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Patent Search

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Abstract:

In this study a comprehensive investigation into the suitability of pond ash material for flexible pavement subbases. The sub-base layers of pavement are composed aggregates, such as sand and gravel. Recyclability at the end of its life and other factors like durability all play a part in creating sustainable pavement systems. Extensive laboratory tests, including compaction, and CBR tests, were conducted to evaluate the strength characteristics of Pond Ash. Based on the results of the laboratory tests ideal conditions of pond ash compaction parameters are 33.36% moisture and 1.1 g/cc dry density. It is necessary to evaluate the geotechnical characteristics of coal including its permeability, compaction characteristics, and particle size distribution. Studies reveal that, with the right stabilization, coal ash mixes can fulfill the specifications needed for sub-base materials. The saturated CBR value was determined to be 16.67%. Moreover, a 15-centimeter laboratory CBR mould was used to perform the dynamic penetration tests with hammers weighing 4.6 and 8 kilogrammes. Further dynamic cone penetration tests in a 60 cm cylindrical mould at 150 mm and 200 mm depth that the 8 kg hammer was adequate for large-scale modelling research. These studies determined the minimal subbase thickness and the depth at which soaked CBR matched laboratory-soaked CBR values. This study uses laboratory and advanced DCPT correlations to better understand pond ash's subbase performance and flexural applications and also by correlating laboratory and DCPT data, the engineers better assess the pond ash performance in road construction and design flexible pavement subbases.

Complete Specification

Description:• The research revolves around the utilization of pond ash, a by-product of coal combustion in thermal power plants, as a sub-base material in flexible pavement construction. Traditionally, pond ash has been regarded as a waste material that requires proper disposal due to environmental concerns.

• Pond ash has gained attention due to its pozzolanic properties, high silica content, and abundant availability. These properties make it a potentially suitable material for construction applications, including road subbases.

• The research aims to provide a comprehensive understanding of the performance of pond ash as a sub base material, offering insights into its potential as a sustainable and cost-effective alternative to traditional materials in flexible pavement construction. , Claims:1. The CBR test results from Pond Ash samples compacted at the same optimal moisture content at

maximum dry density in the laboratory CBR mould, but with two different compactive efforts of 4.6 kg and 8 kg hammers, despite maintaining the same density and moisture conditions in the laboratory, comprise the pavement system to be installed over a weak subgrade with a California Bearing Ratio (CBR).

2. As indicating in Claim 2: An 8 kg hammer has a lower DCP index (penetration rate), which indicates greater resistance to penetration and superior strength attained. Greater compaction energy transferred

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