

A Major Project Report

on

**STABILIZATION OF BLACK COTTON SOIL WITH BAGASSE  
ASH**

Submitted in the partial fulfillment for the award of degree of  
Bachelor of Technology in Civil Engineering

by

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B. Tech, VIII Semester

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**DEPARTMENT OF CIVIL ENGINEERING**  
**SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY**  
**GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)**  
**(A Central University)**  
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**DEPARTMENT OF CIVIL ENGINEERING**  
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**CERTIFICATE**

Certified that the major project entitled “**Stabilization of Black Cotton Soil With Bagasse Ash**” submitted by **Sweta Singh , Rahul Meena and Bolagani Yaswanth Goud** , in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur, is accorded to the students’ own work, carried out by them in the Department of Civil Engineering during session 2023-24 under supervision and guidance.

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## ABSTRACT

Soil is the base of a structure which helps in equally distributing the load and supports the super structure and foundation. If the soil stability is not adequate then failure of structure takes place in form of settlement, cracks. Black cotton soil is also called as expansive soils which is responsible for such situations and is due to presence of mineral called montmorillonite in it, which experience shrinkage and swelling. To overcome these properties of soil are improved by mechanical and chemical process known as soil stabilisation. Many research has been conducted for stabilisation of soil by using cementing, chemical materials like fly ash, calcium chloride, sodium chloride etc. In India, limited techniques are followed in agricultural waste disposal. India is second largest country in the production of sugarcane with 341,400 thousand metric annual tones (TMT) produce. Western Maharashtra is pioneer in production of sugarcane in large quantities sugar cane factories produce waste after extraction of sugarcane juice in machines and that waste after burning produce ash known as bagasse ash. It is made up of fibrous material having silica and pozzolanic in nature which improves the physical properties of black cotton soil.

Experiments are conducted on black cotton soil by partially replacing bagasse ash (4%,8%,12%,16%,20%). Black cotton soil properties of are increased at 16 % by replacing of bagasse ash not including any chemicals.