

The Major Project on
**“COMPARATIVE STUDY OF STABILIZATION OF EXPANSIVE
SOIL USING JUTE FIBRE AND POLYPROPYLENE FIBRE”**

Submitted in Partial Fulfillment for the Award of the Degree of

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By

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CERTIFICATE

This is to certify that the project report entitled “COMPARATIVE STUDY OF STABILIZATION OF EXPANSIVE SOIL USING JUTE FIBRE AND POLYPROPYLENE FIBRE” is a bonafide record of work carried out by Deepak Dhiman (2K12/GTE/05) under my guidance and supervision, during the session 2014 in partial fulfillment of the requirement for the degree of Master of Technology (Geotechnical Engineering) from Delhi Technological University, Delhi.

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DECLARATION

I Deepak Dhiman hereby certify that the work which is presented in the Major Project entitled “COMPARATIVE STUDY OF STABILIZATION OF EXPANSIVE SOIL USING JUTE FIBRE AND POLYPROPYLENE FIBRE” is submitted in the partial fulfillment of the requirement for the award of degree of “MASTER OF TECHNOLOGY” with specialization in “GEOTECHNICAL ENGINEERING” at Delhi Technological University is an authentic record of my own work carried under the Supervision of **Dr. Raju Sarkar**. I have not submitted the matter embodied in this major project for the award of any degree or diploma also it has not been directly copied from any source without giving its proper reference.

DEEPAK DHIMAN

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ABSTRACT

Expansive soil are considered to be unsafe with reference to safety of the structure in serviceability aspects, and needs to be tackled in a well engineered manner, if it should be used as a foundation soil. Several ground stabilization techniques are used to enhance the property of expansive soil, such as lime and cement stabilization. In this report the Jute fibre and polypropylene fibre are used to enhance the engineering properties of the soil. The main goal of this study is to understand the effectiveness of Jute fibre and polypropylene fibre when it is reinforced with soil in different proportions. The effect of fibre reinforcement with expansive soil was observed by a series of laboratory test such as index property test, compaction test, unconfined compression test, CBR test, free swell index test, Brazilian test (Indirect tensile test) , scanning electron microscope test. All the test result shows that there is an improvement of soil when it is reinforced with jute fibre and polypropylene fibre and in this report on the basis of engineering property of soil a comparative study was done with Jute fibre and polypropylene fibre.

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LIST OF ABBREVIATION & SYMBOL

The principal symbol used in this thesis is presented for easy reference. A symbol is used for different meaning depending on the context and defined in the text as they occur.

S.No	Notation	Description
1	G	Specific gravity
2	LL	Liquid limit
3	PL	Plastic limit
4	PI	Plasticity index
5	C	Coefficient of curvature
6	C	Coefficient of uniformity
7	OMC	Optimum Moisture Content ,%
8	MDD	Maximum Dry Density, gm/cc
9	UCS	Unconfined Compressive strength,KN/m ²
10	CBR	California Bearing Ratio Test
11	DST	Direct Shear test
12	C	Unit Cohesion, KN/m ²
13	AR	Aspect Ratio
14	ϕ	Angle of Internal Friction
15	BCS	Expansive Soil
16	XRD	X-Ray Diffraction
17	SEM	Scanning Electron Microscope
18	M.C	Moisture Content
19	c	Intercept
20	M.C	Moisture Content

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