

The use of analytical process in priority rating of pavement maintenance.

ABSTRACT

Decision makers often perform pavements repairs without considering the maintenance priority and without utilizing a systematic procedure. These kinds of arbitrary decisions do not usually guarantee the effectiveness of budget allocation. Rating approach in Analytical Hierarchy Process (AHP) is one of the most effective techniques in decision making process which was used to facilitate the prioritization of alternatives on the basis of important parameters like pavement condition index, traffic volume and road type. In this study, relative weights of criteria, sub-criteria and inconsistency rate in each pairwise comparison matrix were calculated with the help of MATLAB software, coded M-Files as well as Expert Choice software. Finally, with Ideal-Mode synthesizing in Expert Choice software, final weights for all criteria and sub-criteria were obtained. As a case study, a number of streets in district number 6 of Tehran municipality (Iran) were selected and the final rating model was run to determine the maintenance priority index for 131 sections. It was concluded that based on the existing conditions, the rating approach in AHP method prioritized the impaired sections for maintenance easily and effectively.

Keyword: Analytical hierarchy process; Pavement maintenance; Pavement condition index; Traffic volume; Roadway width.