

# INDOT/Industry Regional Meeting

Division of Materials and Tests  
2022

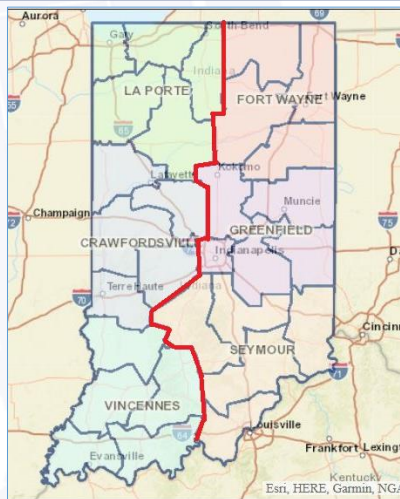


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## QA testing 2022

### BLUEGRASS

- LaPorte
- Crawfordsville
- Vincennes



### INDOT Labs

- Fort Wayne
- Greenfield
- Seymour



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Testing Memorandums

- [Current Testing Memos](#)

Certified Technicians/Supervisor Lists

- [CAPP Technicians](#)
- [ICAT Technicians](#)
- [HMA Field Supervisor](#)

Aggregate Bulk Specific Gravity

- [2022 Gsb List \(2/28/22\)](#)
- [Gsb List Changelog \(2/28/22\)](#)
- [HMA Gsb List Instructions](#)

Data Views

- [HMA Pay Factors and Comparison](#)

PG Binder Index Adjustment

IN.gov

Division of Materials and Tests

INDOT strives to develop, inspect, and maintain effective products are used on

Qualified Products

- [Qualified Products Lists & Changes](#)  
A listing of qualified products
- [Qualified Hot Mix Asphalt Design Lab](#)  
A listing of HMA design laboratories
- [Ready Mixed Concrete Plant](#)

Publications & Manuals

- [Indiana Test Methods Index](#)  
Test Methods and Procedures
- [ITM 226: Review and Validation](#)

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## Overview

- Specification Updates
- HMA Programs
  - Modernizing workflow
- HMA Initiatives

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# Recurring Special Provisions

RSP or RPD	Description	Rev. Date*	Letting Date**
400-R-680	QC/QA Sampling and Testing on 401 and 410 Pay Items ( <i>edit.</i> )	06/21/18	12/01/18
401-R-417	HMA Spray Paver and Emulsion	04/25/21	09/01/21
401-R-417	HMA Spray Paver and Emulsion	01/20/22	06/01/22
401-R-577	Inertial Profiler with Smoothness Pay Adjustments for HMA, Fixed Interval	10/21/21	12/01/21
401-R-736	QC/QA HMA Pavement	07/15/21	12/01/21
401-R-736	QC/QA HMA Pavement	01/20/22	06/01/22
401-R-750	Void Reducing Asphalt Membrane for HMA	01/20/22	09/01/22
402-R-737	HMA Pavement	07/15/21	12/01/21
402-R-737	HMA Pavement	01/20/22	06/01/22
410-R-418	SMA Spray Paver and Emulsion	04/25/21	09/01/21
410-R-418	SMA Spray Paver and Emulsion	01/20/22	06/01/22
410-R-738	QC/QA HMA – SMA Pavement	08/19/21	03/01/22
410-R-738	QC/QA HMA – SMA Pavement	01/20/22	06/01/22
410-R-751	Void Reducing Asphalt Membrane for SMA	01/20/22	09/01/22



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## 401-R-736

12/01/21

SECTION 401, BEGIN LINE 470, DELETE AND INSERT AS FOLLOWS:

All 9.5 mm and 12.5 mm surface mixture longitudinal joints that have the joint adhesive applied shall be sealed using SS-1h, *RPE*, or AE-NT asphalt emulsion in accordance with 902.01(b). The sealing operation shall not begin until all density cores in accordance with 401.16 and 401.20 have been obtained and the installation of pavement corrugations, when specified in accordance with 606, has been completed.

