

Thepparit Ruttanapunyagorn 2006: The Effect of Water on Stone Mastic Asphalt using Steel Furnace Slag Aggregate. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Flt.Lt. Pipat Sounwong, M.Eng. 136 pages.
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The research studies the effect of water on Stone Matrix Asphalt (SMA) surface that using the slag aggregate. Because of the researcher want to design the pavement for high traffic, this research uses gradation of the aggregate base on SMA's properties. The research is studied to solve the damage of Rama IX Bridge's pavement that built and operated since 1987. The high volume of traffic are always occurred on the Rama IX bridge especially on the left lane or the truck lane. Moreover, It has a high gradient with long distance. In addition, Thailand is located on the areas where heavy rainfalls.

The SMA is appropriated for the high volume of traffic pavement as show in many researches at another country. It's difficult to rutting and other damages by using SMA.

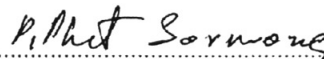
SMA has many special properties which are high Polish Stone Value (PSV), high Skid Resistance Value (SRV). This research studies the properties of two aggregates which are granite stone and slag. This research chooses three gradations of aggregate and tests its by using Marshall Method and Superpave Gyratory Compactor for tests Indirect Tensile, Modulus of Resilient, Permanent Deformation. The binder in this research uses Polymer Modified Asphalt(PMA).

According to the results of this research include density, stability, Indirect tensile and Modulus of Resilient. Slag is better than granite. For example, the stability of SMA greater than granite about 33.70 percent, flow ability and airvoid of these aggregate are similar. Moreover, Slag aggregate more resist from the effect of water than granite aggregate about 0.16 percent. However, the value of results of SMA in this research are higher than standard value.

In conclusions, the gradation of aggregate in this research is appropriated. It shows the high stability, Indirect Tensile, Modulus of Resilient and Moisture Damage.



Student's signature



Thesis Advisor's signature

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