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Cost Effectiveness and Performance Study of Perpetual Pavement Using ABAQUS

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Abstract : Where there are many demolitions on conventional asphalt pavements, heavy costs are paid to repair and reconstruct the pavement roads annually. Recently some research has been done in order to increase the pavement life. Perpetual pavement is regarded as one of them which can improve the pavement life and minimize the maintenance activity and cost. In this research, ABAQUS which is a finite element software is implemented for analyzing and simulation of perpetual pavement. Viscoelastic model of material is used and loading wheel is considered to be dynamic. Effect of different parameters on pavement function has been considered. Because of high primary cost these pavements are not widely used. In this regard, life cost analysis was also carried out to compare perpetual pavement to conventional asphalt concrete pavement. It was concluded that although the initial cost of perpetual pavement is higher than that of conventional asphalt pavement, life cycle cost analysis during 50 years of service life showed that the performance of this pavement is better and the whole life cost of that is less.

Keywords : ABAQUS, lifecycle cost analysis, mechanistic empirical, perpetual pavement
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