

**ESTABLISHMENT OF COVER DEPTH REQUIREMENT
FOR UTILITY PIPES IN ARTERIAL ROADS**

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Degree of Master of Engineering

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Sri Lanka

May 2017

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Thesis submitted in partial fulfilment of the requirements for the degree

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DECLARATION

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ABSTRACT

Pipelines are a safe and economical mean of transporting gas, water, sewage and other fluids. They are usually buried in the ground with substantial protection. Among those utilities, water convey lines would play a vital role in supplying water to the public.

At present, roads have reached their maximum capacity with the increasing of the rapid growth of traffic. Thus, the rehabilitation and widening of roads shall take place to increase the structural integrity of the road pavement and road capacity. At that moment the utility agencies have to decide whether to shift the existing lines (mainly the water lines) or keep them as they are. Therefore, a criterion is needed to decide the minimum distance above the existing lines to cater the new traffic. Furthermore, the cost of removing and replacing utility lines are generally high. Considering these facts, this research intended to identify the safe depths to locate water lines in roads subjected to different traffic loadings.

Existing traffic details of some arterial roads were collected from the Road Development Authority. Heights from the existing road surface to the top of underground pipelines in some of the major roads were collected. The loading calculations were done using the 'CIRCLY' software for a selected pavement structure. Then the bending stresses were calculated using equations.

Finally, the safe depth of locating pipes for satisfying the design traffic loading was determined. Furthermore, studies can be carried out on different pavement types with different thicknesses and characteristics of pavement layers.

Key Words: Safe depth, CIRCLY, Utility pipes

DEDICATION

To my Parents and Husband
Who Always Encouraged Me towards Success

ACKNOWLEDGEMENT

This research was carried out as a requirement of Master for the Engineering program in the University of Moratuwa, under the supervision of Prof. W.K.Mampearachchi. Here I would like to express my sincere gratitude to Prof. W.K.Mampearachchi for his invaluable help, guidance and encouragement given to me during the entire period of this research. Next I would like to express my gratitude to Engineer Mr.Amarasekara, former Additional Director General of RDA for his valuable introduction and guidance given for this research.

I wish to thank Engineer K.H.S.M.Sampath for the guidance given on CIRCLY software. Then special thanks are extended to the staff of Planning Division of RDA for providing the traffic data for my research and Engineer Mrs.V.P.Thirangama, National Water Supply and Drainage Board for giving support in finding related specifications.

Finally, I would like to thank my family and friends for their endless support and encouragement given throughout the period of study.

O.S.Chathurangani

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LIST OF ABBREVIATIONS

Abbreviation	Description
DESA	Design Equivalent Standard Axles
SADT	Single Axle Dual Tyre
PE	Polyethylene
PVC	Polyvinyl Chloride
DI	Ductile Iron
RDA	Road Development Authority