

Estimation of Penetration Requirements for Prime Coat

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Prime coat application is a necessary activity in road construction and it has a purpose in the pavement construction process, yet many times prime is misused during the project. The main function of prime coat is to prevent moisture infiltration to the base and underneath layers by sealing the road base. So the prime penetration into the road base is the most important consideration. When it comes to Sri Lankan context, the application of prime has been a common practice in road construction projects though there is no basis for penetration requirements. This is an issue of concern as there should be a basis for selecting the best type of prime coat in terms of the penetration and penetration requirement for respective type of processed bitumen as well. Commonly used types of processed bitumen for prime application in Sri Lanka are MC-30 (Medium Curing cut back bitumen) and CSS-1 (Cationic Slow Setting). The experimental research was done using both types of bitumen and the Aggregate Base Course (ABC) specified in the ICTAD-2009 specification as the road base. Specimens were casted in AASHTO specified CBR moulds at selected degree of compaction and sprayed each types of bitumen at selected rate under typical defined Sri Lankan conditions. Penetration requirement and required curing time were selected for each degree of compaction and rate of application, and then the penetration requirements for respective required curing time were plotted on a graph against the base compaction and rate of application. There is no significant difference of required penetration for both type of bitumen but MC-30 has shown a bit higher penetration at few time intervals to make it arguably the best to select in terms of the penetration into the base among the two types of bitumen tested. The penetration requirements for MC-30 and CSS-1 with the time are presented and can be used to make decisions on the best type of bitumen to use in terms of penetration and required penetration for a selected type of bitumen with curing time.

Key words: Prime coat, Penetration requirement