

Effect of interlayer bonding quality of asphalt layers on pavement performance

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Abstract. The quality of interlayer bonding at the interfaces between the asphalt layers in flexible pavements affects the overall pavement performance. Lack or partial lack of interlayer bonding between asphalt layers can cause pavement's premature failures such as rutting, slippage of the wearing course, cracking or simply a reduction in the calculated fatigue life of the pavement structure. This paper shows the case studies of investigation of actual or potential premature failure of newly reconstructed and constructed pavements where low quality of interlayer bonding has a dominant meaning. In situ and laboratory tests were performed and followed by analytical calculation of pavement structure where thicknesses of layers and maximum shear strengths obtained from the tests were used. During the investigation it was found out that a low quality of tack coat as well as the same aggregate gradation in the bonded asphalt mixtures were the main reasons behind the weak quality of interlayer bonding. Partial interlayer bonding has a strong influence on reduction of calculated fatigue life of pavement. The summary of the paper includes recommendations on how to avoid the low quality of interlayer bonding of asphalt layers.