

EVALUATING TIME AVAILABLE FOR COMPACTION OF HMA

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DECLARATION

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Road sector development has rapidly increased in Sri Lanka after the civil war. Asphalt concrete is widely used for the construction of roads due to speedy construction, durability, riding quality and easy to apply compared to other materials.

The primary objective of this research is to find the time available for compaction of hot mixed asphalt concrete with effect of wind velocity, lay down temperature, and ambient temperature. The secondary objective is to check the value 135⁰C as the minimum lay down temperature for tropical climates. In this study, cooling time was measured in laboratory and field with different asphalt layer thickness, base temperature, and ambient temperature with different mixtures and lay down temperatures.

According to standard specification for construction and maintenance of roads and bridges, it has specified that the breakdown and the intermediate rolling shall be carried out at temperature not less than 135⁰C and 115⁰C respectively. The final rolling shall be completed before the temperature of the mix falls below 90⁰C.

According to the field data, cooling rate at 12.30 pm to 1.30pm was low during day time and that time was more suitable for asphalt laying and also found that HMA lay down temperature below 135⁰C was not significantly affected to compaction of HMA because compaction density can be achieved applying more roller passes and compaction effort. But in laboratory test, stability of HMA below 115⁰C was contradict to the specification. So that the value of 135⁰C not for minimum lay down temperature of HMA and recommended to complete all the compaction process before reaching 115⁰C and final rolling complete before 90⁰C during day time in western province.

Key words: Temperature of Asphalt, HMA, TAC, Asphalt compaction

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LIST OF ABBREVIATIONS

Abbreviation	Description
HMA	Hot Mixed Asphalt
TAC	Time Available for Compaction
SLS	Sri Lanka Standard
ICTAD	Institute of Construction Training and Development
ABC	Aggregate Base Course
RDA	Road Development Authority
ASSHTO	American Association of state Highway Transport officials