The liquid asphalt sealant shall be a minimum width of 24 in., centered on the joint line, and shall be extended, when necessary, to provide coverage beyond the edge of the pavement corrugation. The sealant shall be applied at an application rate of  $0.03 \pm 0.01$  gal./sq. yd. onto a dry surface, free of any foreign or loose material, using a distributor in accordance with 409.03(a). ~~Areas receiving greater than 0.04 gal./sq. yd. shall be lightly broomed to reduce the effects of excess sealant on the pavement surface.~~ The sealant temperature at the time of application shall be at least 135°F and shall not exceed 180°F. The ambient air and pavement temperatures at the time of application shall be greater than 32°F.

The application rate of the sealant shall be as follows:

Asphalt Emulsion	Application Rate* (gal./sq yd)
SS-1h or AE-NT	$0.03 \pm 0.01$ **
<i>RPE</i>	$0.15 \pm 0.01$ ***

\* The asphalt material shall not be diluted.  
 \*\* Areas receiving greater than 0.04 gal./sq. yd shall be lightly broomed to reduce the effects of excess sealant on the pavement surface.  
 \*\*\* The application rate shall be reduced when sealing milled corrugations in accordance with 606. The application rate shall be  $0.11 \pm 0.01$  gal./sq. yd.

Temporary pavement markings in accordance with 801.12 shall be offset a sufficient distance from the longitudinal joint so as not to obstruct the installation of the pavement corrugations or the application of the liquid asphalt sealant.

The SS-1h or AE-NT sealant shall be cured a minimum of five days prior to applying the permanent pavement traffic markings in accordance with 808. *The RPE sealant shall be cured a minimum of 48 h prior to applying the permanent pavement traffic markings in accordance with*



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## 401-R-736

SECTION 401, BEGIN LINE 583, DELETE AND INSERT AS FOLLOWS:

Within one work day of coring operations the Contractor shall clean, dry, and refill the core holes with *either* HMA of similar or smaller size particles *or bridge deck repair material from the QPL of Rapid Setting Patch Materials*. *The rapid setting patch material shall be mixed in a separate container and placed in the hole in accordance with the manufacturer's recommendations, consolidated by rodding, and struck-off flush with the adjacent pavement.*

06/01/22

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## ITM Updates

### • Indiana Test Methods

- <https://www.in.gov/indot/div/mt/itm/itm.htm>
- ITM 571. Extraction. **03/1/21**
  - Added auto extractor as a valid method
- ITM 583. Certified HMA producer. **03/1/21**
  - Corrected JMF binder adjustment tolerance for SMA
- ITM 587. Reducing HMA samples to testing size. **03/1/21**
  - Added more guidance on mixing and quartering samples
- ITM 902. Verifying Sieves. **02/10/22**
  - Minor clarifications to Figure 1 and 2

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# ITM 571 UPDATE

- Auto Extractors will be used in 2022 at INDOT

## 10.5 Method D – Automatic Extractor

Directive 304 **10.5.1** Extraction using automatic extraction equipment shall be performed in accordance with ASTM D8159, except as follows:

### Extraction Method:

When possible, the auto extractor will be used for a DMF for the entirety of the paving season. When possible, the centrifuge extractor will be used for a DMF for the entirety of the paving season.

**10.5.2** A minimum of 6 wash cycles will be utilized for HMA mixtures and a minimum of 8 wash cycles will be used for SMA mixtures.

