Questions & Answers

FHWA PMEUG Software Training Webinar #5

| Training Topic | Question | Response  (Note: Shaded cells reflect responses given in the webinar, while unshaded cells contain responses prepared following the webinar) |
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| Part 2—Administrative-Level Implementation Activities | None | None |
| Part 3—Technical-Level Implementation Activities | Are the NJDOT xml traffic files available to the public? | Kelly Smith: Yes, you can go to the NJDOT Pavement Design and Technology website (<https://www.state.nj.us/transportation/eng/pavement/technologies.shtm>) and find the xml download under the Darwin ME heading |
| Has the Kentucky DOT tracked cost savings due to decreased thickness and has it tracked cracking and repair costs between the conservative older method and newer method? | Clark Graves: The Department has tracked some cost differences on selected projects but has not done a wholesale analysis. As for evaluating distress, we haven’t seen any significant distress (e.g., fatigue cracking) in our older pavements and no distress in our newer ones. The Department has a robust pavement management system that could be used to track distresses under the older and newer designs, but no analyses have been started yet. |
| Part 4—Panelist Discussion | How have the thermal cracking models worked for some of the more northern states? | Justin Schenkel: Michigan DOT has had a lot of difficulties with the thermal cracking model. The model currently uses mean annual air temperature (MAAT), and we saw lower predicted thermal cracking at a site in the upper peninsula (Iron Mountain) than one in the lower peninsula (Detroit), which seemed backward. We voiced the issue to the software developer and are waiting to hear back. For the time being, we are using a single value. Also, we’ve noticed that the thermal cracking in PMED maxes out at 2,100 ft/mi, whereas we occasionally observe upwards of 8,000 ft/mi of thermal cracking. |
| I would suggest a step-by-step design pamphlet for reconstruction (flexible and rigid) and overlay design. | A pamphlet can be a useful tool for the user but since it will have limited detail, agencies still need to consider more detailed documentation. |
| Verifying local calibration to practical pavement designs is also a key activity after calibration. | Kumar Dave: Indiana DOT has made an effort to calibrate (e.g., DOT accelerated pavement testing [APT] facilities for rutting calibration) and compare those data with our pavement management data for verification.  Nusrat Morshed: New Jersey DOT (through its contractor) recently completed a local calibration. The study used various pavement management sections for calibration and verification, using the statistical parameters of bias, standard error, and root-mean square error.  Hari Nair: Verifying the calibration to practical designs is a very important step. Virginia DOT has been through this process and identified several issues that required some policy decisions during the process.  Max Grogg: APTech also recognizes the importance of this step. It was involved in a project recently where, due to thermal cracking model issues, practical designs could not be obtained. |
| Also, calibration of the new top-down cracking model is challenging. | Participants noted that separating top-down from bottom-up cracking is the most challenging part of this calibration process. This led to the following question. |
| How are agencies differentiating top-down from bottom-up cracking in the distress databases for the local calibration? | Hari Nair: This is an issue in Virginia. For calibration, we assumed that high-severity cracking is top-down and that medium- and low-severity cracking is bottom-up. However, this was not verified in the field.  Justin Schenkel: Verification is important, and Michigan DOT has not been able to do that. We originally went with the assumption that everything in the wheelpath was bottom-up and everything outside the wheelpath was top-down. This was not a great assumption and led to difficulties in calibrating the model. Currently, we are combining all the cracking and calling it bottom-up cracking.  John Donahue: During the global calibration process, there was a cumulative energy variable to separate bottom-up and top-down cracking. The separation, in effect, had to do with the amount of traffic. If there was cracking occurring sooner for areas where there was more traffic, it was tied to top-down cracking, because there wouldn’t have been the required number of load repetitions to induce bottom-up cracking. |
| How are you collecting structural strengths of the pavements from pavement management data? | Nusrat Morshed: New Jersey DOT does project-level evaluation including coring, GPR testing, and FWD testing. The FWD testing data are backcalculated to provide moduli for design.  Kumar Dave: In Indiana, we do in-house FWD testing on all design projects. At the network level, there is an effort underway to do FWD testing and put all the data into a GIS-based database.  Clark Graves: In Kentucky, we use pavement management data to select rehabilitation projects, and then forensic studies on those projects in order to do ME-based designs. There is a subset of these projects that go in the mill-and-fill strategy and therefore do not need a full design. |