TPF-5(385): Pavement Structural Evaluation with Traffic Speed Deflection Devices (TSDDs)

TAC Meeting: January 14, 2020

Fund Transfers and Scheduling

- Virginia has to send a request for the fund transfers to the pool fund to each state.
  - Indiana -> reach out to VA to get the bill.
  - Whenever VA sends the request for the funds they have to make sure they accept Part B
  - SPR:
    - Part A=> Explaining
    - Part B => Research
- States need to have routes ready so that coordination of data collection can be performed effectively

Available Seasonal Data

- Germany: Spring Data
  Dynatest: RAPTOR has data for 2 seasons. RAPTOR is currently not available for testing. Dynatest is to make a decision on what to do with the RAPTOR in the coming months.

Research Topics

- Six research topics were proposed for ranking; resources are available to get 2 topics investigated. The highest two ranked topics are:
  - Guidelines and procedures to implement TSDDs measurements into pavement management (ranked 1st)
  - Development of guidelines and specifications for the collection of continuous deflection data (ranked 2nd)

- Reduce overlap with NCHRP 10-105: "Verification of Traffic Speed Deflection Devices' (TSDDs) Measurements"

- Guidelines for PMS (1st topic):
  - Synthesis of PMS Application of TSDDs. Few studies that have looked into PMS Application:
    - Louisiana
    - Virginia
    - Idaho
    - International: UK, Germany, Australia New Zealand
  - General guidelines is #1 priority. (Even if states have different way of implementation general guidelines will provide guidance.)
  - Network Level Application but also something closer to project level

        - Jim (Idaho): Network ➔ ____?____ ➔ Project
        - Something in between network and project. Not really design thickness but something in between.
        - Maybe Clarify what project level is? Not design thickness but let's say identifying weak spots in the sections
        - Network ➔ Scoping ➔ Project
        - Scoping: Better cost estimation. (Important: The better we can get the cost estimate earlier, the better off we're going to benefit. The real opportunity of TSD is to localize to small areas of interest (i.e. weak spot).
        - Usual maintenance process:
            - PMS kicks out potential projects
                - DOT personnel (network level) go out in the van and survey the sections
                - They decide on the treatments
                - Project level guys go in and identify more detailed work and modify previous assigned decisions
            - Treatment Category of the states also vary from state to state. That might change the scope depending on what we call it but the process exists despite what we might call them.
        - Scanning for Anomaly: Box and whiskers plot. (Long whiskers are of interest as they suggest weak sections along the routes)
        - Dynamic Segmentation?
        - ARRB website -> Add filter to change color? -> Identify routes that require more attention
    - "FULL RESEARCH PLAN"
        - Synthesis
        - Case Studies
        - Guidelines

- Guidelines and Operating condition for data collection (2nd topic)
    - Operating condition: What are the various TSDs doing in terms of speed and temperature? Some work on temperature is being done in Germany. Temperature correction requires thickness information
    - Conditions and Environmental factors: New NCHRP scope has this in common
    - How to implement TSD in network or scoping is still a priority for this study.
    - Research Needs Statement: If we take it to the structural committee they might be able to provide us with more funds.

General Discussion

- Performance Measure? (From TSD)
    - States: there is a big value in coming up with a deflection index that links to each state's specific data
    - Remaining Service Life?
    - TSD and FWD: D0 from TSD we need to know how it compared with FWD. Better understanding of D0 from TSD?
    - Germany is working with Denmark regarding deflection index from TSD.

- Thickness information from the states?
    - We need thickness information for Temperature correction.
    - Discussion about the importance of thickness. Two points of view:
        - Thickness is important for classifying what is strong and what is weak
        - Thickness maybe not that important: knowledge of how pavement responds to load is valuable irrespective of what the thickness is.
- Structural Condition Index + Relevant information such as traffic, thickness or highway classification helps to make better decisions and put things into perspective. We can do better analysis.
- "PMS surface condition data might not be able to identify the weak spots that's where the TSD can come in and say this section is relatively strong/ weak. "

Meeting Chat box: