

# IDOT Technical Update

Illinois Asphalt Pavement Association  
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## 2019 I-FIT Shadowing Exercise

- × Each District Selected At Least One Project
  - × Daily Samples for Surface Mix
    - × As Produced and Long Term Aging I-FIT
- × Sampled In-Line Asphalt Binder Daily
  - × Asphalt binder performance testing

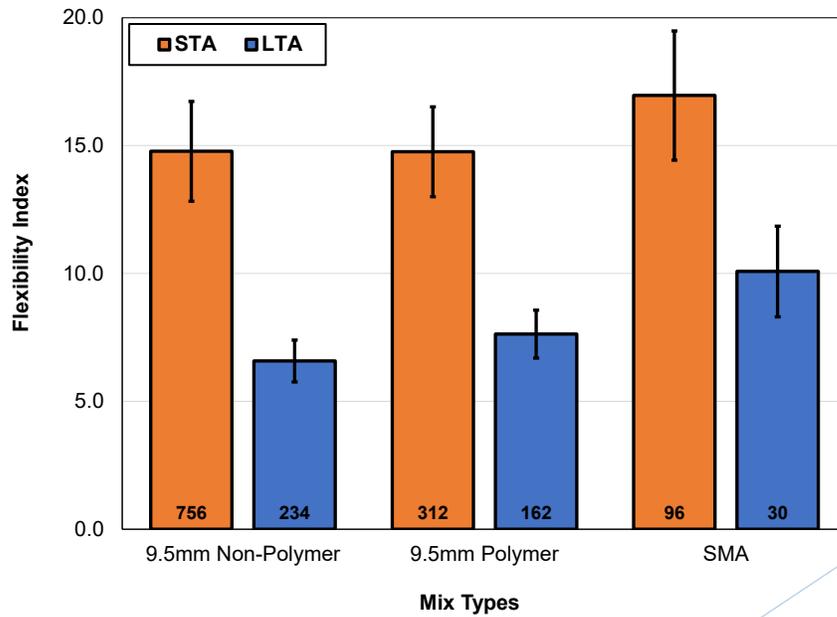
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## Long Term Aging Protocol (IL Mod AASHTO R30)

- x Surface Mixtures Only
- x Specimens conditioned in forced draft oven
- x 3 Days at 95°C



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## 2019 I-FIT Shadow Projects

District	Binder Grade	ABR (%)	STA Avg. FI	LTA Avg. FI	$\Delta T_c$ (°C)	% FI Reduction
1A	SBS PG 70-28	18	20.5	10.5	-4.3	47.8%
1B	SBS PG 70-28	18	10.9	5.9	-13.3	43.1%
1C-Mix 1	PG 58-28	32	10.6	4.9	-	51.1%
1C-Mix 2	PG 64-22	15	9.2	3.6	-	61.6%
1D	GTR PG 70-28	20	12.3	7.0	-	42.2%
2	PG 58-28	30	7.2	3.8	-4.7	46.9%
3	PG 58-28	29	28.2	7.4	-3.2	73.1%
4	SBS PG 76-22	10	20.1	9.1	-	54.9%
5-Mix 1	PG 58-28	29	37.6	10.1	-11.2	71.9%
5-Mix 2	PG 58-28	29	24.7	10.1	-10.2	58.7%
6	PG 64-28	10	26.5	14.4	-6.4	43.8%
7	PG 58-28	30	28.2	17.4	-4.4	33.6%
8	SBS PG 76-22	10	9.5	7.3	-	22.6%
<b>Average</b>			<b>18.9</b>	<b>8.6</b>	<b>-7.6</b>	<b>50.1%</b>

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## District 2 Project

<b>Mixture</b>	N70 F IL-9.5
<b>Binder Grade</b>	PG 58-28
<b>VMA (%)</b>	15.5
<b>ABR (%)</b>	30

Day	STA FI Avg.	LTA FI Avg.	$\Delta T_c$ (°C)	% FI Reduction
1	8.7	5.4	-4.7	37.9%
2	6.9	3.1	-5.4	55.1%
3	7.4	3.9	-4.1	47.3%
4	5.9	4.0	-	32.2%
5	7.1	2.7	-	62.0%

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## District 3 Project - WMA

<b>Mixture</b>	N70 E IL-9.5
<b>Binder Grade</b>	PG 58-28
<b>VMA (%)</b>	15.3
<b>ABR (%)</b>	29

Day	STA FI Avg.	LTA FI Avg.	$\Delta T_c$ (°C)	% FI Reduction
1	29.7	9.7	-	67.3%
2	30.5	7.9	-3.0	74.1%
3	27.1	7.3	-2.2	73.1%
4	42.9	8.5	-3.3	80.2%
5	19.5	5.2	-4.2	73.3%
6	19.6	5.8	-3.5	70.4%

