

Department : Civil

Year : 2014-2015

Group No: 11

Guided By

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Project Title

“IMPROVEMENT OF ENGINEERING PROPERTIES OF EXPANSIVE SOIL BY USING BAGASSE ASH AND GROUNDNUT SHELL ASH”

Abstract:

Black cotton soil is one of the major regional soils in India, covering an area of about 3.0 lakh sq.km. Black cotton soil or the expansive soils in India are highly problematic, as they swell on absorption of water and shrink on evaporation thereof. Expansive soils are problematic soil because of their inherent potential to undergo volume change corresponding to change in the moisture regime. When they imbibe water during monsoon, they expand and on evaporation thereof in summer, they shrink. Because of these alternate swelling and shrinkage, structures founded on them are severally damaged. The annual cost of damage to the civil engineering structure is estimated at thousands of crores. To overcome this, property of soil must be improved by artificial means known as „soil stabilization“. It is a technique which improves one of more soil properties by mechanical, cementing and chemical use. Today world is facing serious problem of disposal of agricultural waste. South Gujarat is popular for production of sugarcane in large quantity. Sugar factories produce waste after extraction of sugar in machines that waste when burnt, the resultant ash is known as „Bagasse ash“. Saurashtra of Gujarat is popular for production of ground nut in large quantity. ground nut factories produce waste after extraction of ground nut in machines that waste when burnt, the resultant ash is known as „Ground nut shell ash“. It is a fibrous material with presence of silica (SiO_2) and can be used to improve the properties of black cotton soil. “Bagasse ash” and “groundnut shell ash” is mixed in various proportions in parent soil. For this various proportions of “Bagasse ash” and “Groundnut shell ash” different properties of soil are determined in laboratory and compared with the parent expansive soil properties. The study is carried out on various properties i.e. Compaction properties, Atterberg’s Limit, C.B.R.

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