DRISI

Caltrans Division of Research, Innovation and System Information

Research Notes

Pavement

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Project Title:
Tri-Annual Performance Model Update

Task Number: 3814

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Tri-Annual Performance Model Update

Pavement Management System (PaveM) Performance Model Update

WHAT IS THE NEED?

The Caltrans pavement management system, PaveM, relies on performance models to predict the future condition of the pavement and predict the benefits of performing treatments. The current models implemented in the system have been developed and enhanced over several projects, each building on new data, improved processing of the historical data, incorporation of new treatments, and improved statistical models. Also, the models have evolved as PaveM has changed and adapted to changing requirements as the system has been deployed, such as the addition of new performance indicators and new treatments. However, as with all evolving systems, ongoing work in this area continues to be necessary. Specifically, PaveM will move away from the very limited built-in modeling environment in Agile Asset's Pavement Analyst software (which is used for PaveM) and begin to use a custom scripting environment that will allow for the direct implementation of statistical models. This will require adapting the current models to be usable with the parameters directly available in PaveM. Besides, new automated pavement condition survey (APCS) data is collected annually and this needs to be incorporated into the modeling process.

This current project is a continuation of the modeling work which was performed under the 2011-2014, 2014-2017, and 2017-2020 contracts (specifically UCPRC projects 5.01, 5.02, 5.03, and 4.68). As can be seen from the nature of the work laid out in this work plan, performance modeling is an ongoing activity, both because it needs to incorporate newly collected data and because it needs to adapt to the changing design and business requirements of pavement management.
This project also incorporates data from projects 4.81 (Improved Traffic Models for PaveM and ME Design), 3.58 (Continued Calibration of ME design Models with PMS Data), and 2.03

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(Support and Training for PaveM Operations). The improved traffic models will be used to update the traffic used in model development, and the improved models will also be used to enhance the calibration process.

WHAT ARE WE DOING?

The updating of the performance models will be accomplished through the following tasks,

Task 1: Continued performance model database development

Task 2: Continue and enhance empirical model development

Task 3: Deliver and integrate new performance models into PaveM

Task 4: Develop alternative models as needed

Task 5: Reporting of model results

WHAT IS OUR GOAL?

The goal of this project is to develop updated performance models and any improvements in PaveM needed to use them.

WHAT IS THE BENEFIT?

As APCS continues to assess the performance of the network this new data will improve the PaveM models and allow for better predictions. The improved predictions will enable Maintenance to better predict the roadway needs and be proactive in addressing them.

WHAT IS THE PROGRESS TO DATE?

As of December 2021, the research team has made the following progress:

1. Worked on algorithms to improve GPS-to-postmile conversions for 50,000 lane-miles.
2. No work this quarter
3. No work this quarter
4. No work this quarter
5. Continued documentation for the engineering configuration of PaveM.