# "IMPROVING STABILITY OF SOIL USING NATURAL FIBER'S (COCONUT COIR)"

## PROJECT REPORT

**Submitted by**


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**In partial fulfillment of the requirements for the degree of**

**BACHELOR OF ENGINEERING**

**In**

**CIVIL ENGINEERING**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI- 590018**

**Under the Guidance of**

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**ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**MOODBIDRI-574225, KARNATAKA**


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**ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY**
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# CERTIFICATE

Certified that the project work entitled**"IMPROVING STABILITY OF SOIL USING NATURAL FIBER'S (COCONUT COIR)"**is a work carried out by

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students of Departmentof Civil Engineering of Alva's Institute of Engineering and Technology in partial fulfillment for the award of **BACHELOR OF ENGINEERING** in **CIVIL ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2020–2021. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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# ABSTRACT

Soil having poor bearing and shearingstrength need stabilization to make it suitable for construction purpose. In this study coir (extracted from coconut) is used as natural fiber for stabilization of soil. Stabilization using natural fiber is a cost-effective and eco-friendly approach to improve properties of soil. Chemical-based or synthetic fibers harm our environment so; the use of natural fiber is an initiative to maintain balance in nature. This study reveals around the reinforcement of soil by coir fiber and the comparison between engineering properties before and after stabilization. The study is carried out to evaluate the effects of coir fiber on shear strength of soil by carrying out direct shear test and unconfined compression test on two different soils samples. Disturbed samples are collected from two different construction sites. In laboratory, testing of liquid limit, specific gravity along with grain size distribution is carried out for the classification of soil. For different percentage of coir fiber the Proctor Compaction test was carried out. Further at optimum moisture content (OMC), direct shear test and unconfined compression test are carried out for different fractions of coir fiber. The experimental results with and without coir fiber reinforcement are compared to obtain optimum quantity of fiber reinforcement (% of soil sample) required to stabilize a weak soil along with the inference about effect on bearing capacity and shear strength