE DEPARTMENT OF CIVIL  
ENGINEERING IN PARTIAL FULFILMENT OF THE REQUIREMENT  
FOR THE DEGREE OF MASTER OF ENGINEERING IN STRUCTURAL  
ENGINEERING DESIGN

By

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JANUARY 2003



## DECLARATION

I, Ernest Merrill Wijesinghe, hereby declare that the content of this thesis is the original work carried out for a period of one year by me. Whenever others' work is included in this thesis, it is appropriately acknowledged as a reference.



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## Abstract

Swimming is an ideal recreational activity in Sri Lanka since it is a tropical country. The island is blessed with beautiful sea beaches right round. However due to the financial limitations and other restrictions, majority of Sri Lankans are not so fortunate to have ready access to the sea coast. Thus, people really interested in swimming are directed to swimming pools constructed inland. As can be seen in recent times, Sri Lankan sport has gained some remarkable achievements. Once the facilities are provided, Sri Lanka may reach international level in swimming too. The main obstacle for all these is the non-availability of adequate number of swimming pools in Sri Lanka due to high capital cost involved.

This exercise is to achieve cost effective structural forms for the construction of swimming pools for Sri Lanka. Conventional type pools are constructed using cantilever type retaining walls as vertical members designed to retain water limiting the crack width exerted by the water pressure. Highest cost is involved in the materials and workmanship associated with the walls. If this is reduced, many of the citizens will be able to afford to construct their own private swimming pools. The middle level schools may collect a nominal sum of money from parents and build the school swimming pool. Sports clubs and other institutions will also be interested to have their own pools. The operational and maintenance cost compared to the capital cost is very low and can be collected from the users of the pools very easily.

First of all, a comprehensive literature survey was conducted to determine the alternative structural forms used in other countries. These alternatives were compared with the conventional forms. It was observed that there are more effective methods still not widely used in Sri Lanka. Direct application of these will not be suitable to Sri Lankan context. Hence certain modifications were made to match to our conditions. When these alternatives were still behind the expected effectiveness, further desk studies were carried out to invent more effective methods. The methods developed will not be suitable for sites with higher level of ground water. Construction of pools using this method without deep ends will be possible if the ground water table is 1m below the pool top level. Similarly pools with deep ends will be possible using this method when the ground water level is 2m below the pool top level. Again the soil needs to be firm for the use of this method.

The structures needed for water treatment process were also studied to observe the effectiveness by changing the structural forms.

## Acknowledgements

First, I wish to express my gratitude and thanks to the Vice Chancellor of the University. And I wish to thank the Dean, Faculty of Engineering and Head of the Department of Civil Engineering of the University.

Next, I would like to express my sincere gratitude to the staff of the University of Moratuwa who taught me Engineering since the day I entered as an undergraduate to this excellent institution. Then I wish to give my thanks to all the staff of the structural Engineering Division of Department of Civil Engineering at the University of Moratuwa for teaching me throughout the Post Graduate course fruitfully.

It is my duty to give my special thanks to Dr.M.T.R.Jayasinghe, Associate Professor at the Dept. of Civil Engineering who guided me throughout this research work with excellent comments and suggestions. He was always enriched to create new things over conventional patterns to make this research a useful one. His continuous monitoring work for last fifteen months with valuable additions to this work is indispensable.

I am very much grateful to Mrs.D.Nanayakkara, the course coordinator of the Post.Graduate.Diploma course, who conducted the course with great devotion. It is my thanks to Dr. (Mrs.) M.T.P.Hettiarachchi, the research coordinator who monitored the progress of the research work timely and coordinated effectively.

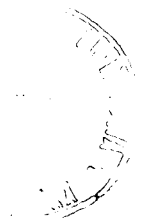
Finally I must be thankful to National Water Supply & Drainage Board for giving me this valuable opportunity to follow the Master of Engineering course.

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