Abstract

For a developing country like India, the biggest challenge right now is to maintain the momentum of its economic growth with judicious utilization of its natural resources while ensuring preservation of environment. Large scale aggregate requirements for construction of highways is met through stone quarries which leave a lasting impact on the environment. The government is gradually pushing for Concrete pavements due to their obvious benefits over Bituminous pavements but the biggest hurdle in this direction is high initial cost and requirement of raw materials in terms of aggregate. Possible answer to this problem is to formulate a way wherein we can reduce the high initial cost and requirement of natural aggregate. This is where use of Reclaimed Asphalt Pavement Material (RAPM) comes into play. The flexible pavement was the dominant road construction technology in our country during the last century. Majority of these pavements have crossed their projected service life. These pavements contain more than 90% of aggregates by weight. Demolition of these pavements, for construction of new ones as well as for restoration purposes, create practical problems like disposal of solid waste such as RAPM. Unfortunately, this RAPM finds its way into landfills, thus causing increase in landfill facilities and ultimately damage to the environment. The problem of scarcity of virgin natural aggregate and mounting disposal concerns of RAPM can be solved by employing it for construction or restoration of pavements. The objective of this project is to carry out replacement of coarse fraction of natural aggregate by RAPM and study its effects on the resultant Pavement Quality Concrete (PQC). The thin asphalt film outside the coarse aggregate fraction obtained from RAPM alter its interaction with cement mortar during concreting process. As a result, existing codes which are primarily based on interaction between virgin natural aggregate and cement mortar cannot be efficiently used while using RAPM. A new mix design approach using Packing Density method has been used in this project to achieve optimum proportions of constituents in production of PQC during the course of the study. A processing method aimed at improving the overall material properties of RAPM leading to increased strength gain in RAPM mixes is also discussed and analyzed experimentally in this project.

Key words: RAPM, PQC, Packing density, Processing method.