Long Life Asphalt Pavement Projects Update

Neal Fannin P.E.
Pavement Materials Engineer
CMD
LLAP Construction Specifications

• MTV Required
• Longitudinal Joint Density Specification
• RIDE SPECIFICATION OPTIONAL
• Tack Coat Every Layer (New Section 460)
• % WITHIN TOLERANCE (PWT) ACCEPTANCE
• INCENTIVIZE CRITICAL ELEMENTS (i.e. MAT DENSITY)
• PERFORMANCE TESTING
LLAP Construction Specifications

- Pilot Specification Only Included SMA projects
- Rutting Test. (Hamburg Wheel tracking)

- Cracking Tests (DCT, IFIT, SCB, OT,
LLAP Current Features

• **Asphalt Rich Base Course**
  - PWT acceptance includes incentive/disincentive.
  - Design at 3% voids
  - Design 1 gyration level lower than other courses.

• **Base Course**
  - PWT acceptance includes incentive/disincentive.

• **Binder Course**
  - PWT acceptance includes incentive/disincentive.
  - DCT and Hamburg Wheel track test required as performance testing.

• **Wearing Course**
  - SMA only
  - 2% density incentive possible
  - DCT and Hamburg Wheel track test required as performance testing
3 Projects with data

- SR 279 – A83, Allegheny Co.
- SR 376 B09, Allegheny Co.
- SR 0080 – B34, Centre Co.
- SR 0079 – A83, Butler Co.
DCT Data

DCT Performance Diagram

DC(T) Fracture Energy (J/m²)

Hamburg Rut Depth (mm)

19mm JMFs

Producer 1

Producer 2

SMA JMFs

Producer 3

Producer 2
IFIT Data

**IFIT Performance Diagram**

- **IFIT Fracture Energy (J/m²)**
- **Hamburg Rut Depth (mm)**

- 19mm JMFs
- Higher asphalt content JMFs
- Field Cores

*Pennsylvania Department of Transportation*
IFIT Data

IFIT Performance Diagram

- IFIT Fracture Energy (J/m²)
- Hamburg Rut Depth (mm)
- Producer 1
- Producer 2
- Producer 3

Pennsylvania Department of Transportation
Texas Overlay Data

TEX Overlay Test Data

IFIT Fracture Energy (J/m²)

Hamburg Rut Depth (mm)
SCB (TP 105) @ -12C & -24C

SCB Performance Data at -12C and -24C degrees

DC(T) Fracture Energy (J/m²)

Hamburg Rut Depth (mm)

-12C

-24C
IFIT Plots

19mm

SMA

Pennsylvania Department of Transportation
Problems Encountered

• Including hard limits for performance testing needed long lead times to deal with redesign and retesting.

• Hard limits assumed that limits were applicable to all PADOT mixes.

• The testing labs available for performance related testing are very limited.

• Large number of tests make testing inefficient.
Changes

• Conditioning time is only what is in bulletin 27 for making gyratory samples.

• Performance related testing only required on 19mm NMAS and less.

• Performance related testing limits changed to targets and data for information.
Current Demonstration Projects

- **District 2-0 – SR 0080 Sect. B34 (ECMS 82105)**
  - Mill and overlay
  - Projected let – 7/2017
- **District 10-0 – SR 0079 Sect. 247 (ECMS 91919)**
  - Structural overlay
  - Projected Letting 11/2017
- **District 11-0 – SR 0279 Sect. A83 (ECMS 87772)**
  - Binder & Wearing Performance Related Testing only.
  - Projected Letting 1/2017
- **District 11 - SR 376 Sect. B09 (ECMS 81976)**
  - Mill and overlay
  - Project Let 4/2017
- **District 6-0 – SR 422 Sect. PM2 (ECMS 86924)**
  - Mill and overlay
  - Project Let 8/2018
- **District 2-0 – SR 322 Section B06 (ECMS 96820)**
  - Full depth asphalt paving.
  - Let July 2018
- **District 3 - SR 0080 Sect. 123 (ECMS 97546)**
  - Mill and Overlay
  - Project Letting 3/2018
- **District 10 – SR 0080 Sect. 34A (ECMS 106025)**
  - Structural Overlay
  - Project Letting 7/2017
- **District 11 – SR 0028 Sect. A55 (ECMS 92277)**
  - Full depth crack and Seat
  - Project Letting 11/2017
- **District 3 – SR 0015 Sect. 88C (ECMS 76400)**
  - Scratch and paving composite paving
  - Project Letting 9/2018
- **District 4 – SR 0084 Sect. 450 (ECMS 76861)**
  - Full depth asphalt paving
  - Project Letting 9/2018