



# INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

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Indianapolis, Indiana 46204

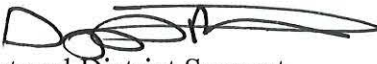
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**Eric Holcomb, Governor**  
**Joe McGuinness, Commissioner**

March 16, 2020

## CONSTRUCTION MEMORANDUM 20-04

TO: District Deputy Commissioners  
District Construction Directors  
District Technical Services Directors  
District Area Engineers, Project Engineers/Supervisors  
District Project Management Director, Project Management Director  
District Traffic Engineers, District Testing Engineers  
District LPA Coordinators, Field Engineers, Office of Material Management

FROM: Gregory G. Pankow, P.E., Director   
Division of Construction Management and District Support

SUBJECT: QC/QA Hot Mix Asphalt 2020 Specification changes

The purpose of this memorandum is to highlight recent QC/QA HMA Pavement and HMA Pavement specification changes. These changes have resulted in recurring special provisions, RSP, which can be found on INDOT's website at: <https://www.in.gov/dot/div/contracts/standards/rsp/sep19/sep19.htm>.

Contracts that are paving under the 2020 Standard Specifications, but do not contain these changes, may elect to incorporate them at no cost.

### QC/QA HMA Pavement (401)

The Department has adopted Recurring Special Provision [401-R-701 QC/QA HMA PAVEMENT](#) (Adopted 10-17-19). Changes include allowing finer 9.5 mm surface mix designs, changing air void targets for 9.5mm Open Graded HMA, and minimum mixture temperature requirements at the time of spreading for mixtures not controlled by density cores.

### HMA Pavement (402)

The Department has adopted Recurring Special Provision [402-R-702 HMA PAVEMENT](#) (Adopted 10-17-19). Changes include allowing ESAL substitution for 402 mixtures, increasing the air void tolerance on Type D certifications, and minimum mixture temperature requirements at the time of spreading for mixtures not controlled by density cores.

If a contractor chooses to utilize one or both of the RSPs on a contract let on or after **September 1, 2019 and prior to March 1, 2020** where it is not in the original contract documents, a **no cost** change order will need to be generated in accordance with 109.05. If there are any questions, please contact the Office of Materials Management.

**Please note contracts let on or after 3/1/2020 will already contain the provisions with the above mentioned changes.**

If you have questions relating to this memo, please contact the Field Engineer assigned to your district.

GP/NEA

**ATTACHMENTS:**

1. [401-R-701 QC/QA HMA PAVEMENT](#) (*Adopted 10-17-19*)
2. [402-R-702 HMA PAVEMENT](#) (*Adopted 10-17-19*)

(Adopted 10-17-19)

The Standard Specifications are revised as follows:

SECTION 401, BEGIN LINE 68, DELETE AND INSERT AS FOLLOWS:

The single percentage of aggregate passing each required sieve shall be within the limits of the following gradation tables:

Sieve Size	Dense Graded, Mixture Designation – Control Point (Percent Passing)				
	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.75 mm**
50.0 mm					
37.5 mm	100.0				
25.0 mm	90.0 - 100.0	100.0			
19.0 mm	< 90.0	90.0 - 100.0	100.0		
12.5 mm		< 90.0	90.0 - 100.0	100.0	100.0
9.5 mm			< 90.0	90.0 - 100.0	95.0 - 100.0
4.75 mm				< 90.0	90.0 - 100.0
2.36 mm	19.0 - 45.0	23.0 - 49.0	28.0 - 58.0	32.0 - 67.0*	
1.18 mm					30.0 - 55.0
600 µm					
300 µm					
75 µm	1.0 - 7.0	2.0 - 8.0	2.0 - 10.0	2.0 - 10.0	3.0 - 8.0

\* The mix design gradation shall be less than or equal to the PCS control point 58.0% passing the 2.36 mm sieve for all 9.5 mm surface mixtures. The mix design gradation can be greater than the PCS control point 58.0% passing the 2.36 mm sieve when used on non-Department maintained facilities.

\*\* The total blended aggregate gradation for the 4.75 mm mixture shall have a fineness modulus greater than or equal to 3.30 as determined in accordance with AASHTO T 27.