**a)** Dry cycles shall equal the number of wash cycles.



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# AASHTO Updates

*the computer or internet, hard copies are not needed.*

ITM	908	Yes / No	T305-14	Date		
<input type="checkbox"/> ITMs on Computer	909	Yes / No	T312-19	Date		
ITM	Date (if printed)	Current?	910	Yes / No	T331-21	Date
207	Yes / No	916	Yes / No	T344-12	Date	
220	Yes / No	<b>AASHTO</b>		<b>ASTM</b>		
571	Yes / No	<input type="checkbox"/> AASHTOs on Computer	<input type="checkbox"/> ASTMs on Computer			
572	Yes / No	R30-02	Date	<b>D5821-13</b> Date		
580	Yes / No	R35-17	Date			
581	Yes / No	R46-08	Date			
583	Yes / No	R66-16	Date			
584	Yes / No	R76-16	Date			
586	Yes / No	R90-18	Date	<b>OTHER TEST METHODS</b>		
587	Yes / No	T11-20	Date	<b>REFERENCED IN QCP</b>		
588	Yes / No	T27-20	Date	Test Method	Date	
590	Yes / No	T30-21	Date			
591	Yes / No	T166-21	Date			
902	Yes / No	T209-20	Date			
903	Yes / No	T255-00	Date			
905	Yes / No	T269-14	Date			
906	Yes / No	T275-17	Date			

3.4  All assigned DMFs for current calendar year



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## INDOT Directives

- Directives are for public view on the INDOT webpage
  - <https://www.in.gov/indot/div/mt/directives/directives.htm>
- Internal procedures developed by INDOT to direct testing activities

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## INDOT Directives

<b>300</b>	<b><i>Asphalt Materials</i></b>	
301	Certified Hot Mix Asphalt Producer Program Procedures	4/9/21
302	Asphalt Materials	4/15/19
303	Plate Sample Preparation and SUPERPAVE Gyratory Compactor (SGC) Specimen Fabrication	8/5/21
304	QC/QA Hot Mix Asphalt Procedures	8/5/21
305	Hot Mix Asphalt Mix Design Laboratory Requirements	1/23/20
306	Specific Gravity of Fine Aggregates from Extracted Samples	2/14/19

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## INDOT Directives

- Directive 304

**Gyratory Specimens with a difference of more than 0.020:** the Gmb values may be used for subsequent determination of the volumetric properties of the mixture; however, the procedures contained within Directive 303 should be reviewed prior to compaction of additional specimens. If available, the A3 box may be used to make additional gyratory specimens and will replace the previous gyratory specimen values. However, use of the A3 box for aggregate Gsb testing and original or appeal sample replacement take priority.

## Modernizing Workflow

### Cloud-based Tools



# Modernizing Workflow



## DMF ENTRY

- HMA Producers and District Testing

## Lab Testing

- INDOT HMA testing Labs

## Field Assistant and SM

- District Construction

## HMA Pay Wizard

- Producers and INDOT



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# Modernizing Workflow



MDS Overview
Contracts

HMA Producer:

Certified Plant #:

Plant Location:

Approved Design Lab:

	Aggregate Size	Source	Sou... #	Q- Nu...	Led...	Design Lab GSB	Design Lab ABS %	INDOT List GSB	INDOT List ABS %	DMF %
	11 st.	US Agg Portland	2361	962...	3-6	2.603	1.98	2.603	1.98	45.0
	12 st.	US Agg Portland	2361	962...	3-6	2.541	3.20	2.541	3.20	17.5
	Crushed Gravel Sand	US Agg Richmond	2331	982...	na	2.603	2.33	2.603	2.33	7.0
	24 St. Sand	Barrett	2334	9821...	na	2.730	1.37	2.730	1.37	11.0
	4.75 Rap	Plant	na	na	na	2.640	1.00	2.640	1.00	18.0
	Baghouse	Plant	na	na	na	2.800	1.00	2.800	1.00	1.5

PG Binder	Source	Source #
64-22	AMI	7105
70-22	AMI	7105
76-22	AMI	7105

Additive	Sou...	Sou... #

Binder % RAS	0.0
Binder Repl. %	19.3
Virgin Binder %	5.7

PG Grade, Design TSR	Mixture Designation	Maximum Particle Size	Mixture Course
64-22	9.5 mm	12.5 mm	<input type="checkbox"/> Base Inter <input checked="" type="checkbox"/> Surf

Ignition Oven Test Temp.	900 F / ...
Binder Actual %	7.0
Binder calculated effective %	5.1
Gyrations Nini/Ndex/Nmax	6/50/75

