

Evaluation of Foam Asphalt Technology for roads construction in the Gulf

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Abstract: This paper summarizes research carried out in the area of Foamed Asphalt Technology that was planned to compare the performance of foamed asphalt pavement mixes with conventional aggregate of road bases. The research work focused on the investigation and evaluation of the feasible use of foamed asphalt technology for Saudi roads using marginal quality construction materials, marl, and Recycled Asphalt Pavement (RAP) materials for local applications. Materials included Ministry of Transport (MOT) granular base class A and B, subbase material class B, and reclaimed asphalt pavement (RAP) material. Foamed asphalt mixes were designed for subbase class B (SB) and RAP material utilizing low percentage of Portland cement. Foamed asphalt mixes were optimized to meet dry and wet indirect tensile strength (ITS) requirements. Designed mixes in addition to granular base class A and B were evaluated for shear strength, angle of internal friction, dynamic resilient modulus at 25°C and wheel tracking test dry at 50° C and soaked at 22° C.

Results indicate that base class A has the lowest rutting followed by base class B then foamed SB class B and finally foamed RAP. Portland cement was effective in reducing stability loss of foamed asphalt mixes. Resilient modulus testing indicated that SB mix has behavior comparable to base class A. RAP mix has shown the best behavior. Saturation has reduced resilient modulus of all mixes significantly. Foamed asphalt technology can be used successfully to construct road bases from locally available marginal or recycled materials.