Evaluation of emulsified asphalt treated sand for road bases

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Abstract

This research aims at laboratory evaluation of emulsified asphalt treated mixture for their potential application in low volume roads as bse courses. In order to develop cost-effective mix specifications, the locally available aggregates such as dune sand and crusher fines have been used in place of conventional crushed stones. Three blending percentages of crusher fines with sand were used such as 0%, 25% and 50% of the total aggregates. Portland cement was also added to improve the mix curing and strength characteristics. Three percentages of cement by weight of total aggregates were used, i.e., 0%, 1.5%, and 3.0%/ Illinois method of mix design based on modified Marshall stability was adopted to design each mix. The design mixtures were further subjected to dynamic testing using repeated loading equipment. Split tensile strength, resilient modulus, and fatigue and rutting tests were conducted. Finally, based on laboratory results, emulsified asphalt pavement thickness design charts were prepared assuming suitable CBR values for the subgrade. Field trials on full scale emulsified asphalt pavements and their long term monitoring will still be required to validate the laboratory based design specifications.