Performance of Nano kaolin clay as modified binder in porous asphalt mixture

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Abstract

The performance of porous asphalt (PA) mixture incorporating Nano kaolin clay (NKC) was presented in this study. The study covers basic properties of PA including morphology characteristic, penetration and softening point test. In addition, cantabro loss and resilient modulus test with regards to the variations of mix design of the PA was also examined. The kaolin clay used in this study has gone through the grinding process to produce the NKC with the percentage replacement of bitumen used was 3%, 5%, 7% and 9%. The results show that the used of NKC improved the physical properties of PA by reducing the penetration value, meanwhile increasing the softening point value. This indicates that NKC enhanced the temperature susceptibility of PA. The experimental result also show that NKC modified binder improved the durability and resistance to rutting and cracking of PA. Furthermore, 5% NKC is also considered as the optimum NKC proportion. The utilization of NKC is able to improve the physical and mechanical properties of PA. Therefore, it can conclude that the performance of PA is also enhanced with utilization of NKC in the bitumen.

KEYWORDS :

porous asphalt(PA); Nano kaolin clay (NKC)