

In this work, the effects of ceramic waste (CW), marble dust (MD), and cement on the performance of road sub-base layer characteristics were investigated. Industries routinely produce CW and MD, and the disposal of these types of waste is a major environmental problem in Algeria and worldwide. Thus, the recycling of these waste materials requires the development of long-term solutions. The goal of the current work is to estimate the effects of CW, MD, and ordinary Portland cement (OPC) on the soil of the sub-base layer improving its engineering properties, such as dry density and bearing capacity as measured by the California Bearing Ration (CBR). We planned different admixtures of soil containing 5, 10, and 15% CW, and 2, 3, 4, and 5% MD, and 1.5, and 2% OPC by dry weight. The attainment of sub-base materials was investigated with soil–CW only, soil–MD only, soil–OPC only and soil–CW–OPC. The results showed that the CBR values of sub-base materials increase with the addition of recycled wastes and OPC. The CBR values of mixtures with OPC only and OPC with CW were greater than that of CW and MD only. This work offers the possibility of improving the sub-base layer by the addition of CW, MD, and OPC to obtain greater economic and environmental sustainability through better resource utilization.