2019 PAPA REGIONAL TECHNICAL MEETINGS

PAPA REGIONAL MEETING TOPICS

6.3 mm Thin Asphalt Overlay

Tack Coat

Long Life Asphalt Pavements

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CMD

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Topics

- 6.3mm Thin-Lift asphalt overlay
- Tack coat specification changes
- SMA in PA

Section 412 - 6.3mm Specification Features

- **Aggregates: Changes to Section 703**
  - **SRL**
    - **Coarse Aggregate** – **SRL** as listed in Bulletin 14.
      - **AASHTO #89 and #9** Being added to Section 703.
      - **AASHTO #9** Need to be sampled and pass **quality** and **SRL** testing to be used in 6.3mm asphalt.
      - **AASHTO #89** Will be approved based on the AASHTO # 8 quality and SRL test results.
    - **Fine aggregate –**
      - **Manufactured**
      - **fine aggregate** must be manufactured from the same parent rock as SRL rated coarse aggregate.
      - **Natural Fine Aggregate** – Must be sent for SRL determination.

Section 412 - 6.3mm Specification Features

- Design Gyrations for all roadways = 75
- Design VMA = 16.5% minimum
- Drain down test (AASHTO 305) required for mixes with greater than 7.0% asphalt content.
- Binder grade is PG 76-22 only. Possible future inclusion of PG 64-22.
- RAP & RAS
  - No RAP or RAS allowed

Section 412 - 6.3mm Specification Features

- **Tack coat:**
  - Proper application and adequate quantity's of tack are very important for thin asphalt layers.
  - New tack specification **SOL 481-17-01.**

- **Weather limitations:**
  - Air and Surface Temperatures 50° and rising.
  - For paving season extensions, compaction needs to be completed in less than 10 minutes.
  - Use **PaveCool** developed by MnDOT. Google PaveCool or go to: http://www.dot.state.mn.us/app/pavecool/

6.3mm Compaction

PaveCool 3.0 Report

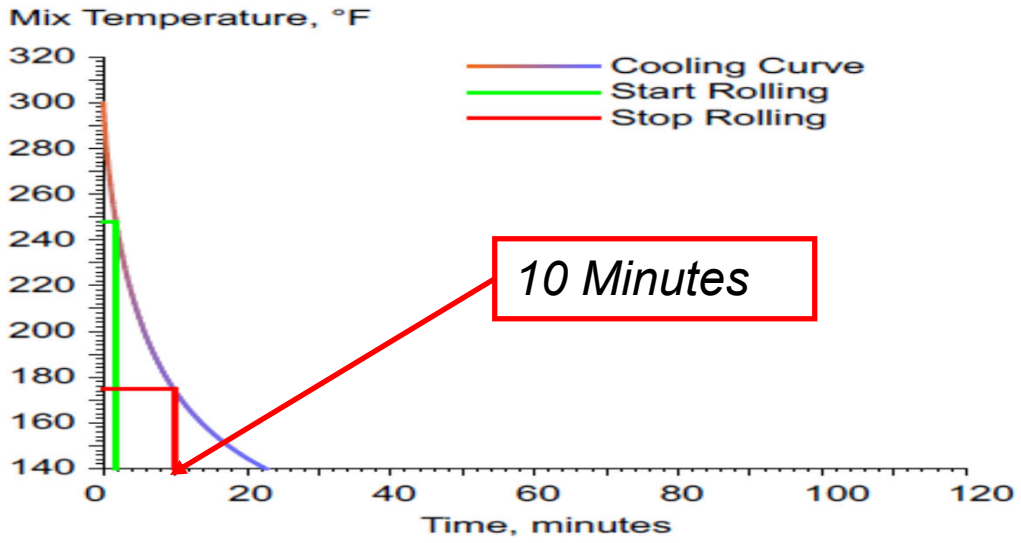
Project: 6.3mm Thinlay

Date & Time	Start Rolling*	Stop Rolling*
1/3/2017 9:25 AM	2 minutes (248 °F)	10 minutes (175 °F)

Mix Type	Binder Grade	Thickness	Delivery Temp.
Fine/Dense	PG 76-22	1.00 in.	300 °F

Air Temp.	Wind Speed	Sky	Latitude
70 °F	5 mph	Clear & Dry	41 ° North

Existing Surface	Moisture	State	Surface Temp.
Asphalt			70 °F



PaveCool File:
6.3mm Thinlay 40 deg.pc3

6.3mm Mix Spec. Possible Changes

- 6.3mm asphalt currently only allows PG76-22 asphalt with no RAP
- Research project constructed in 2018 is evaluating PG64-22, and the use of PG 64-22 asphalt and 10% RAP in these mixtures
- Centre Co., SR 1001