Green = WMA Additive Used (Days 1-4)  
 Red = WMA Additive Not Used (Days 5-6)

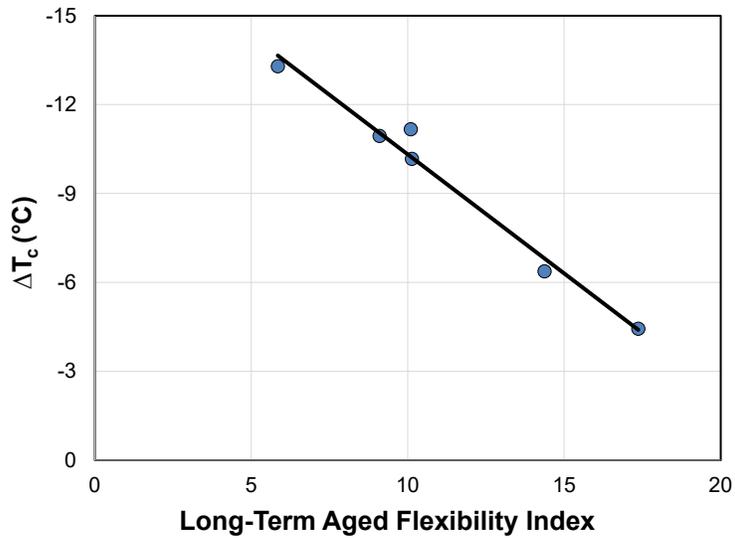
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## Findings

- × 12 of 13 mixtures met I-FIT As Produced Criteria of 8.0
- × 11 of 13 mixtures met Proposed I-FIT LTA Criteria of 4.0 in Production
- × Polymer-modified HMA showed lower FI Percent Reduction

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## Binder Performance Testing & LTA FI



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## I-FIT in 2020

- x No I-FIT Thresholds
- x Districts will characterize ALL mixes used in 2020
  - x As-Produced I-FIT on All Mixes
  - x Long Term Aged I-FIT for All Surface Mixes

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## 2021 I-FIT/Modifier Implementation

- x Asphalt Binder Performance Test In-Place
  - x Begin Allowing Terminal-Blended Binder Modifiers
- x As-Produced I-FIT for All Mixes with Thresholds
- x LTA I-FIT for All Surface Mixes with Thresholds

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## AASHTO PSP Observations

- x All private & IDOT labs received good scores on Gyratory Bulk Gravities ( $G_{mb}$ )
- x A few labs on both sides had issues w/ Max Gravities ( $G_{mm}$ ) that warranted investigation, corrective action & retesting
- x Asphalt Content results good so far, just two low scores on ignition ovens

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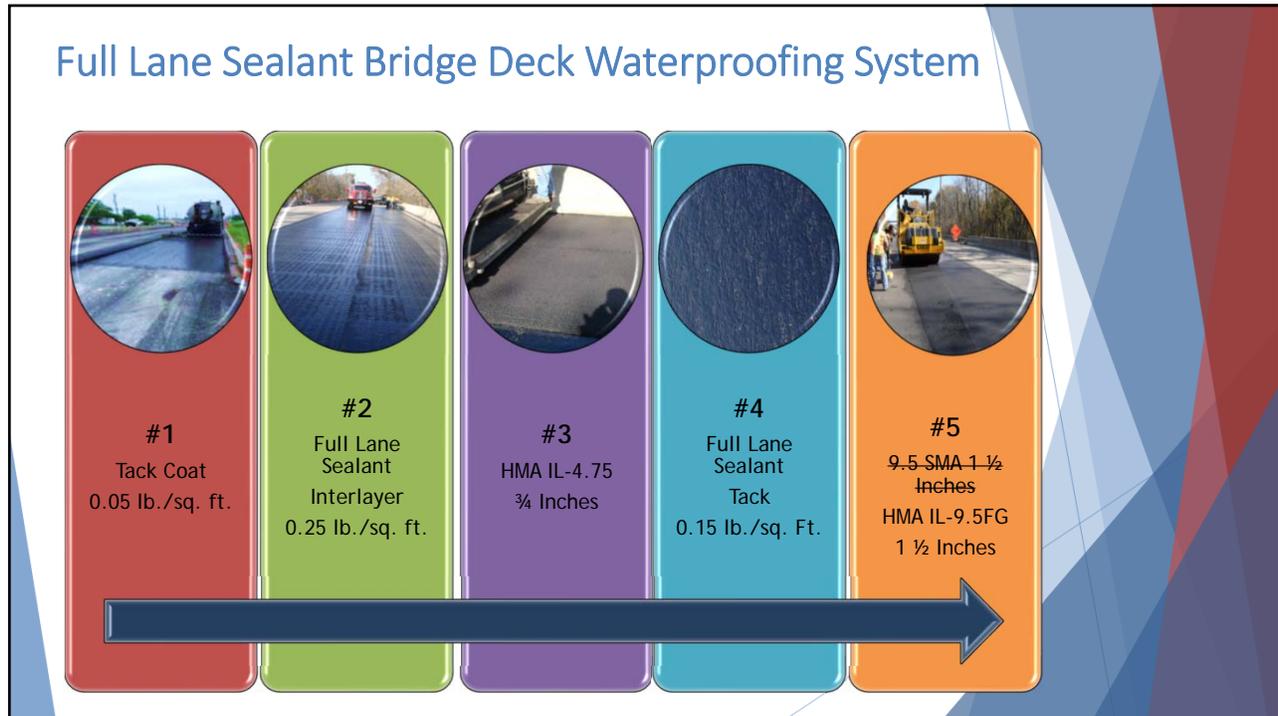


