

## LABORATORY AND FIELD EVALUATION OF HALF WARM FOAMED ASPHALT MIXTURES

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### *ABSTRACT*

This paper presents a laboratory and field study on the development of half-warm foamed asphalt mixtures manufactured at temperatures below 100 °C. Foam bitumen produced in the laboratory was first mixed with aggregate blends at different moisture contents and pre-heated at 95 °C to produce half-warm mixtures. The mixtures were then assessed in terms of particle coating and workability. Laboratory results indicated that fully coated and workable mixtures could be produced at temperatures below 100 °C using foamed bitumen. Also, aggregate moisture content had a significant effect on mixture quality. Following the laboratory work, selected materials were manufactured in an asphalt plant fitted with a system to produce foam bitumen and installed using conventional equipment. Specimens cored from the site trials showed that density and voids of the half-warm materials were comparable to those of the equivalent hot mix materials. Stiffness, resistance to permanent deformation, resistance to water damage and durability were also investigated and were considered similar to those of the hot materials. Furthermore, binders recovered from the half-warm mixtures showed less hardening than those recovered from the hot mixtures as a result of lower production temperatures.

*KEY WORDS:* Foamed bitumen, half-warm mixtures, CO<sub>2</sub> emissions.