Strategies to Improve and Preserve Flexible Pavement at Intersections

Title: Strategies to Improve and Preserve Flexible Pavement at Intersections

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The failures of intersections are often a significant pavement performance problem requiring cost-effective, technically sound mitigation techniques. Truck heavy wheel loadings, particularly when slow moving or standing, and during hot weather, subject the pavement to stress/strain conditions, which may cause excessive permanent deformation. These high stress/strain conditions at intersections require these pavements to be designed, constructed, and maintained to withstand much more severe operating conditions than regular pavements. The products of the proposed research will include the guidelines for design and construction of intersections and a draft specification for the construction of intersections.

An expert system will also be developed for TxDOT districts as an easy-to-use tool for selecting appropriate remedies at intersections. The implementation of an expert system for the selection of appropriate remedies for intersections seems logical. An expert system, a subfield of artificial intelligence, is a knowledge-based system whose performance is intended to rival that of human experts while being highly domain specific. It can be used to record and distribute scarce expert knowledge, to apply the expert knowledge to remote locations, to ensure the quality of problem solving, and to train experts out of ordinary people.

The expert system in this case will serve as a step-by-step guidance on the process of designing the optimum solution. The expertise of the engineers that are experienced with intersection remediation would be utilized by everyone. The expert system will ensure a more rational, faster and consistent manner of selecting an alternative. Also uniformity of the decision process in using an expert system promotes more design consistency across the districts. Also, Expert systems are most valuable to organizations that have a high-level of know-how experience and expertise that cannot be easily transferred to other members especially that more baby boomers are retiring from agencies like TXDOT. The system is designed to carry the intelligence and information found in the intellect of experts and provides this knowledge to other members of the organization for problem-solving purposes.