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Title: A study on stabilisation of laterites using foamed bitumen

Abstract
Roads play an important role in the development any country's economy and construction materials play a major role in construction and maintenance of roads. Currently the road construction industry is being faced with problems of diminishing of good quality materials/aggregates, increasing haulage costs, high-energy requirements in terms of fuel that is required to meet the heating requirements. Because of these challenges existing or local materials may be the only option; but these may not meet the required material specifications and thus they would need to be improved through say stabilisation.
Foamed bitumen technology is one of such techniques that can be employed in improvement of these materials. This technology involves adding foamed bitumen (i.e. a mixture of liquid bitumen, water and air) to aggregates at ambient temperatures; this eliminates heating of the aggregates and hence cuts down on the energy costs. The foamed bitumen works by combining with the fines forming a mortar that binds the rest other coarser particles into a composite mass. The foamed bitumen can be used with a wide variety of road construction materials provided that the material being treated contains adequate fines (a minimum of 3-5 % has been proposed).
Laterites are basically tropical soils that are a result of the tropical weathering process; they exist in various forms ranging from clays, gravels to hard rocks. In the gravel form laterites can be employed as subbase, road base or wearing course materials for a given pavement structure. Chemically they are composed of hydrated oxides of iron and aluminum and small amounts of silica and other trace elements. However most of the times these laterites do not meet the required road material specifications and thus have to be improved by say stabilisation.
In this study previous research in the area of foamed bitumen technology and laterites was reviewed and synthesised into a state of the art report. Laterites from Uganda have been sampled from the five borrow pits and characterised through physical, strength, chemical and mineralogical tests. Laboratory experiments are being undertaken on foamed bitumen and foamed bitumen mixes involving laterites. It is expected that foamed bitumen will improve properties such as flexibility; tensile strength, resilient modulus of the laterites. Results from foamed bitumen mixes involving laterites will be compared with those from laterites only.