PERFORMANCE COMPARISON OF DIFFERENT TYPES OF POROUS TWIN-LAYERS FOR HIGH ROAD SAFETY STANDARD

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ABSTRACT
There is a need to guarantee an improved durability of Porous Asphalt Concrete for road pavement wearing courses in terms of structural and surface characteristics, and drainage performance. This need has long since prompted researchers in the road sector to seek new design solutions, aimed, among other things, at the optimization of maintenance operations.

The rapid deterioration of draining power and noise reduction properties of porous asphalt layers has been mainly attributed to the premature clogging of pores and the inherent difficulties in selecting suitable porous asphalts, especially for urban applications, where such problems are more anticipated. These failures have contributed to the development and experimentation with the "Twin-Layer" porous asphalt concept.

In this paper, a performance related approach is proposed for different types of Twin-Layer. Underpinned by a rational mix design method, the technique aims to provide a high safety standard on roads where traffic moves at high speeds.

The mix design study has been conducted for the porous under-layer and for the surface filter. Three types of filter porous asphalt mixtures have been studied. This, together with the admixtures incorporated into the supporting asphalt concrete, has enabled an optimal mixture to be identified. The performance comparison between the different mixtures has been conducted on the basis of mechanical, hydraulic and superficial characteristics exhibited by the different Twin-Layers adopted.

KEYWORDS: Twin-Layer, PAC Porous Asphalt Concrete, Mix-Design, Safety