

Improving sustainability of road construction by partial replacement of natural aggregates in subbase layer with crushed brick and reclaimed asphalt pavement

ABSTRACT

Reducing dependent on naturally sourced materials is among the priority in improving the sustainability of road construction. The subbase layer which provides strength and stability across the road profile, comprised mainly of natural aggregates. This study aims to explore the feasibility of partial replacement of natural aggregates in subbase layer with 20% Crushed Brick (CB) and 20 to 50% Reclaimed Asphalt Pavement (RAP). California Bearing Ratio (CBR) test and Constant Head Permeability tests were carried out to determine the effect of this partial replacement on the geotechnical properties of the subbase layer. The results obtained denotes that the combination of 20% CB and 50% RAP is the optimum partial replacement of natural aggregates in subbase layer with CB and RAP. The use of CB further complements RAP in improving the stiffness and compressibility of the subbase layer while contributing significantly toward sustainability in road construction.