



# Black Cotton Soil Stabilization by Using Ceramic Waste and Lime

Dushyant Vaishnav<sup>1</sup>, Sarvesh Kumar Jain<sup>2</sup>

<sup>1</sup>P.G.Student, <sup>2</sup>Professor Civil Department, MITS, Gwalior (M.P.)

## ABSTRACT

Swelling and shrinkage of soil makes increase structural risk of any infrastructure, the Black cotton soil contains Montmorillonite clay mineral. Montmorillonite clay mineral made up by weak Van der Waals force therefore water holding capacity of this soil is comparatively very high and also shows high swelling and shrinkage. In this experimental analysis contain resistance of expansive behavior of soil with respect to ceramic waste and Lime up to certain percentage. Objective of this study is to find optimum utilization of ceramic waste Lime in expansive soil stabilization in this study firstly find optimum use of ceramic waste is 4% than find optimum used of lime by taking constant replacement of ceramic waste as 4%. Optimum value of ceramic waste as 4% and optimum value of lime is found 5%.

## Introduction

peninsula surrounded by Arabian sea and Pacific ocean, there is variety of soils available

## Expensive nature of soil

The Black cotton soil contains Montmorillonite clay mineral. Montmorillonite clay mineral made up by weak Van der Waals force between the unit of clay structure and make therefore water holding capacity (7-10 Å gap Between ) of this soil is comparatively very high and also shows high swelling and shrinkage, this property of the soil known as expansiveness of soil [ ][ ]. The expensive nature makes stability in structure because expensive soil can swell and shrink up to 250%[ ]. Therefore it is avoided in construction infrastructure projects.

## Structural resistance due to expensive soil

India large variety of soil like alluvial, Black soil, Red soil, Laterite, Desert soil, Mountain soil and peaty soil etc. there is access amount of Black cotton soil major areas contain black cotton soil are good for agriculture point of view.

**Geological feature of India** Geographical location of India is at N-E quadrant or we can say in first quadrant, it is

Figure 1 (Source : Soil profile of India pmfias.com government forest website)



### Structural resistance due to expensive soil

Literature Support

Methodology

Results and Analysis

Conclusion

References

[1]

[1]

