Meeting Minutes: TPF 5(443): Continuous Asphalt Mixture Compaction Assessment using Density Profiling System (DPS)

Date: 10/14/2020
Location: Skype

Agenda

- 10:00 – 10:02am: Introduction – Shongtao Dai (2 min)
- 10:02 – 10:07am: Welcome -- Glenn Engstrom (5 min)
- 10:07 – 10:12am: FHWA Activities/DPS Update – Steve Cooper (5 min)
- 10:12-10:37am: Status of the Pooled Fund Study – Shongtao Dai (25 min)
- 10:37-10:47am: New Features in PaveScan2.0 and Contract Update – Roger Roberts (10min)
- 10:47-11:12am: Review of Testing Protocols and MnDOT PaveScan 2.0 Experience – Kyle
- Hoegh/Mercedes Maupin (25min)
- 11:12-11:30am: Field Data Collection Results—Kyle Hoegh (18 min)
- 11:30-11:45am: Ohio DPS update – Craig Landefeld (15 min)
- 11:45-11:55am: New York DPS update – Thomas Kane (10 min)
- 11:55am-12:00pm: Short Break
- 12:00pm-12:40pm: Update of Each State – Current Activities and Future Plan (5min/each)
- ID, MDOT, ME , MO , MS , ND , PADOT , WA, FL, AK, GA,UT
- 12:40-12:55pm: Questions and Feedback on the Training Materials – All (15 min)
- 12:55pm-1:00pm: Questions and Action Items

Meeting Notes: Presenters

- FHWA DPS Update – Steve Cooper
    - Mobile Asphalt Technology Center (MATC).
        - 2 DPS carts for Demos and Equipment Loan Program.
    - Quality Engineering Solutions (QES), inc. implementation plan and Roadmap.
    - Turner Fairbank Research to evaluate calibration and data analysis.
- Status of the Pooled Fund Study – Shongtao Dai
    - Workplan Summary
        - Software and Hardware Improvements with GSSI.
            - Contracted through March 2021

- Summer 2020 projects: TH251, TH2, TH30, TH95, TH25, MnROAD.
    - Hired Contractors for testing.
- Moisture Measurement Device
    - Dr. David White with Ingios.
    - FLIR MR160 Moisture Meter.
- Precision and Bias Statement & Equipment and Operator Certification
    - Will work with NCAT

- Features in PaveScan 2.0 and GSSI Contract Update – Roger Roberts
    - Task 6: Puck Module, tested by MnDOT and fully implemented.
    - Task 7: QA Module, tested inhouse and fully implemented.
    - Task 8: Core Module, being tested inhouse, 95% implemented.
- Review of Testing Protocols and MnDOT PaveScan 2.0 Experience – Kyle Hoegh
    - Chapter 2: Laboratory Dielectric to AV% Conversion Procedure.
        - Design, Medium (-250 g), and High (-500 g) voids Plant Mixed Material Sample (PMMS).
        - HDPE puck for Sensor validation.
        - New and Improved Laboratory Dielectric testing and conversion in PaveScan App.
    - Chapter 4: Field Dielectric Quality Assurance Procedure.
        - Swerve, Line test, HDPE test.
    - Chapter 5: Field Routine Collection Protocols.
        - MDOT Gator project: single pass full coverage with moving bracket.
    - Chapter 6: Field Core Validation Procedure.
        - Using random core locations already being taken for QA.
        - Zero extra cores taken for us this year!
        - Core Measurements:
            - Static, Distance with mark, Core mode.
    - Chapter 8: Analysis and Reporting Procedures.
        - From MnDOT built Data Analysis macro to GSSI incorporated in “Playback Range.”
    - MnDOT PaveScan 2.0 Experience.
        - Trained 4 Contractors on puck fabrication and testing procedures.
            - 6 projects with puck fabrication.
            - 78 pucks fabricated and tested.
        - 30 unique production days.
        - 234 dielectric tests.
        - 266 validation cores with dielectric values.
        - Over 60 miles of swerve data collected.
        - Issue with PaveScan 2.0 sensor turned out to be temperature calibration.
        - Potential error:
            - Magnetic susceptibility.
            - Puck thickness sensitivity.
- Ohio DPS update – Craig Landefeld
    - 2018 Projects: FRA 270, SAN 6, HAN 75/68, VIN 50.
    - 2019 Projects: WIL 191, GUE 77, FRA 71, ALL 75, ROS 35.
    - 2020 Projects: RIC 71, TUS 36, MAD 70.
        - Machine Comparisons

        - Precision and Bias
        - QC/QA Procedures and Tolerance
    - Swerve Collection
    - Gyratory Procedures
    - Taking additional cores rather than puck fabrication
    - RIC I-71:
        - Predicted was not lining up with Core Density.
        - Issue with PaveScan 2.0 sensor turned out to be temperature calibration.
        - Reprocessing data
    - TUS 36:
        - High correlation, $R^2 = .98$
        - Using Temperature correction from GSSI.
- Next:
    - Machine Comparisons
        - Precision and Bias
        - QC/QA Procedures and Tolerance
    - Gyratory Procedures
    - Collection Procedures (Joint, Swerve, Longitudinal)
    - VETA for Analysis.
    - Specs for Pilot Project

- New York DPS update – Thomas Kane and Rich Hamilton (Advanced Testing Company)
    - 16 Paving days on Route 30A
        - 9 days 19 mm < 0.3
        - 7 days 9.5 mm < 0.3
    - 1 Paving day on Route 97
        - 9.5 mm < 0.3
    - Zipper pattern with 3 ft and 9 ft offsets.
    - Additional pass 2.5 ft where joint matching.
    - QA Procedures:
        - Sensor Leveling
        - HDPE scans
        - Swerve testing
- Update of Each State – Current Activities and Future Plan
    - Idaho: none
    - Maryland DOT: Not much experience using PaveScan 2.0. 1 Project in the works with limited data at the moment.
    - Maine: Ran into issues but got PaveScan 2.0 running again to see correlation. Starting more data collection next summer.
    - Missouri: No device. Looking at other's data. Looking to do demo using Federal HWY demo equipment.
    - Mississippi: none
    - North Dakota (Amy Beise): Just received PaveScan 2.0. 5 days of field collection. More data next season. Collected cores and mix for winter analysis.

- Pennsylvania DOT (Mark Russell): Using PaveScan 1.0, nothing this year due to pandemic restrictions. Plan for collection next summer.
- Florida (Wang Guangming): Just received PaveScan 2.0, collected data with PaveScan 1.0. Currently no agenda due to pandemic, planning implementation for future.
- Alaska (Rich Giessel): Nothing this year due to pandemic restrictions.
- Georgia: none
- Utah (Ken Talbot): Waiting for PaveScan 2.0 to collect next summer.

Action Items

- MnDOT will hold a webinar on data analysis on Spring 2021
- FHWA will provide a DPS training to Missouri
- Revised Draft Procedures, MnDOT, May 2021
    - PaveScan 2.0 Lab Protocol, Feb. 2021
    - PaveScan 2.0 Field Protocol, May 2021