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Thesis Title : Relationship between Unconfined Compressive Strength and
Soaked CBR of Breccias Cement Mixture and Breccias
Asphalt Mixture
Major Field : Civil Technology
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Academic Year : 1997

Abstract

Breccias are easily found in the North Eastern part of Thailand. It is mostly used for filling and subbase. However, due to a shortage and high cost of crushed rock used for base course, the improving of breccias by mixing with cement and asphalt in appropriate proportions to replace crushed rock has become more significant.

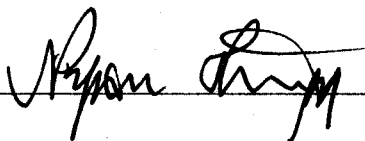
The Unconfined Compressive Strength and Soaked CBR are indicators of weight loading capacity used in the designing and inspection specification of highways. According to the specification of Department of Highways, the Soaked CBR value of crushed rock used for base must not be less than 80%, while the Unconfined Compressive Strength of improved soil must not be less than 17.5 ksc. at 7- day curing.

The result of this research showed that the relationship between Unconfined Compressive Strength and Soaked CBR of 1%, 2%, 3%, 4% and 5% of cement in breccia mixture at a curing period of 1, 3, 7, 14 and 28 days can be represented by the following linear equation :

$UCS \text{ (ksc.)} = 7.8475 + 0.0484CBR \text{ (%)}$, with $R^2 = 0.9345$. The linear equation for 1%, 2%, 3%, 4%, and 5% of asphalt in breccias at a curing period of 7, 14, and 28 days are :

$UCS \text{ (ksc.)} = -8.1718 + 0.1602CBR \text{ (%)}$, with $R^2 = 0.8617$. These equations can be used as an easy, fast, convenient and effective tool in the testing and inspection of weight loading capacity of materials used in highways.

A mixture of 2% cement in Breccias and a mixture of 5% asphalt in Breccias meet the specification of base course material. In comparison to crushed rock in 1997, the former mixture reduces the material and operation cost by 40%, while the latter increases the cost by 204%.



Committee Chairperson