

Influence of Fly Ash and Coir Fiber for the Construction of Soil Subgrades



Sunaram Murmu¹



S. Shankar²



D. Harinder³



CSRK Prasad

Department of Civil Engineering, Transportation Division National Institute of Technology,
Warangal-506004, Telangana, India.

ABSTRACT

As the world, in one side is debating about the adoption of green technology in the construction industry which could contribute towards the sustainable development and on the other side on the same time it's facing the disposal problem of various waste products from the different industries. For example Fly, ash from coal burning power plants and coir fibre from the coir industries are such two waste materials. These waste materials have vast applications in civil engineering area in general and in pavement engineering in particular i.e. for strength improvement of different pavement layers and embankments. Use of these materials in pavements will reduce the disposal problems to some extent. Fly ash was added to the soil in varying proportions of 20, 30, 40, and 50% to mitigate the swelling symptoms of BC soil. Optimum mix based on the highest density out of the above mix was further chosen for the reinforcing with coir fibre (straight and twisted) of length 10, 20, 30 mm at varying percentages of 0.5%, 1.0% and 1.5% for strength enhancement. Attempts are made to finalise the optimum soil-fly ash-fiber based on CBR and UCS mix suitable for the subgrades.

Keywords: Sustainability, Fly ash, Coir fibres, CBR, UCS, and Subgrade

-
1. M.Tech Student, Transportation Division, Department of Civil Engineering, National Institute of Technology, Warangal-506004, Telangana, India.
 2. 4 Faculty, Transportation Division, Department of Civil Engineering, National Institute of Technology, Warangal-506004, Telangana, India. Email: shankarcvg@gmail.com
 3. Ph.D Student, Transportation Division, Department of Civil Engineering, National Institute of Technology, Warangal-506004, Telangana, India.