

Stabilization of dune sand using foamed asphalt

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Abstract: Foamed asphalt technology has increasingly gained acceptance as an effective and economical soil improvement and stabilization technique, mainly because of its improved aggregate penetration, coating capabilities, and handling and compaction characteristics. This laboratory research program was carried out to investigate the feasible use of foamed asphalt technology in Saudi Arabia to improve the prevalent dune sands for possible use as a base or subbase material. Several variables were investigated to evaluate the relative improvement of dune sand as well as to permit the development of design procedures for the future use of foamed asphalt technology in the harsh climatic conditions of eastern Saudi Arabia. Statistical analysis of the results was employed to verify the effects of emulsified asphalt and foamed asphalt treatment, with and without the addition of Portland cement, on the strength characteristics of the treated mixes. The results displayed significant improvement in the performance of dune sand-foamed asphalt mixes, as compared to that of the emulsified asphalt mixes.