

## **INCINERATOR BOTTOM ASH AGGREGATES IN BITUMINOUS MIXTURES**

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### **ABSTRACT**

When municipal solid waste is incinerated in energy from waste plants, approximately 25% by weight of the waste burnt remains as an inert gravelly like ash known as *Incinerator Bottom Ash aggregates* (IBAA). This ash has traditionally been land-filled. However, in recent years it has been increasingly further processed and used as a secondary aggregate. Despite this increase, higher usage is still required.

In this paper, experimental investigations were performed to develop a control blend made of limestone aggregates to meet the BS 4987:2003 requirements for binder course and base layers. A procedure was then developed to substitute limestone with IBAA, within the control blend, at relatively high levels. The void structures of the new blends were then established. Subsequently, a 100/150 pen bitumen was used to produce hot bituminous mixtures containing 0, 30, 60 and 80% IBAA. The volumetric properties, stiffness modulus, moisture sensitivity and ageing of these mixtures were studied.

It was found that using IBAA in hot asphalt mixtures appears suitable for binder course and base layers in flexible pavements although it requires more binder to be added. Moreover, using IBAA was found to improve the stiffness of these mixtures. Generally, expected reduction in the retained stiffness was noticed as a result of subjecting the mixtures to water ingress, whereas ageing of the mixtures resulted in a general increase in the retained stiffness.

**KEY WORDS:** IBAA, limestone, hot mixtures, moisturizing, ageing