	Fine RAP	Coarse RAP	RAS
% in mixture	18.0	0.0	0.0
Binder % extracted	7.5	0.0	0.0

Design No:

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# Modernizing Workflow

2019 implemented DMF entry  
 2019 implemented Lab Testing



Extraction Data		Fines Recovery	
*Sample Check-In St	*Weight of Sample (A) Gram	*Cup & Fines C <sub>f</sub> Gram	
	*Dried Aggregate (B) Gram	*Cup c Gram	
Show 10 entries	Cup Fines (C) Gram	Cup Fines [C <sub>f</sub> - c] (C) Gram	Refresh Check-in
Sample ID	Filter Fines (D) Gram	Filter Fines	
R179122400001	Total Aggregate & Fines (E) Gram	*Dried Filter & Fines D <sub>y</sub> Gram	29/2019 Check-in
R183403540111	% Bituminous (F) %	*Filter f Gram	29/2019 Check-in
R183403541011	*Testing Technician Id lbgootee	Filter Fines [D <sub>y</sub> - f] (D) Gram	29/2019 Check-in
R193123400005	*Test Completion Date 03/29/2019		29/2019 Check-in

Showing 1 to 4 of 4 entries

Add Test Method

Test Methods:

pe A B C<sub>f</sub> c C<sub>c</sub> D<sub>y</sub> F D E F Tester Test Date Remove

No Tests Found



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# Modernizing Workflow

2019 implemented DMF entry  
 2019 implemented Lab Testing  
 2020 implemented Field Assistant



Contractor Information							
Crew	Equipment	Remarks	Contractor	Crew	Personal Type	City	Action
(*) Denotes required fields							
*Contractor:	Select Contractor...		26-1745760 - K & S MARKERS INC	1	prsn : Laborer	3	
*Crew No.:	Select Crew...	Add Crew	35-1139301 : E & B PAVING INC	1	prsn : Carpenter	2	*Select a Remark Type: BCCOP : DWR Work Operations
Add	Delete Selected		35-1630972 : ABC CUTTING CONTRACTORS	1	prsn : Laborer	2	Milestone on site for paving, resurface. John is QC/QA for Milestone, Phil is 812-555-0132 Paving commenced at 8am, starting at Sta 123+25.12'. Bill is Paving Foreman on site. Looking to do around 800 tons today, two bridges if hitting daily planned qty. Down from 10:30 to 11:30 due to plant issues.
Show 10 entries			35-1630972 : ABC CUTTING CONTRACTORS	2	supr : Foreman	1	K&S Markers running ahead of Milestone, removing RPMs from tomorrow's planned mill work.
Contractor			35-1630972 : ABC CUTTING CONTRACTORS	2	prsn : Laborer	1	
Showing 0 to 0 of 0 entries							
			35-1917625 : MILESTONE CONTRACTORS LP **PRIME**	1	supr : Foreman	1	
			35-1917625 : MILESTONE CONTRACTORS LP **PRIME**	1	prsn : Laborer	4	
			35-1917625 : MILESTONE CONTRACTORS LP **PRIME**	1	prsn : Equipment Operator	3	
			35-1917625 : MILESTONE CONTRACTORS LP **PRIME**	1	prsn : Q/C Q/A H.M.A. Tech	1	
			35-1917625 : MILESTONE CONTRACTORS LP **PRIME**	1	supr : Superintendent	1	
Showing 1 to 10 of 11 entries							

Remark Type	Text	Action
BCCOP : DWR Work Operations	ABC Cutting on site cutting through sidewalks and curbing. One crew marking, one cutting. Started at...	
HITE : PE/S High Temp	92	
LOTE : PE/S Low Temp	72	
WEAT : PE/S Weather	Clear	

Showing 1 to 4 of 4 entries



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# Modernizing Workflow

- 2019 implemented DMF entry
- 2019 implemented Lab Testing
- 2020 implemented Field Assistant
- 2020 implemented HMA Pay Wizard



