

**THE CEMENT STABILIZED SOIL
AS A ROAD BASE MATERIAL FOR SRI LANKAN ROADS**

W.W. BANDARA

(2010/2011)



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Master of Engineering in Highway and Traffic Engineering

Department of Civil Engineering

University of Moratuwa

Sri Lanka

February 2014

DECLARATION

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ACKNOWLEDGMENT

I wish to pay my sincere gratitude to Dr. W. K. Mampearachchi who supervised and guided me to complete a successful research. Also I would like to thank him for supporting and expending his valuable time throughout the study.

All material tests were conducted in A32 and A35 project laboratories and immeasurable support given by Mr. Athula (MAGA Engineering Pvt Ltd), Mr. Nimal (China Harbour Engineering Company Ltd) and their staff is gratefully acknowledged.

I would like to thank all engineers who contributed their valuable time for sharing knowledge and experience with me.

I thank the organizer of Transport Research Forum, University of Moratuwa, 2011, for giving me a great opportunity to present my research.

I am also grateful to all staff members and post graduate students in the University of Moratuwa who supported and taught me during my postgraduate study.



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ABSTRACT

Soils that can be stabilized are Granular, Sandy, Salty and Clayey materials. In Sri Lanka, lower quality coarse-grained and sandy materials are available which give higher elastic modulus than fine-grained material (Salty and Clayed materials).

In order to control shrinkage cracks, Unconfined Compressive Strength (UCS) at seven days should be limited. According to the findings, it was revealed that the most practical thickness of the cement stabilized base is 200mm and the most practical UCS at seven days is 3-4MPa to achieve compaction and the decided life with economical pavement thickness.

When the strength is measured in terms of CBR (California Bearing Ratio) and UCS, different cement contents arise from these two measuring methods. Therefore this study was performed to identify correct strength measure. The correct strength measure is UCS only and no relationship was found between UCS and CBR.

For road pavements with stabilized base, critical tensile stress or strain is located at the bottom of the stabilized layer. To control the fatigue cracking for required number of axial load repetitions, this tensile stress should be limited.

Above mentioned limitations cannot be analyzed using the conventional pavement design based on Structural Number principle. Hence a Mechanistic-Empirical Method is used to analyze pavements with a stabilized base which is difficult to carryout in general practice.

Therefore, through this study, pavement design charts for pavements having 200mm thickness of a Cement Stabilized soil Base (CSB) were developed by a Mechanistic-Empirical Method for various sub grade and traffic classes. According to the developed pavement design chart, it was revealed that CSB can be used for roads with traffic less than 1.5×10^6 standard axial load repetitions.

Key words: Cement Stabilized soil Base, Unconfined Compressive Strength (CUS), California Bearing Ratio (CBR), Mechanistic Empirical Method

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