

عنوان مقاله:

INFLUENCE OF NANO MATERIALS ON MICRO CRACK HEALING OF ASPHALT STABILIZED SUBGRADE SOIL

محل انتشار:

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نویسندگان:

Sarsam S. I. - Department of Civil Engineering, College of Engineering, University of Baghdad

Husain A - Department of Civil Engineering, College of Engineering, University of Baghdad

خلاصه مقاله:

The liquid asphalt binder loses its volatiles slowly and continuously during its service life as a soil stabilizer under environmental and service impacts. This will results in loss of elastic properties, and initiation of micro cracks, which is considered as the start of distress for the whole pavement layers. Asphalt treated material can heal by themselves in slow process under repeated loading at ambient temperature. The micro racks healing phenomena can increase the lifetime of asphalt treated layer for several years. The aim of this work was to investigate the impact of implication of Nano material additives in the self-healing phenomena of asphalt stabilized subgrade soil. Specimens of 100 mm diameter and 75 mm of height have been prepared and compacted at the target density and optimum asphalt content using various percentages and types of Nano materials (Hydratedlime, silica fumes, and coal fly ash). Specimens were subjected to the repeated indirect tension in the Pneumatic repeated load system (RPLS) at 20 ° C for 30 minutes to allow the initiation of micro cracks. Specimens were withdrawn from the testing chamber and stored in an oven for 120minutes at 60 ° C to allow for crack healing phenomena. Specimens were returned to the testing chamber and subjected to another cycle of repeated indirect tension at 20 ° C for 30 minutes. The deformation of the specimens under repeated indirect tensile stress was captured using video camera for both conditions. The impact of Nano additives on the crack healing was detected through the variation of the strain level of the specimens before and .after healing

کلمات کلیدی:

Asphalt stabilization, Indirect tensile stress, Punching shear stress, Repeated load, Crack healing

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