Contract: RS-19465 CLN: 033 DMF: 19302003 Lot: 1 Acceptance: PWL												
QA/Apprel Unlified	Sample Date	Related Sample Id	Res. Qty (Tons)	Mix % Binder	Mix Grm	Pil 1 Grm	Pil 2 Grm	Pil Aug. Grm	Core A Grm	Core B Grm	GA Adjustment	
Sublot 1	08/22/2019	A194515524100	600.00	6.49	2.399	2.341	2.333	2.337	2.264	2.280	5,355.73	
Sublot 2	04/09/2019	R194515524101	600.00	6.60	2.426	2.365	2.350	2.353	2.299	2.311	1000.00	
Sublot 3	04/09/2019	R194515524102	600.00	6.49	2.428	2.337	2.330	2.334	2.260	2.305	1,012	
Sublot 4	04/09/2019	R194515524103	600.00	6.54	2.428	2.336	2.332	2.334	2.235	2.230	\$500.00	
Sublot 5	04/09/2019	R194515524104	600.00	6.58	2.427	2.348	2.349	2.349	2.267	2.212	\$74.00	
INDOT T30 Detail											Total Lot Quantity 3000 Tons	
Mix Properties for Acceptance											0.93	
Acceptance Results and Pay Factors, Final												
	Average	Signis	N	Qu USL	Qu	PWLj	Q LSL	Ql	PWLj	Total PWL	Pay Factor	LCPI
% Air Voids	3.31	0.65	5	5.40	3.22	100	2.6	1.09	86	86	0.98	1.02
% Vbe	12.21	0.55	5	13.50	2.35	100	11	2.2	100	100	1.05	
% Density	93.52	1.53	10	-	-	-	91	1.65	96	96	1.03	



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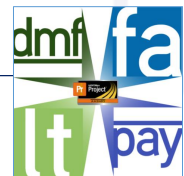
# Modernizing Workflow

## DMF Entry

- Can submit HMA and OG
- SMA is still excel DMF coversheet (for now)

## HMA Pay Wizard

- Can only process HMA
- OG and SMA are still excel pay workbooks (for now)



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## DMF Entry updates

- DMF Entry 2.0 (Launch end of March)
- Will accept SMA DMFs and JMFs
- Will also accept miscellaneous mix types without validation (Micro-surface, UBWC, FDR, CIR, CCPR)
  - Can even assign to contract items

### TM 19-01 Update

- Reference designs may be submitted with bulk specific gravities determined by the above procedure. Any affected properties, including VMA, VFA, FAA, and dust/effective binder ratio shall be recalculated based on the new Gsb values. If any recalculated property is outside specification limits, the design cannot be referenced and a new design must be submitted.
  - If a reference design had an established Gsb per ITM 597, the established Gsb will be automatically populated by DMF Entry on the DMF being considered for acceptance. If there is disagreement that it appropriately reflects the DMF being considered for acceptance, this should be noted in the submittal and further discussion will need to take place

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## HMA Paywizard Updates

- Once DMF Entry is updated, will work on getting SMA and OG integrated into Paywizard (2023)

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## HMA Paywizard

- Stress the importance of R# for contractor use
- Let district testing know:
  - If a Lot needs to be rolled back or converted to single subplot acceptance (end of paving)
  - Something is wrong, “stuck”, or hasn’t processed
  - Final subplot tonnage

