

Investigating the Properties of Asphalt Concrete Containing Recycled Fillers

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Abstract : Increasingly accumulation of the solid waste materials has become a major environmental problem of communities. In addition to the protection of environment, the recycling and reusing of the waste materials are financially beneficial. Waste materials can be used in highway construction. This study aimed to investigate the applicability of recycled concrete, asphalt and steel slag powder, as a replacement of the primary mineral filler in asphalt concrete has been investigated. The primary natural siliceous aggregate filler, as control, has been replaced with the secondary recycled concrete, asphalt and steel slag powders, and some engineering properties of the mixtures have been evaluated. Marshal Stability, flow, indirect tensile strength, moisture damage, static creep and volumetric properties of the mixtures have been evaluated. The results show that, the Marshal Stability of the mixtures containing recycled powders is higher than that of the control mixture. The flow of the mixtures containing recycled steel slag is lower, and that of the mixtures containing recycled asphalt and cement concrete powder is found to be higher than that of the control mixture. It is also found that the resistance against moisture damage and permanent deformation of the mixture can be improved by replacing the natural filler with the recycled powders. The volumetric properties of the mixtures are not significantly influenced by replacing the natural filler with the recycled powders.

Keywords : filler, steel slag, recycled concrete, recycled asphalt concrete, tensile strength, moisture damage, creep

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