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16 . ABSTRACT

There has been some reluctance on the part of some in Oklahoma to use SMA mixtures. There are several factors that could be involved in the slow acceptance of SMA mixtures in Oklahoma. These factors are 1) the extra expense associated with the higher binder contents and better quality aggregates required, 2) a lack of data indicating that SMA mixtures perform substantially better than conventional Superpave mixtures and 3) a lack guidance on thickness design benefits, including appropriate input parameters for the MEPDG. The objectives this study are to evaluate the performance of SMA mixes compared to S-4 mixes and to determine the performance benefits. Testing included Hamburg Rut Tests and dynamic modulus testing.

Hamburg rut testing indicated that SMA resists permanent deformation better than ODOT S-4 mixes made with the same source and grade of asphalt cement. Both measured and predicted dynamic modulus of SMA was less than ODOT S-4 mixes. The Asphalt Institutes fatigue equation indicated longer fatigue life for SMA compared to S-4 mixes. MEPDG prediction models contradict these findings.

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