

Correlation Between California Bearing Ratio (CBR) With Plasticity

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A research team led by Dr. Masyitah Md Nujid has invented a product intended to replace cement as soil stabilizer in road construction by using cockle shell powder (CSP). This innovation project was won Silver Medal at the International Bujang Valley Innovation, Invention and Design Competition 2019 (BVIIEC) on 13th June 2019 at Dewan Perdana UiTM Kedah under Science and Technology category. The purpose of innovation is to use geo-environmentally friendly material in soil stabilisation techniques by using natural waste materials. The quality of the subgrade depends on the strength and the stabilisation technique adopted for problematic soil to increase the bearing value. For estimating the bearing value or evaluate the strength of highway sub-bases and subgrades for design of pavement thickness by conducting California Bearing Ratio (CBR). The CBR and PI show a good correlation and thus inclusion of CSP in marine soil could be used as an alternative material for subgrade layer in increasing soil strength. The innovation in designing a mixture of soil stabilisation techniques using CSP in a correlation between CBR and plasticity index is found very useful

in pavement construction. This innovative product is economical (reduce cost construction, repair, maintenance), Eco-environmental additives use (natural waste) and it is will beneficial to environment, contractor, government & road users. In terms of novelty and uniqueness, the product is economical, potential to replace cement additive and promote geo-environmental friendly material in soil stabilisation technique. Hence, this product has the potential to be commercialised because it reduces the cost of material and overall construction cost, recyclable and sustainable geo-material stabiliser also an alternative material use for road stabilisation.

