Previous issue | Next issue | Archive

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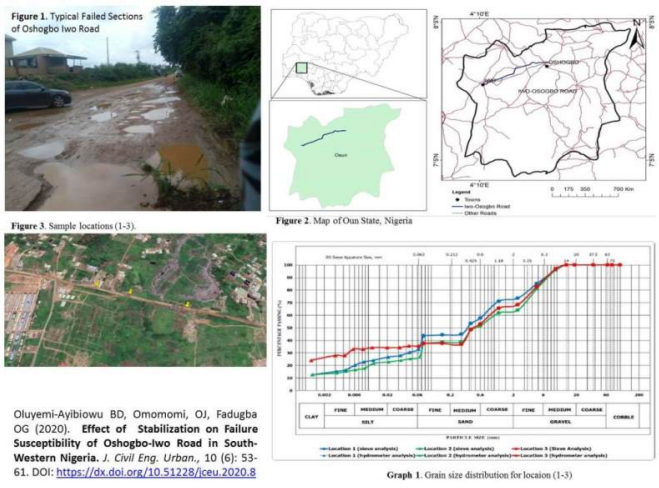

Research Paper

Effect of Stabilization on Failure Susceptibility of Oshogbo-Iwo Road in South-Western Nigeria.

Oluyemi-Ayibiowu BD, Omomomi OJ, Fadugba OG.

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Abstract
The research evaluated the failure susceptibility of biopolymers (Guar Gum, Xanthan Gum, Bentonite) and polyvinyl acetate (PVAc) stabilized soil samples from three failed locations along Oshogbo – Iwo Road's using the TDRAMS mathematical model formulated by Aderinola et al., (2015). The stabilizers were added to the soils in concentrations of (0.25-2) % Biopolymers, (1-3) % Bentonite and 2% PVAc. The samples were classified according to AASHTO as A-5 (slty-sand) and ML group (inorganic silts, sfine sands with low plasticity) based on USCS classification system. Geotechnical tests carried out on both natural untreated and treated samples showed that the natural soil samples gave OMC values of between (11.7-14.97) %, MDD (1644-1453.6) Kg/m3, and soaked CBR (2-6) %. 1% Guar gum, 1 % Xanthan gum, 3% Bentonite and 2% Poly vinyl Acetate were deduced to be optimal mixes for improved strength. However, Guar gum was observed to be the best stabilizer. With the TDRAMS model, 1% Guar gum reduced the failure susceptibility indices of the road by 11.02 % (i.e. from 127 to 113). However, for maximum benefits to be achieved from the stabilization, other factors like provision of good drainage facilities, adequate road sections etc. must be provided. This will help in improving the strength of the subgrade soils and overall durability of the road.
Keywords: Stabilization, Guar Gum, Xanthan Gum, Polyvinyl acetate, Failure Susceptibility

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Previous issue | Next issue | Archive