

# Stabilization of Black Cotton Soil by Using Stone Dust

Karishma M. Tadavi<sup>1</sup>, Chetan D. Patil<sup>2</sup>, Girish R. Bhamare<sup>3</sup>  
Darshan R. Koli<sup>4</sup>, Prashant K. Panpatil<sup>5</sup>, Gaurav S. Sabe<sup>6</sup>

<sup>1-6</sup>Department of Civil Engineering

Khandesh Bahuuddeshiya Sanstha's College of Engineering & Technology, Jalgaon, Maharashtra, India

**Abstract:** *The soil above which a civil engineering structure rests must have adequate shear strength and bearing capacity if it is to be secure and stable. When the soil on the site is unsuitable, it can be improved using the soil stabilization method. Black Cotton Soil is a soil with low bearing capacity, swelling and Shrinkage characteristics. Through this project, we are trying to study the improvements in the properties of soil by adding stone dust of varying percentages. Use of waste material and natural materials for improving soil property is advantageous because they are cheap, locally available and eco-friendly. Effectiveness of using natural wastes is rapidly increasing. Keeping this in view an experimental study is conducted on locally available black cotton soil mixed with varying percentage of stone dust. In order to achieve the objectives detailed laboratory tests were conducted on virgin sample and stone dust reinforced clay. Tests are performed by varying the stone dust content in different proportions so as to achieve optimum stone dust content ensuring maximum increase in bearing capacity of the soil. The soil sample selected for the study is the Jalgaon Region's Black Cotton soil. The basic properties of virgin soil like specific gravity, Atterberg's limits, compaction characteristics were Studied. Further the black cotton soil is mixed with varying percentage of stone dust by dry weight of soil such as 0.5 %, 0.75% and 1 %.*

**Keywords:** Black Cotton Soil, Stone dust, Stabilization, Optimum Moisture Content (OMC), Maximum dry density (MDD), Stone dust, Stabilization, Waste Material, Soil property, Eco-friendly.