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## Full Lane Sealant Bridge Deck Waterproofing System



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## FLS Waterproofing System

- × Alternate waterproofing system
- × Uses FLS & low permeability, statically rolled HMA mixtures
- × More efficient & cost effective construction
- × Handwork for proper coverage on parapets, curbs, skews



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## Wax-Modified Hot Applied Asphalt Tack Coat (WMT)

- × Developed an Experimental Feature Workplan
- × Working with Industry to develop a material specification
- × Solicit Districts for projects in 2020



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## Material Quantity Estimates, 2020

Item Description	Unit	Total
SMA	TON	889,404
HMA, E and F surface	TON	204,731
HMA, all other	TON	3,128,779

× NOTE: Estimates are based on projections from November 2019 through June 2020 lettings. Estimates do not include quantities from previously awarded contracts.

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## Hot-Mix Asphalt Trends

- x 4,222,914 tons projected for 2020 from lettings
  - x *Does not include carry-over work*
- x 2019: 4,737,000 tons
- x 2018: 3,203,000 tons
- x 2017: 4,686,000 tons
- x 2016: 4,579,000 tons
- x 2015: 7,020,000 tons

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## Hot-Mix Asphalt Items (2020 Estimates)

- x 889,404 tons of SMA
  - x CA - 593,232 tons / FA - 78,268 tons
- x 204,731 tons of E & F Surface Mixes
  - x CA - 98,885 tons / FA - 58,348 tons
- x 3,128,779 tons of All Other HMA Mixes
  - x CA - 1,407,951 tons / FA - 916,732 tons

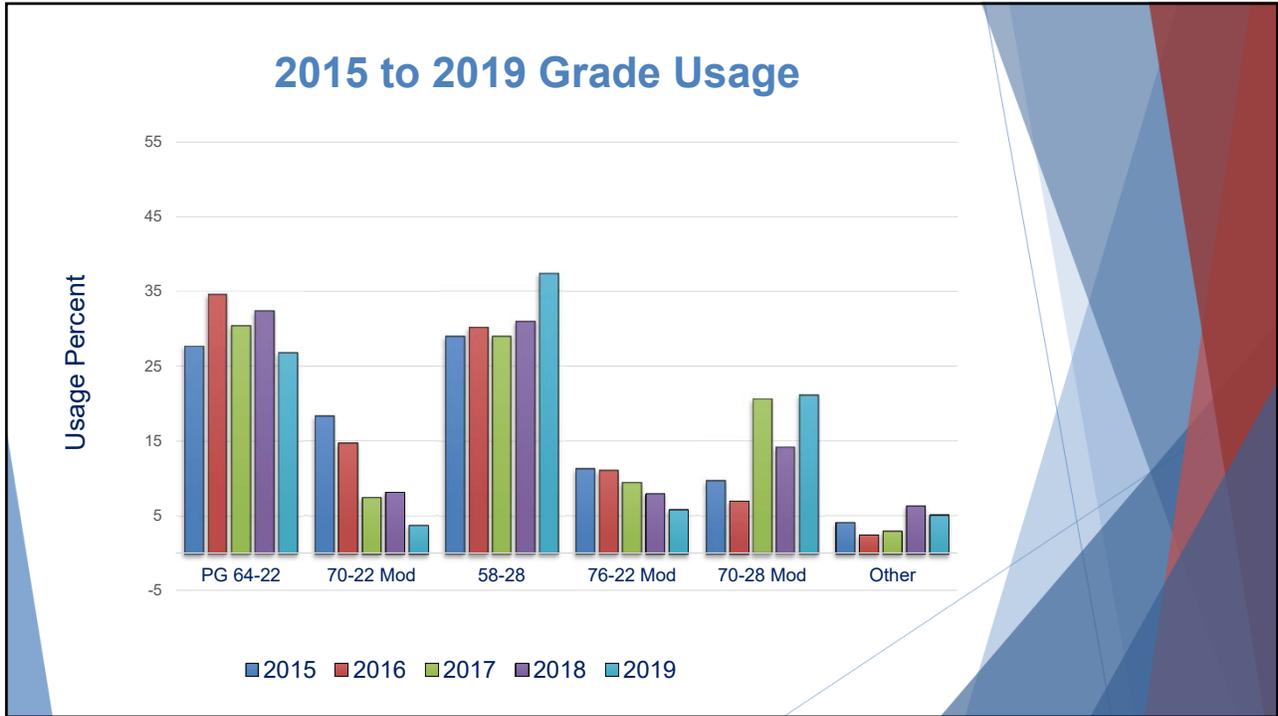
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# PG Binder Usage

