CLIENT NOTE R2K-04

STONE MASTIC ASPHALT

Stone Mastic Asphalt (SMA) is a gap graded wearing course mix with a high proportion of coarse aggregate, which interlocks to form a skeletal structure to resist permanent deformation and bound with a mastic mortar. It is delivered, laid and compacted while hot.

Roads2000 manufactures its own stone mastic asphalts and is capable of producing and laying mixes with maximum stone sizes of 10mm and 7mm.

SMA is a structural asphalt material which has recently become more popular due to its property of disguising reflective cracks in the open textured surface. Therefore it is utilised for all roads from arterial to residential. The IPWEA/AAPA Technical Specification for Supply and Laying of Hot Asphalt Road Surfacing (Rev 2) provides advice on the design for SMA. Roads2000 uses Class 320 bitumen exclusively for all stone mastic asphalts.

When laying stone mastic asphalts, it is recommended that layer thicknesses are not less than 3x the stone size or greater than 5x the stone size. The increased thickness is to limit the possibility of "dragging" the mat. When laying multi-layer asphalts, the previous layer must be allowed to cool below 40^{o}C. Compaction should be provided by only static steel rollers and vibratory or rubber-tyred rollers should not be utilised.

SMA is at high risk of flushing immediately following installation and/or in high temperatures. Main Roads Specification 502 for SMA recommends that no traffic be allowed on the completed asphalt if it has a temperature in excess of 40^{o}C. This can be offset by gritting and/or the application of water to (i) reduce contact with the surface binder and (ii) cool the asphalt to the required temperature. Roads2000 does not recommend that SMA is used in carparks or roundabouts (ref R2K-05). In the USA, polymer is utilised in the binder for intersections surfaced with SMA.

Roads2000 can provide advice to clients on the mix designs where required.

References

1. IPWEA/AAPA Technical Specification, Tender Form and Schedule for Supply and Laying of Hot Asphalt Road Surfacing (Rev 2, April 2002)
2. AAPA Fundamentals of Bituminous Surfacing (2010)
3. Main Roads Specification 502 for Stone Mastic Asphalt (28/03/2011)