DESIGN OF BITUMINOUS MIXES

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TYPES, APPLICATION AND PROPERTIES OF BITUMINOUS MIXES

The range of possible mix compositions is almost infinite, from single size coated stone at one extreme to mastic asphalt at the other. However, the types of bituminous mixes used worldwide can be broadly classified as either asphalts or macadams.

The principal differences between asphalts and macadams are as follows:

I. The grading of the aggregate in an asphalt is usually a relatively single-sized coarse aggregate with a large proportion of fine aggregate and very little intermediate sized material; as a result of this "gap" in the grading this type of mix is often referred to us "gap-graded"; in macadams the aggregate grading is continuous.

II. The strength of an asphalt is dependent on the stiffness of the sand/filler/bitumen fraction, ie the mortar. The strength of a macadam is primarily achieved through friction and mechanical interlock of the agrregate particles.

III. As asphalts contain a high proportion of filler, ie a large surface area of aggregate to coat, they have a relatively high bitumen content; on the other hand macadams have less fine aggregate, thus less bitumen is required to coat the aggregate satisfactorily.

Contents