



PROJECT SUMMARY

Texas Department of Transportation

0-6673: Improvement in Pavement Ride, Distress, and Condition Based on Different Pavement Types

Background

Each district is required to develop a 4-year pavement management plan assigning project treatment categories for the Pavement Management Information System (PMIS). However, there are different interpretations in the districts about what treatments should be considered as preventive maintenance (PM), light rehabilitation (LRhb), medium rehabilitation (MRhb), and heavy rehabilitation (HRhb). There is a need to develop guidelines with technical criteria for the selection of maintenance and rehabilitation alternatives and to identify which treatments belong to each PMIS treatment category. There is also a need to update the improvements to the PMIS scores for each treatment category.

What the Researchers Did

Pavement performance data were extracted from the PMIS, Design and Construction Information System, and Decision Support System legacy databases for years 1993 through 2012. A comprehensive statistical investigation of historical pavement performance and construction data for 13 Texas Department of Transportation (TxDOT) districts was performed. The analysis focused on the increase in the PMIS scores due to PM, LRhb, MRhb, and

HRhb. The analytical procedures included descriptive statistics, hypothesis testing, and engineering judgment.

Final recommendations to update PMIS ride, distress, and condition score increase and reset values for flexible and rigid pavements were developed in the research project. Field survey investigations were conducted to validate findings from the historical PMIS data analysis. The researchers also prepared a set of guidelines to assist TxDOT districts to develop more rigorous 4-year pavement management plans. To that end, the appropriate PMIS treatment category for each treatment alternative was identified, and improvements to the ride, distress, and condition score were updated.

Research Performed by:

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What They Found

In 1993, PMIS score improvements due to treatment were provided in the *Pavement Management Information System Concept, Equations, and Analysis Models* research report. These recommendations were updated in 1995. Based on historical data, engineering judgment, and feedback from TxDOT practitioners, the researchers updated the PMIS score increases and reset values as shown in Table 1.

What This Means

As a result of this project, the researchers developed *Guidelines to Assign PMIS Treatment Levels* considering the climatic zone and traffic levels. The guidelines include updated PMIS score increases for PM, LRhb, MRhb, and HRhb. These guidelines will enhance the PMIS decision-making process at TxDOT and will result in better-informed decisions when selecting treatment alternatives for the 4-year pavement management plans.

Table 1. PMIS Score Increases and Reset Values for Different Pavement Treatments.

Pavement Type	Treatment Level	Ride Score	Distress Score	Condition Score
Flexible	PM	Increase by 0.5	Reset to 100	Reset to 100
	LRhb	Increase by 1.2	Reset to 100	Reset to 100
	MRhb	Reset to 4.5	Reset to 100	Reset to 100
	HRhb	Reset to 4.5	Reset to 100	Reset to 100
Rigid (CRCP*)	PM	Increase by 0.8	Reset to 100	Reset to 100
	LRhb	Increase by 1.9	Reset to 100	Reset to 100
	MRhb	Reset to 4.2	Reset to 100	Reset to 100
	HRhb	Reset to 4.2	Reset to 100	Reset to 100
Rigid (JCP**)	PM	Increase by 0.7	Reset to 100	Reset to 95
	LRhb	Increase by 1.6	Reset to 100	Reset to 100
	MRhb	Reset to 4.5	Reset to 100	Reset to 100
	HRhb	Reset to 4.5	Reset to 100	Reset to 100

* Continuously reinforced concrete pavement

** Jointed concrete pavement

For More Information

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