

Experimental Study on Stabilization of Black Cotton Soil Subgrade using Bagasse Ash and Egg Shell Powder for the Design of Flexible Pavement

P.A.Sivasubramani^{1*}, C.Arya², R.Karunya³, N.Mohammed Jalaludeen⁴

^{1,2}Department of Civil Engineering, SNS College Of Engineering, Coimbatore
^{3,4} B.E. Civil Engineering, India

Abstract : This study evaluates the potential of Bagasse Ash (BA) and Egg Shell Powder (ESP) to stabilize soft and expansive soil. The physical properties of clay, BA and ESP have been studied by conducting Specific gravity, wet sieve analysis, Liquid Limit (w_L) and Plastic Limit (w_P) tests. The soil has been classified as Clay of Medium Compressibility (CI). Light Compaction Test (LCT) has been carried out to determine the Optimum Moisture Content (OMC) of virgin soil. Then, for the purpose of determining the strength of virgin and stabilized soil, California Bearing Ratio (CBR) tests have been conducted. Optimum proportion of BA and ESP are to be replaced to stabilize the soil is determined by varying the proportions from 5% to 25% by weight of soil and addition of 3% of ESP then CBR tests are conducted. The design of flexible pavement for the CBR value and the estimation of savings in cost are carried out. The results of the experimental research show that soil replaced by 25% BA and addition of 3% of ESP can effectively be used as a soil stabilizer for subgrade as not only the CBR value has increased but also the expansive nature of clay is reduced. This leads to reduction in overall cost.

Keywords : Bagasse Ash(BA),Egg Shell Powder(ESP), California Bearing Ratio, Light Compaction Test, Optimum Moisture Content.

P.A.Sivasubramani *et al* /International Journal of ChemTech Research, 2017,10(8): 662-669.
