

Development of Polymer Modified Bitumen Specification for Sri Lanka

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Implementation of polymer modified bitumen (PMB) is a new movement of Sri Lankan highway industry and it has become a challenging task for many reasons. One is, currently used penetration grading system is inadequate for proper quality control of PMB. The improper use of PMB would result in poor pavement performance and will lead to serious maintenance and cost issues. And the lack of experience of Sri Lankan engineers is a problem since a very strict process control is required. Hence there is the need of a proper guideline to implement PMB in Sri Lanka.

The Performance Grading system is considered as the most effective specification for bitumen since the test methods capture fundamental rheological properties of bitumen. This was successfully implemented in USA; but is lagging in other parts of the world due to the cost and complexity of the new test equipment. But the empirical tests also are taken as indirectly related to the road performance for centuries. In PMB specifications of countries such as Australia, UK, India, Brazil, China etc. it is evident that the used test methods does not necessarily measure fundamental rheological properties of bitumen, but the empirical tests which are indirectly related to the characteristics of bitumen.

In this research, the possibility of developing a Sri Lankan Specification of PMB with available test methods was studied. The important bitumen properties that are necessarily needed to be controlled are identified and the test methods which can determine those characteristics are included in the specification. Requirement limits for each test are set according to literature findings. Here the controlling of mixing and compaction temperatures for PMB was specially considered since it is a major practical issue. Further development for this specification can carry out with the experience of SL engineers in future, and the developed specification would be a great assistance for earlier stages of PMB pavements in Sri Lanka.

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