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Creep Compliance Characteristics of Cement Dust Asphalt Concrete Mixtures

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Abstract : The current research is directed towards studying the creep compliance characteristics of asphalt concrete mixtures modified with cement dust. This study can aid in assessing the permanent deformation potential of asphalt concrete mixtures. Cement dust was added to the mixture as mineral filler and compared with regular lime stone filler. A power law model was used to characterize the creep compliance behavior of the studied mixtures. Creep testing results have revealed that the creep compliance power law parameters have a strong relationship with mixture type. Testing results of the studied mixtures, as indicated by the creep compliance parameters revealed an enhancement in the creep resistance, Marshall stability, indirect tensile strength and compressive strength for cement dust mixtures as compared to mixtures with traditional lime stone filler. It is concluded that cement dust can be successfully used to decrease the potential of asphalt concrete mixture to permanent deformation and improve its mechanical properties. This is in addition to the environmental benefits that can be gained when using cement dust in asphalt paving technology.

Keywords : cement dust, asphalt concrete mixtures, creep compliance, Marshall stability, indirect tensile strength, compressive strength
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