

## Comparison of Density Specifications Used for Construction of Hot Mix Asphalt (HMA)

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Measuring the density of asphalt concrete in the field is very important in quality controlling of the flexible pavements. Malpractices use in compaction of asphalt concrete in the field causes quality maintaining and durability problems in the Sri Lankan road system. In Sri Lanka Almost all the road projects use the Marshall Test Method to check the density of laid asphalt concrete. There are three methods for measuring degree of compaction of asphalt concrete in field; with respect to laboratory density, with respect to maximum density and with respect to a trial section. The objective of this research is to investigate the above three methods and select the most appropriate specification for quality control / quality assurance of HMA with further modifications to the prevailing systems.

In order to accomplish the objective following methods were undertaken. Air void percentage and degree of compaction of asphalt in binder/wearing course have been calculated w.r.t. Marshall Density and Theoretical Maximum Density. The results convince that core densities should be lie within the range of 97.5-100% of the Marshall Density of the same asphalt sample, and 92-98% of the Theoretical Maximum Density to satisfy the air voids within the acceptable region. Since it is difficult to have a control strip in the field, nuclear density gauge (CPN-MC-1DR-P PORTAPROBE) was used to check the density in the field. Observations imply that the number of roller passes need to be changed to maintain better quality in road construction.

**Key words:** Degree of Compaction, Theoretical Maximum Density, Marshall Density

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