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Technical and economic evaluation of pavement maintenance methods

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ABSTRACT

The road network is an integral part of daily trips and also it is an infrastructure with high cost both structural and environmental, which begins to deteriorate immediately after construction due to traffic loads that receives, environmental conditions and possible failures. For all these reasons, the need for selection of the optimum technical and economical method of maintenance is imperative. After understanding the structure and the components of road pavement, the deteriorations and their causes, as well as the failures that occur in them, are reported. Then, it is described the methods of maintenance, and the use of innovative materials and methods in construction and maintenance of pavements. Next, after mentioning the sources of funding for maintenance and the evaluation methods of maintenance alternatives (life cycle cost analysis), they are developed problems evaluating of maintenance interventions for different cases, from which following conclusions are warranted. There is no correct intervention maintenance that is suitable for all similar problems, because each case has different conditions and requirements, with the result that the appropriate selection of both the type of pavement and the method of preservation vary. In particular, the decision to implement a more efficient construction method is obtained according to the available investment funds, the organization's strategy and the optimal technical and economical planning of maintenance, which arises from the analysis of the life cycle costs of the alternatives and leads to direct savings of economic benefits by reducing government spending, but also indirectly benefits to users. In addition, ongoing research which is conducted to develop new materials and techniques that are aimed at greater resistance to wear, reduce environmental impact and maximum economic efficiency, has resulted in rapid growth in the use of recycled materials in asphalt mixtures, which can be sourced either from existing damaged road surfaces or other kinds of waste, such as worn tires, glass, fly ash, etc. Finally, it is worth mentioning the importance of road safety during project implementation of road maintenance, as well as measures that must be taken according to national legislation.

KEYWORDS

Pavements, Maintenance, Innovation, Technical and economic evaluation of pavements, Life Cycle Cost Analysis