Study on Soil Stabilization Using Fly Ash & Rice Husk Ash in Roadway Embankment

V M Vithiya[1] and Piriyashankar[2]

Abstract

In Sri Lanka, there is a shortage of suitable embankment material for road construction due to the country's increasing demand for highways and economic crisis. Meanwhile, industrial waste products such as fly ash and rice husk ash, generated in large quantities by rice mills and coal power plants, are considered valueless by-products. Improper disposal of these by-products in landfills poses a significant environmental threat. The purpose of this study is to assess the stability of an embankment that was constructed using inappropriate embankment material and stabilized using a mixture of fly ash and rice husk ash. The research adopts an exploratory approach to investigate this alternative solution.

In the experimental work, different proportions of fly ash (0%, 20%, 40%, and 60%) and 5% ricehusk ash by dry weight will be mixed with the soil. This range of proportions allows for a comprehensive evaluation of the

impact of the ash mixture on stabilization. To determine the required material parameters for numerical analysis, various tests will be conducted, including standard proctor compaction. These tests will provide essential data on the compaction characteristics and other relevant properties of the stabilized soil samples.

The obtained material parameters will be used in subsequent numerical analyses to assess the stability of the embankment. This analysis will involve evaluating the embankment's resistance to deformation, load-bearing capacity, and potential failure mechanisms.

***Keywords**: Embankment material, Fly ash: Rice husk ash, Road Construction*

1. University of Jaffna, Sri Lanka.
   maryvithiya1997@gmail.com