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Summary

- **Pay special attention to tack coat application**
- **Thin layers lose heat faster and need to be compacted sooner (Within 10 minutes)**
- **Aggregate producers that anticipate making this mixture can submit Type A, AASHTO #9s for quality testing and SRL now**

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Tack Coat Specification Update
Section 460

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Change in Tack Material

- **New Tack is similar to CSS-1h emulsified asphalt.**
  - The Minimum residual asphalt is 57% instead of 28%
  - The application temperature is 90F to 150F (AET - 75F to 140F)
- **Non-tracking Tack is also an option now.**
  - Minimum residual asphalt is 50%.

Change to Application Rate

- **Application Rate depends on surface placed on.**

Surface Type	Uniform Asphalt Residue Rate (RR) (Gallons per square yard)
New Bituminous Paving	0.03 to 0.05
Existing Bituminous Paving	0.04 to 0.07
Milled Surface (Bituminous & PCC)	0.04 to 0.08
Portland Cement Concrete	0.04 to 0.07

Additional 2019 Tack Coat Changes

- CT making tack coat **mandatory** between each layer is in circulation and <u>should be effective for this construction season</u>.

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SMA in PA

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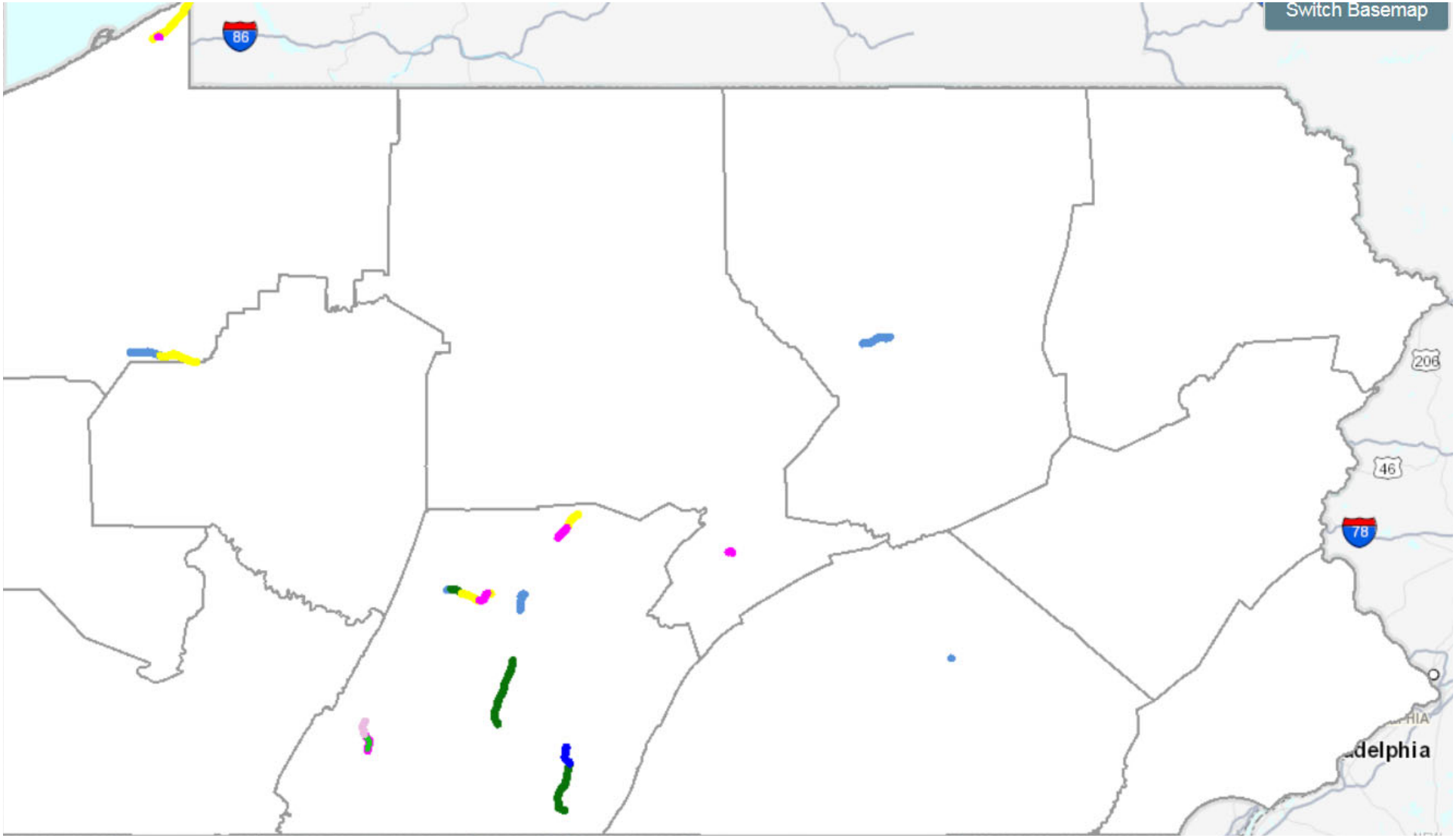
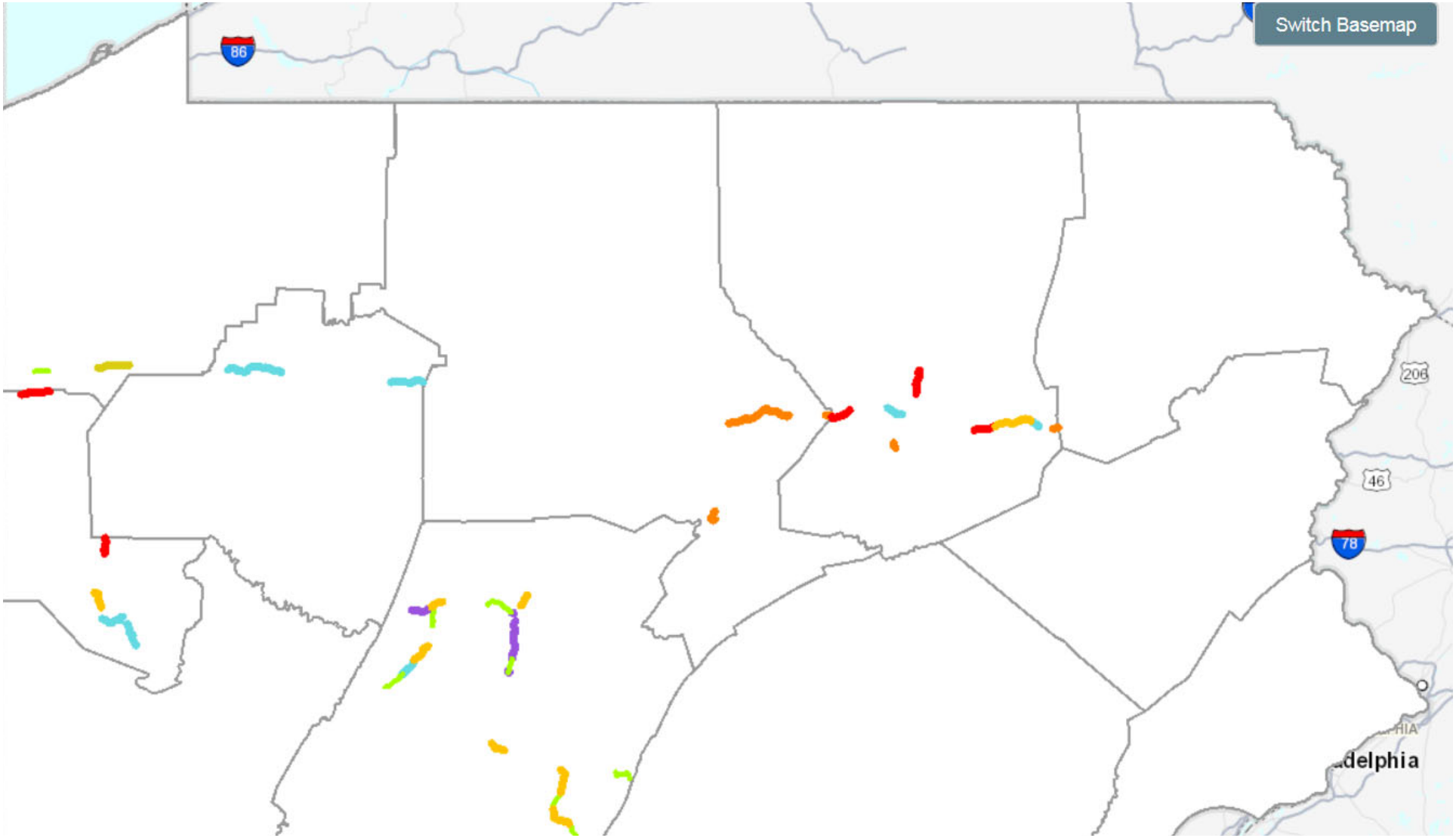
History

- First SMA project placed in 1994 in PA in District 8. (Harrisburg area)
- 1997 District 9 placed their first SMA project.
- 2001 District 9 placed 2 projects
  - 2003 – 1 project
    - 2004 – 1 project
      - 2005 – 1 project
        - 2006 – 2 projects
          - 2007 – 3 projects (6 state wide)
- SMA Specification - Effective in PA specifications 10/1/2009.

