STRENGTHENING AND SUPPORTING EFFORTS TO REDUCE SWELLING OF SOIL BY USING BEACH SANDS THROUGH CBR TEST

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ABSTRACT

Abstract

Today, the transportation infrastructure development projects (in the form of roads / highways) are so rapid. However, this is not balanced with the availability of building materials in the form of sand. As a result, people search for sand with exploitation of nature to damage the environment, for example: rivers are sucked up by sand, fertile land is dug up in the sand until there is only a gaping hole. On the other hand, many roads are damaged due to heavy tonnage vehicles or because the road foundation is in the form of expansive clay. The rescue effort is to use beach sand (sea sand) for stabilization / repair of road sub-grade in the form of clay.

This research is using experimental method. This research is a continuation of previous research. The experiment was carried out by repairing / stabilizing clay soil by mixing beach sand. Sand content varies from 60%, 80%, to 100%. (Previous research has been carried out on sand content of 0% to 50%). Mixed soil was compacted at optimum water content, then tested for its support strength (by CBR test), and tested by Swelling (development) to determine the potential for clay development. Swelling is what often destroys the road.

The results of the study are CBR (strong-support) and Swelling (development) values. Mixing: 60%, 70%, 80%, 90%, 100% beach sand against clay, able to increase the CBR value by a row: 7.3%; 9.6%; 11.8%; 18.5%; 25.2% (Lendah clay, Unsoaked), and: 6.2%; 9.8%; 13.4%; 19.3%; 25.2% (Lendah clay, Soaked). In Prambanan clay, the yield is slightly smaller than the Lendah clay. The Swelling value is: 0.095%; 0.055%; 0.015%; -0.107%; -0.229% (Lendah clay), almost the same as Prambanan clay. Here it can be seen that mixing beach sand will always increase the CBR value, but if the percentage of sand is too much, the soil will easily collapse (negative swelling). The conclusion is that in the clay mixture with beach sand the optimum percentage of beach sand will be 85%.

Kata Kunci: *stabilization, clay, sand, Swelling, CBR*