

Effect of compaction temperature on porous asphalt performance

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ABSTRACT

Porous asphalt is an open-graded aggregate mixed with polymer modified binder that contains relatively high air voids after compaction to allow for water infiltration. The performance of porous asphalt, particularly the strength and durability are highly influenced by compaction temperature. Higher compaction temperature may decrease the mixture air voids, thus failed to achieve required mixture densities and reduce its ability to perform as designed. Meanwhile, lower compaction temperature could potentially increase the viscosity of polymer modified asphalt and decrease the adhesion between aggregates, hence promoted stripping problem on pavement. Therefore, this study investigates the performance of porous asphalt compacted at various temperatures. The samples were prepared by using polymer modified asphalt PG76, granite aggregates and hydrated lime as mineral filler. The materials were mixed and compacted using gyratory compactor at different temperatures. The samples were then tested for volumetric properties, Abrasion loss, Resilient Modulus, Creep and Moisture Susceptibility. Based on the results, it can be concluded that compacting the porous asphalt at low temperature will reduce its performance.

KEYWORDS:

Compaction temperature; Porous asphalt performance; Open-graded aggregate