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## HMA Paywizard

- Reminder about appeal windows

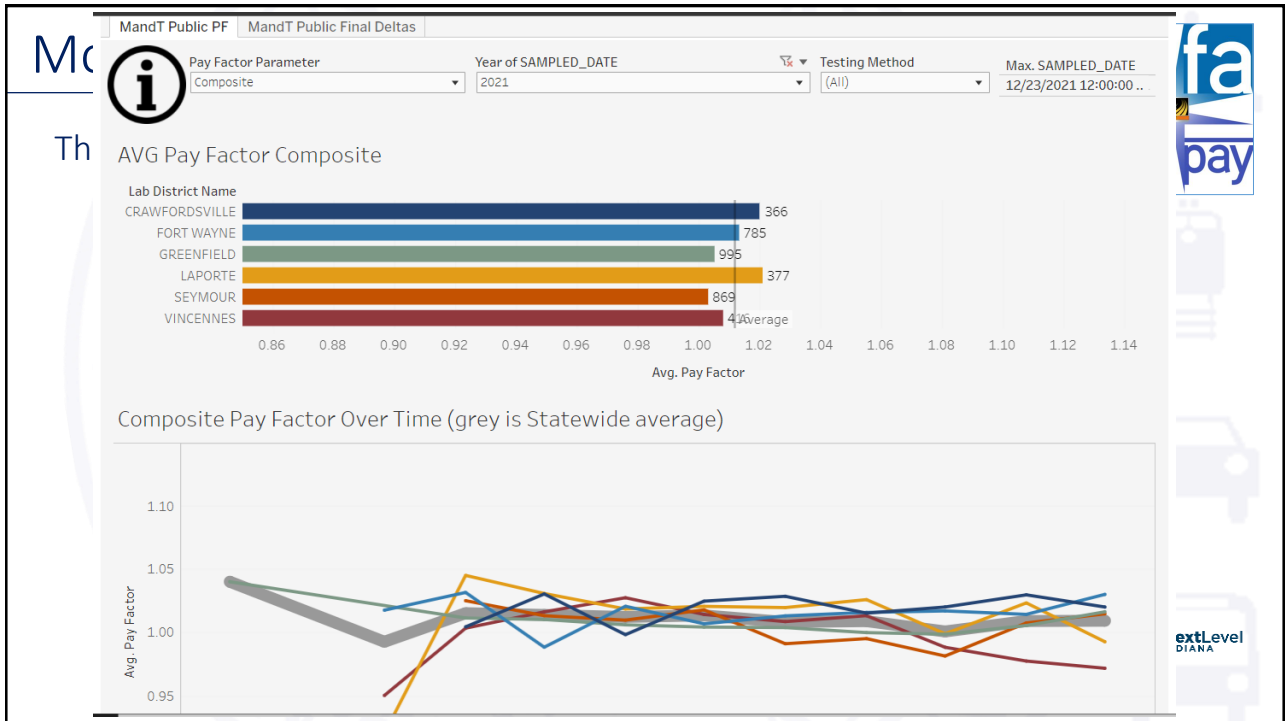
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The screenshot shows the HMA Pay Wizard application. The browser address bar is `paywizard.indot.in.gov/?RedirectUrl=...`. The application header includes the IN.gov logo and 'INDOT HMA Pay Wizard'. A 'Pay Wizard Menu' is open, listing options: 'Edit QC Data', 'Edit Lot Info', 'Edit Appeal Request', 'Copy QA Results To QC' (highlighted with a red arrow), 'Clear Sandbox Data', 'Hide Inactive', and 'About'. A modal window titled 'Select Sample Id to copy QA data' is open, displaying a list of sample IDs and their approval dates:

Sample ID	Approval Date
R213519402801	Approved 2/11/2022
R213519402802	Approved 2/11/2022
R215545200020	Approved 2/3/2022
R215545200021	Approved 10/8/2021

At the bottom of the modal are 'CANCEL' and 'NEXT' buttons. To the right of the modal, text reads: 'within seven days of the test date. The engineer will make quality control'.

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## Average Density Summary

- 2018 S4 avg 92.95%
- 2019 S4 averaged 93.2%
- 2019 S5 averaged 94.41%
- 2020 S5 averaged 94.64%
- 2021 S5 averaged 94.75%

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## PWL Pay Factors

PWL				
	AV	VMA/Vbe	Density	LCPF
2017	0.97	0.95	1.01	0.97
2018	0.96	0.93	0.97	0.95
2019	1.00	0.98	0.97	0.98
2020	1.01	1.03	0.99	1.00
2021*	1.02	1.04	1.00	1.01

