

LABORATORY EVALUATION OF CLOGGING BEHAVIOR OF POROUS ASPHALT PAVEMENTS

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ABSTRACT

Porous asphalt has been used as surface wearing courses for road pavements to improve wet-weather driving safety, as well as to perform as a form of quiet pavement to reduce traffic noise. Both forms of benefits are derived from the presence of relatively high porosity in the porous pavement mixture. During operation, clogging of the porous layer may take place and this can seriously reduce the effective porosity of the porous mixture and impair the ability of the porous pavement to serve its intended functions. Therefore in the design of a porous asphalt pavement, it is important that its porosity, and hence drainage capacity, is retained sufficiently during operation to serve the intended functions throughout its service life. In this research, using permeability as the drainage capacity parameter, a laboratory study was performed to examine the drainage and clogging behaviors of different designs of porous asphalt mixtures used in Singapore, subject to the common clogging materials found in Singapore roads. Clogging was created by introducing the clogging materials in stages into the porous materials tested. A constant-head test was employed to determine the permeability of the porous materials at different stages of the clogging test. The relative clogging susceptibility of the different porous asphalt mixtures studied are compared by means of a coefficient of clogging potential.