

## **Effect of compaction temperature on the performance of dense-graded asphalt mixture**

*N. A. Rahmat<sup>a</sup>; N. A. Hassa<sup>a</sup>, R. P. Jaya<sup>b</sup>, M. K. I. Mohd Satar<sup>a</sup>; N. Mohd Azahar<sup>1</sup>; S. Ismail<sup>a</sup> and M. R. Hainin<sup>a</sup>*

<sup>a</sup> School of Civil Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor

<sup>b</sup> Faculty of Civil Engineering and Earth Resources, Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia

### **ABSTRACT**

Compaction temperature is an important parameter that determines the volumetric properties of the compacted asphalt pavement. Using an improper compaction temperature can cause problems on the dense-graded asphalt mixture performance. If the compaction temperature is less than the desirable temperature, it can potentially reduce the density and increase the air voids, thus reduce the pavement strength. This study investigates the effect of compaction temperature on the performance of dense-graded mixture. The samples were prepared by mixing 60/70 pen bitumen and granite aggregates using Marshall mix design method. The samples were compacted using Marshall compactor at various temperatures. The compacted samples were then evaluated for volumetric properties and tested for Marshall stability, resilient modulus and dynamic creep. Based on the results, it was found that the variation of the temperature affects the volumetric properties. On the other hand, the reduction in temperature reduces the stability, resilient modulus and creep performance.

### **KEYWORDS:**

Compaction temperature; Performance of dense-graded; Asphalt mixture