

Naphatrapee Anantachaiyapong 2009: Permanent Deformation Resistance Properties of Lab-Made Asphalt Concrete Mixtures Using Lime Stone Aggregates. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Piphat Sornwong, M.Eng. 124 pages.

In this research, , the dynamic creep tests using Simple Performance tester were conducted to simulate the actual loading condition in the pavement with the vertical load from traffic and the horizontal confining stress. Further, several tests to determine engineering properties of asphalt concrete material namely stability and flow test, strength index, moisture-induced damage, indirect tensile strength test and resilient modulus test were also conducted in this research. The lime stone aggregates are in the highway number 3 contraction project in Chonburi. A asphalt binders penetration grade 40/50 and 60/70 (AC 40/50 and AC 60/70) and polymer modified asphalt (PMA) were used to produce asphalt concrete materials in this study.

Results of indirect tensile strength test at 5 temperatures indicated that in general asphalt concrete materials with PMA have the indirect tensile strength greater than those with AC 40/50 between 35°C – 60°C and AC 60/70 respectively. Results of resilient modulus test at 5 temperatures that asphalt concrete materials with AC 40/50 have the resilient modulus higher than those with PMA at 5-35 degree Celsius. At 50-60 degree celsius, asphalt concrete materials with PMA have higher Resilient modulus than those with AC 40/50. It is noted that, at any temperature, the asphalt concrete materials with AC 60/70 have the lowest Resilient modulus. Finally

Based on the laboratory test results of asphalt concrete materials in the research, it can be concluded that asphalt concrete materials with AC 40/50 and PMA have superior properties than asphalt concrete materials with AC 60/70. Moreover the dynamic creep tests the showed that asphalt type PMA is Accumulates strain is slower than all other types.

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Thesis Advisor's signature

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