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STABILIZATION OF MARGINAL AGGREGATES WITH FOAMED ASPHALT

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Stabilization of Marginal Aggregates With Foamed Asphalts

by

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The shortage of high quality aggregates together with increased traffic has created a need for treating local materials for use as base courses.

Asphalt has become a common base stabilizer in the last fifteen years; however, the criteria developed for materials selection and design and construction techniques have been based mainly on requirements developed for asphalt concrete surface courses. Thus, because of these sometimes "strict" requirements, materials and construction techniques are being utilized which significantly increase cost and provide a stabilized material whose properties are in excess of those required by traffic and the environment.

Recent research to provide the technology for the utilization of more economical asphalt treated bases has brought forth stabilization of marginal aggregates using foamed asphalt.

Four sands and one siliceous river gravel from various regions of Texas were stabilized with foamed asphalt to product laboratory test specimens. Strength, stiffness and stability of these specimens were measured using common laboratory testing methods. Water susceptibility, temperature susceptibility and fatigue performance of these asphalt paving mixtures were also quantified.

AASHTO structural layer coefficients of the foamed asphalt were calculated and compared to those established for bituminous stabilized bases at the AASHTO Road Test. Equivalent thicknesses were determined for these foamed asphalt mixtures.

Based on available literature, foamed asphalt appears to be an economically attractive alternative for stabilization of pavement bases and subbases. However, laboratory results obtained in this study, utilizing marginal aggregates, suggest that foamed asphalt mixtures have low stabilities and poor fatigue performance when compared to conventional hot mix paving materials. In addition, the foamed asphalt mixtures have poor resistance to water susceptibility.

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