

Model Studies on Use of Coal Mine Waste and Modified Clay Soil as Fill Material for Embankments and Foundations

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Abstract : The objective of this study is to investigate the significance of coal mine waste and improved clay soil when used as a fill and for the construction of embankments. To determine the bearing capacities of coal mine waste and improved clay soil apart from laboratory test PLAXIS 2D software is used to make the analysis simpler. Depending upon the bearing capacities obtained for different cases the conclusion can be obtained. Load carrying capacities are determined for coal mine waste, clay and by altering their height ratio when clay (H2) is at the bottom and coal mine waste (H1) is on the top with three different cases ($H = 0.25H1 + 0.75H2$, $0.5H1 + 0.5H2$, $0.75H1 + 0.25H2$) in addition to this bearing capacity of improved clay soil (by replacing clay with 10% CMW, 30% CMW and 50% CMW, in addition, Polycom) is also determined. The safe height of the embankment that can be constructed with the improved clay for different slopes, i.e., for 1:1, 1.5: 1, 2: 1, is also determined by using PLAXIS 2D software by limiting the Factor of safety to 1.5.

Keywords : cohesion, angle of shearing resistance, elastic modulus, coefficient of consolidation, coal mine waste

Conference Title : ICSMGE 2025 : International Conference on Soil Mechanics and Geotechnical Engineering

Conference Location : New York, United States

Conference Dates : April 17-18, 2025