2003 to 2009



2009 to 2016



Long Life Asphalt Projects

- 5 Projects paved in 2018
- 6 Projects to be paved 2019 thru 2022

WMA SMA in 2017

- WMA SMA specification change approved Feb. 24, 2017.

- WMA technology at hot mix temperatures.
  - Compaction aid

Current Initiatives

- **SMA on Interstates**
  - Most Districts have switched to SMA wearing courses on Interstate and high value routes

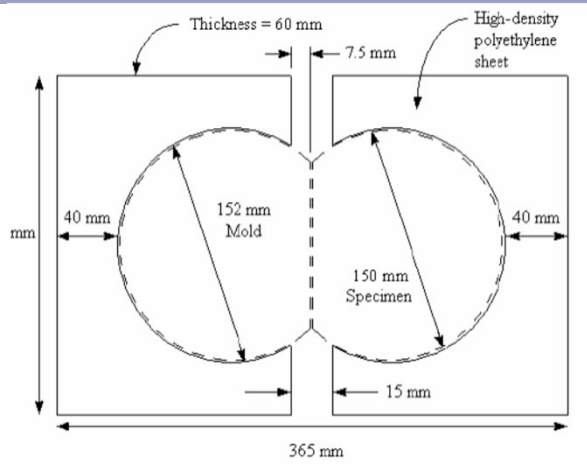
- **RAP use in SMA**
  - Dist. 11 initiated a research project to evaluate the inclusion of 10% RAP in SMA for roadways with lower traffic. (collectors, some arterials)
  - The ability of Districts to specify NO RAP SMA on any road will be preserved
  - Work Plan is being revised to include a more diverse materials sample

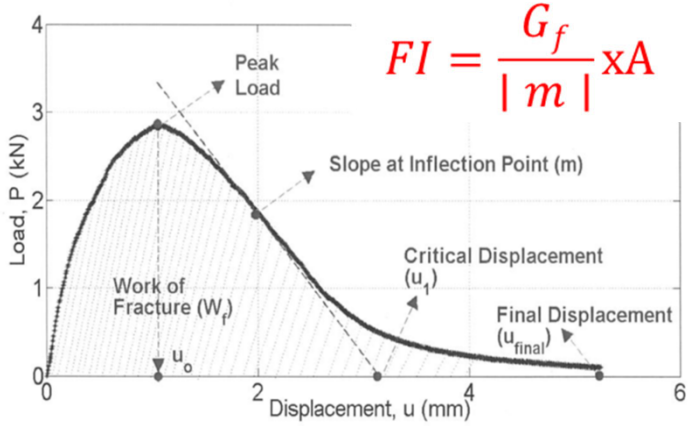
RAP in SMA - Other States

- **Illinois DOT** allows the use of up to **15% of FRAP** in SMA mixes
- **Illinois Tollways** allows up to **20% of FRAP** in SMA mixes
- **Virginia DOT** allows up to **20% of RAP** in wearing courses
- **Maryland State Highway Administration** allows up to **20% of RAP** in SMA
- **Texas DOT** allows up to **15% of FRAP** in wearing courses
- **Alabama DOT** allows up to **20% of RAP** in SMA

RAP in SMA Research Projects

- Work Plan Testing
  - Asphalt Binder Testing
    - Base binder true grade
      - ΔT_c
    - RAP binder true grade
      - ΔT_c
    - Combined binder true grade
      - ΔT_c
  - Completed mix testing
    - Hamburg Wheel Tracking test - AASHTO T 324
    - Flexibility Index Test – AASHTO TP 124





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RAP in SMA Research Projects

- **District 11** - Allegheny Co.
  - ECMS 91790 - Let 2/28/2019
  - SR 0885 (Boulevard of the Allies)
  - Mill, scratch, and overlay with 1.5” 9.5mm SMA

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RAP in SMA Research Projects

- **District 4** - Lackawanna Co.
  - ECMS 102557 - Let 6/6/2019
  - SR 6006, Mill, scratch and overlay with 9.5mm SMA

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RAP in SMA Research Projects

- **District 6** - Chester Co.
  - ECMS 108918 – Work Order
  - SR 0030, Mill, scratch and overlay with 9.5mm SMA

Questions?