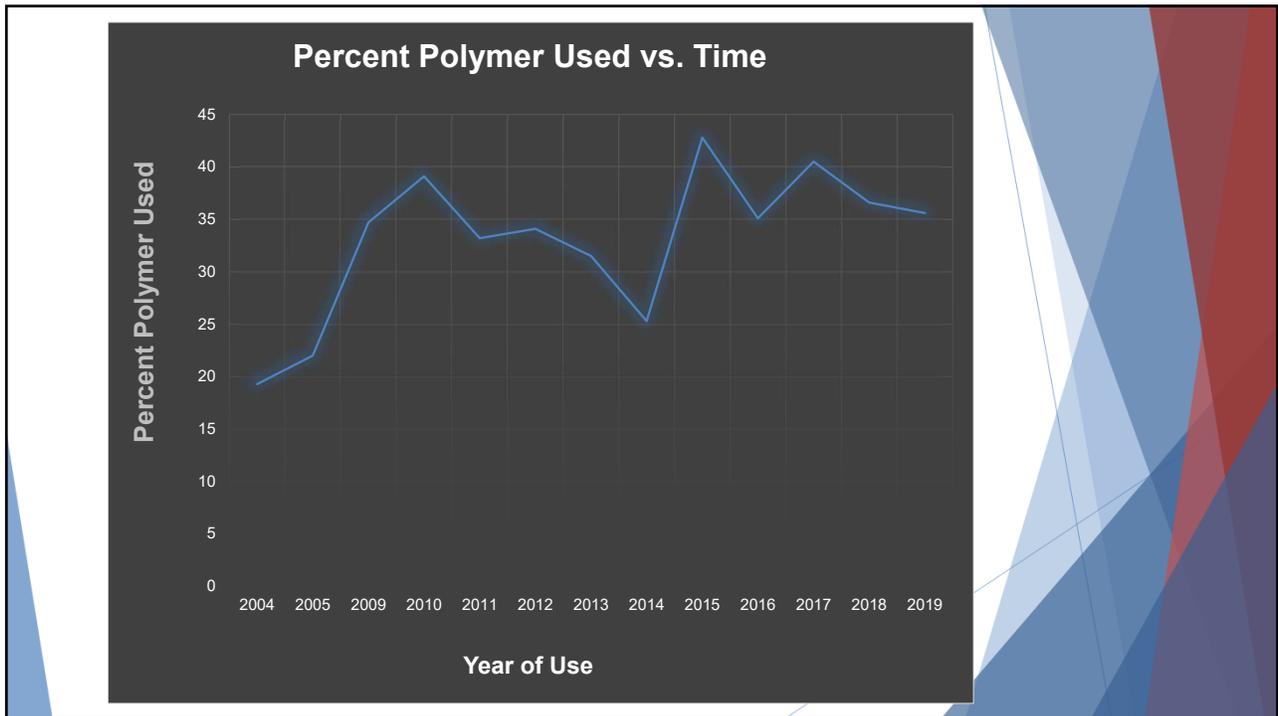
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## QC/QA Spec Revisions

- x Small Group still working on changes
- x January 2022 spec book
- x Will work with BLRS, Districts, Local Agencies, and Industry to develop any needed modifications

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## Pavement Preservation

- x Bureau of Research formed TWG
- x SMART overlays
- x Thinlay option being explored
  - x McHenry Co. applications
  - x FLS option for higher traffic levels?

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# Thank You!

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