TPF-5(385) Meeting Minutes

June 10, 2020

Meeting Agenda:

- Management and business meeting
- Planned testing schedule
- Presentation: VDOT TSD implementation efforts
- Discussion board on TSD data use and research team support
- Scheduling date/venue for next meeting – TRB is default
- Pooled fund extension

Members and Testing Performed

As of now 21 members (20 states + FWHA). TSD testing has been performed for 19 agencies. Louisiana is the only participating agency that has not had testing performed yet; however this is at the request of Louisiana which requested testing this summer. Most of the data has already been delivered & processed. Status of RAPTOR still unknown.

Research in progress (update by Gerardo Flintsch)

After feedback from the agencies the highest ranked research project (Guidelines and procedures to implement TSD at the network level). Project deliverables include: Literature review of practice (October 2020), survey to the states (October 2020), case studies (Early 2021), manual of practice (mid 2021).
Another project is set to start in Fall 2020 (Guidelines for operating tsd and data collection (QC/QA) manual). Would be good to collaborate with institutions/researchers from other countries.

Administrative / business meeting

1) Use the PFS project for technology transfer

Discussion centered on the topic of how to share the information and analysis methods that come out of the pool fund; should this information be public or only restricted to pooled fund members? Should it be posted on a public or private website?
In general states would like to share information but it would best to allow agency to review and give permission before going public with the information.
Siva proposed having a website where the analysis tools are public. The case studies will first be shared among Pooled Fund members only. Based on feedback from agencies, may go public or not. Web platform is being hosted at VTTI.

2) How much of collected data should be shared among Pooled Fund members

Gerardo opened the discussion on whether to make the collected data available to all the TPF members or just to restrict access to VTTI and each state to its specific data. Also what platform for data sharing should be used? FHWA website, Infopave, or others?

Siva suggested asking the members in a survey about their opinion.
The following was asked by a pooled fund member: Who is requesting the data? Is it academics, TPF partners, Consultants? – A bit of any (Jerry's answer).
Miss, KY, Vermont, MN – willing to share.
Question raised: Since the pooled fund is Federally Funded – Is data mandatorily to be shared? What does the Law says?

3) Extend the TPF project until 2023 – Current end date: Sept. 2021

SIVA: Go ahead! *No opposition from the States.*
PA, C. Smith, I. Rish (GA), NM-DOT, C. Morrison, AR – Extend!
VT – Extend (need to check $)
One state asked if they'd to provide funding for the additional year. The understanding is if a state does not contribute for a year, they'll still be able to participate in all discussion meetings. In some cases it might still be possible to pay the state representative for travel to meeting (but not guarenteed). The limitations of not contributing funds are mainly not being able to get testing performed.

Testing Schedule for Summer / Fall 2020

Jerry: In, MI To be completed in June. Scheduling Midwest route for July (KS, OK, ???). After: GA, SC, NC, PA – August 2020. Jerry would like to get routes as soon as possible to be able to better plan. In general, better planning will allow Jerry get more miles which benefits the participating agencies.

About opening technical seminars / webinars

Gerardo suggested doing technical seminar. Some of the topics could be:

- To show the vailable tools and present case studies
- Introducing the data (or findings) release to the public and/or other partners
- Jerry: asking the states to disclose (at least rough) information about their case studies / experience?? – To use them as justification for further business purposes. The webinars to "disclose" information that would otherwise be by request only
- Make these available to the public?? – Flintsch says " why not?"
- How often should the webinars be? -> Monthly? Bi-monthly? Duration = ½ hour + discussion?
- Who offers themselves to present?

Flintsch: The seminars would be shared with other academic agencies aiding the States. Focus mostly on the technology and data processing itself (not State-specific procedures)

Presentation: Virgnia Implementation of TSD for PMS (Samer Katicha)

Project Objective: Network-level TSD implementation into the VDOT Pavement Management

- To replace structural evaluation performed with the FWD on interstates (done in 2006 to 2008 at 0.2 mi interval) with TSD data
- And to add structural input for primary routes.
- Total testing of 4,000 miles (1,500 interstate; 2,500 primary)

Important questions the project looked at:

- Question1: Can TSD show how sections deteriorate

- Question 2: Does the data from the TSD behave the same way as the data from the FWD – will the PMS return the same management decisions?
- Question 3: How the structural info changes the selected corrective / prev. treatments
- Question 4: Cost/benefits of the technology?

Question 1) it does: VDOT PMS data showed that sections with worse measured structural condition deteriorated faster.

Question 2) The calculated SNeff from both devices is different. The report provides the corrected threshold for SNeff to do repair. Consistency with FWD is good – both devices flag mostly the same weak sections in the network (TSD and FWD consistency within the same range consistency between two repeated FWD surveys)

Question 3) how to update the Treatment selection process?

First, PMS decisions are made based on surface condition. The structural condition is then used to modify treatment of sections that are identified as structurally weak or structural strong. Structurally fair sections are not modified.

Question 4) – Did not do detailed cost benefits, but evaluated how the average cost per mile changes as a function of thresholds for structurally weak, fair, and good.

Conclusions:
TSD shows weaker sections deteriorating faster
TSD can replace the FWD for net-wide applications
The impact of choice of index is small at the network level; i.e. most (reasonable) indices will flag the same sections as structurally weak/strong (high correlation between SCI300, D0, and SNeff)
Adding separate treatment for structurally strong sections may save money (moving sections from Corrective maintenance to Preventive maintenance)

Discussion (after presentation):
Questions 1: One state member mentioned that they can do around 4 miles/day with FWD. Asking how (often) did VDOT do the FWD testing.

Question 2: What about managing good pavements on bad subgrade? Are we checking SCI 200 / 300 / subgrade beyond the SNEff??.

Answer: No, but D0 (used for SNEff) is highly correlated with SCI, so some subgrade information is passed by in D0 and so more or less we can tackle the subgrade at the network level with D0 metrics only. However, more information research is needed on that front. One issue with testing on interstate is that the total pavement thickness is relatively high which makes it difficult to evaluate subgrade.

Biran D. – The TSD is good for detecting where in the network issues are, but not how deep into the pavement these are. But they hint where to send the FWD for a detailed inspection.

FLINTSCH: Requested all participants to do a survey.

Comments from the audience regarding GPR data to obtain layer thicknesses needed for calculation of SNeff and for temperature correction:

- An agency (same story with VDOT) put the issue of having (or not) thickness information for SNeff calculation (and a GPR is not always available)
- Other mentioned doing educated guesses of thickness when GPR data is not available – too wild (other commented)
- And what about using historical construction records (Miss).
- And what about the rounding-up of thicknesses as per specification? Would It affect the results?
- *Senthil: Maybe we'll need to look into a sensitivity analysis -?of thickness data?*
- Question: *What is the layer thickness sensitivity for temperature correction?*
- ARRB: considering adding a GPR to the TSD truck (same as TRL has)

Jerry: Commenting on big-data management issues that arise when dealing with the data from these projects. A Big data session in TRB meeting would be on its way (he's organizing)