\*as of 12/21

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## Volumetric Pay Factor

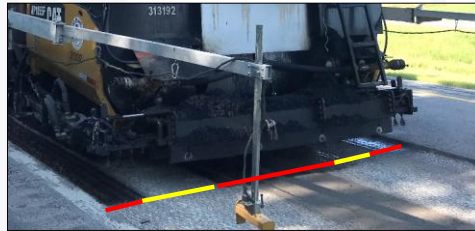
Volumetrics				
	AV	VMA/Vbe	Density	SCPF
2017	0.98	0.91	0.99	0.94
2018	0.97	0.95	0.98	0.93
2019	0.99	1.01	1.00	1.00
2020	1.02	1.04	1.00	1.02
2021*	1.01	1.03	1.00	1.02

\*as of 12/21

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## HMA Initiatives

- Strategic Steering Committee (SSC)
  - Spray Pavers with HMA



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## Spray Pavers with HMA

- 401-R-417 HMA Spray paver and emulsion
- 410-R-418 SMA Spray paver and emulsion
- Design Memo 21-20
  - BFU is mainly larger interstate/4-lane divided/freeway. HMA and SMA
  - Still target ~12 per year.
- RSP update

*The mixture placed on all travel lanes, turn lanes, auxiliary lanes, and ramps which are 11 ft or more in width shall be placed upon an approved surface by means of laydown equipment in accordance with 409.03(c)4. This shall include a mixture placed simultaneously with a travel lane, turn lane, auxiliary lane, or ramp.*

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## HMA Initiatives

- Strategic Steering Committee (SSC)
  - VRAM



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## VRAM

- HMA and SMA RSP (BFU is approval of M&T)
  - 401-R-750 Void Reducing Asphalt Membrane for HMA
  - 410-R-751 Void Reducing Asphalt Membrane for SMA
- SSC committed to implementing in 2026 specifications for all Cat 4 roadways
  - M&T, Pavement, Technical services will select projects in the interim

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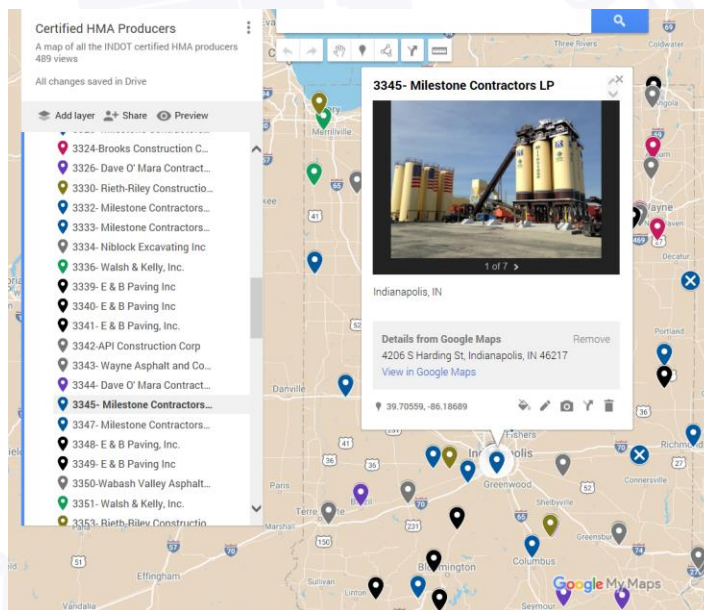
## HMA Initiatives

- Strategic Steering Committee (SSC)
  - IRI
    - Goal to fully implement in CY 2023
    - ~17 pilot projects let in 2022
    - CM 21-02. Allow for the use of the high speed profiler on projects utilizing profilograph simulation mode or straightedge simulation mode
    - CM 22-01 release on 3/10.
      - Supersedes CM 21-02



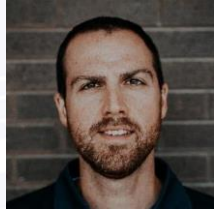
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<https://tinyurl.com/hmaplants>



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Thank You



Nathan Awwad

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317-522-9661

