THE SOIL - CEMENT STABILISATION USING LATERITIC SOIL

A project report presented in partial fulfillment of the requirements for the award of Advanced Diploma in Civil Engineering of MARA Institute of Technology.

By:

ROSMADI BIN MD. DALI

DEPARTMENT OF CIVIL-ENGINEERING
MARA INSTITUTE OF TECHNOLOGY
SHAH ALAM 40450 SELANGOR

JULAI 1989 ·

	TABI	E OF CONTENTS	PAGE		
	Synopsis		(i)		
	Acknowledgement		(ii)		
	Nome	enclature	(iii)		
	Chapter 1 - LATERITIC SOIL				
	1.1	Introduction	1		
	1.2	Determining the strength of lateritic soil	2		
	1.3	Variations In strength of lateritic soil	4		
	Chapter 2 - PRINCIPLES OF SOIL STABILIZATION				
	2.1	Introduction	5		
	2.2	Methods of stabilization	6		
	2.3	Mechanical Stabilization	6		
	2.4	Stabilization with cement	7		
	2.5	Stabilization with lime	7.		
•	2.6	Stabilization with Bituminious materials	9		
	Chap	ter - 3 SOIL STABILIZATION WITH CEMENT			
	3.1	Introduction	10		
	3.2	Mechanism of soil - cement stabilization	10		
	3.3	Factors affecting cement stabilization	12		
	3.4	Principles & Application	12		
	3.5	Soil Quality requirements	13		
	3.6	Cement	14		
	3.7	Stabilization process	14		

SYNOPSIS

The design of structures depend upon the strength of the soil on which they stand. In the case of weak soils its strength and stability can be increased by stabilization.

An experimental investigation on the response of lateritic soil to stabilization by Portland Cement has been undertaken. Effect of moisture content and density on compaction were observed and further studies recommended.

They are many methods and agents by which soils may be stabilized. This study uses cements as its stabilizing agent. Soils which passed sieve No.2.0 mm was used in this study. The behaviour of the soil such as it dry density, California Bearing Ratio (CBR) and other properties when mixed with different propotion of cement have been studied.

The soil sample have been taken from Section 21 in Shah Alam Selangor and study made by mixing it with different percentages of Portland Cement by weight.

ACKNOWLEDGEMENT

The author is greatly indebted to his advisor En.Ibrahim Kamarudin, Lecturer School of Engineering for his inspiring guidance, suggestions, discussions and encouragement throughout the course of this study.

He also expresses his deep gratitude and sincere thanks to En.Idris Zakaria, Course Tutor Diploma in Civil Engineering, School of Engineering for his keen interest and worthy suggestions.

The author wishes to express his appreciation to the laboratory technician En.Saadon, En. Samsuddin, En.Yusof and his colleagues for their assistance during this study.

NOMENCLATURE

TERM		SYMBOL
Moisture Content		M.C.
Liquid Limit		L.L.
Plastic Limit	,	P.L.
Plastic Index		P.I.
Specific Gravity		Gs
Bulk density		ь
Dry density	ig .	.d
Optimum Moisture Content		O.M.C.
Maximun Dry Density		M.D.D.
Driginal Diameter		Do .
California Bearing Ratio		CBR