PCS Control Point for Mixture Designation (Percent Passing)					
Mixture Designation	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.75 mm
Primary Control Sieve	4.75 mm	4.75 mm	2.36 mm	2.36 mm	n/a
PCS Control Point	40	47	39	47	n/a

Sieve Size	Open Graded, Mixture Designation – Control Point (Percent Passing)		
	OG9.5 mm	OG19.0 mm	OG25.0 mm
37.5 mm			100.0
25.0 mm		100.0	70.0 – 98.0
19.0 mm		70.0 – 98.0	50.0 – 85.0
12.5 mm	100.0	40.0 – 68.0	28.0 – 62.0
9.5 mm	75.0 – 100.0	20.0 – 52.0	15.0 – 50.0
4.75 mm	10.0 – 35.0	10.0 – 30.0	6.0 – 30.0
2.36 mm	0.0 – 15.0	7.0 – 23.0	7.0 – 23.0
1.18 mm		2.0 – 18.0	2.0 – 18.0
600 µm		1.0 – 13.0	1.0 – 13.0
300 µm		0.0 – 10.0	0.0 – 10.0
150 µm		0.0 – 9.0	0.0 – 9.0
75 µm	0 – 6.0	0.0 – 8.0	0.0 – 8.0
% of Binder	> 3.0	> 3.0	> 3.0

Dust/Calculated Effective Binder Ratio shall be 0.6 to 1.4. The Dust/Calculated Effective Binder Ratio for 4.75 mm mixtures shall be 1.0 to 2.0.

The optimum binder content shall produce a  $\Delta P_b \leq 0.20$  as determined in accordance with ITM 591 and the following air voids at  $N_{des}$ :

Air Voids at Optimum Binder Content								
	Dense Graded					Open Graded		
Mixture Designation	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.75 mm	25.0 mm	19.0 mm	9.5 mm
Air Voids	5.0%	5.0%	5.0%	5.0%	5.0%	15.0% - 20.0%	<del>10.0</del> 12.0%	<del>15.0</del> 17.0%

SECTION 401, BEGIN LINE 132, DELETE AND INSERT AS FOLLOWS:

VOIDS FILLED WITH ASPHALT, VFA, CRITERIA @ $N_{des}$	
ESAL	VFA, %
< 3,000,000	60 – 73
3,000,000 to < 10,000,000	60 – 70
$\geq 10,000,000$	60 – 70

Notes:

- For 4.75 mm mixtures, the specified VFA range shall be 67% to 79%.
- For 9.5 mm mixtures, the specified VFA range shall be ~~68.69%~~ to ~~71.72%~~ for design traffic levels  $\geq 3,000,000$  ESALs.
- For 25.0 mm mixtures, the specified lower limit of the VFA shall be 62% for design traffic levels < 300,000 ESALs.
- For OG mixtures, VFA is not applicable.

SECTION 401, BEGIN LINE 360, DELETE AND INSERT AS FOLLOWS:

Rubblized concrete pavements shall be primed in accordance with 405. PCCP, milled asphalt surfaces, and ~~asphalt surfaces~~ *new and existing asphalt surfaces* shall be tacked in accordance with 406. Contact surfaces of curbing, gutters, manholes, and other structures shall be tacked in accordance with 406.

SECTION 401, BEGIN LINE 381, INSERT AS FOLLOWS:

#### 401.14 Spreading and Finishing

The mixture shall be placed upon an approved surface by means of laydown equipment in accordance with 409.03(c). Prior to paving, both the planned quantity and lay rate shall be adjusted by multiplying by the MAF. When mixture is produced from more than one DMF for a given pay item, the MAF will be applied to the applicable portion of the mixture for each. The temperature of each mixture at the time of spreading shall be less than 315°F whenever PG 64-22 or PG 70-22 binders are used or not more than 325°F whenever PG 76-22 binder is used. *No mixture shall be placed on a previously paved course that has not cooled to below 175°F. For mixtures compacted in accordance with 402.15, the temperature of each mixture at the time of spreading shall not be less than 245°F.*

SECTION 401, BEGIN LINE 749, DELETE AND INSERT AS FOLLOWS:

Air Voids		
Dense Graded	Open Graded	Pay Factor
Deviation from Spec ( $\pm\%$ )	Deviation** ( $\pm\%$ )	
$\leq 0.5$	$\leq 3.0$	1.05
$> 0.5$ and $\leq 1.7$	$> 3.0$ and $\leq 4.0$	1.00
	4.1	0.98

1.8	4.2	0.96
	4.3	0.94
	4.4	0.92
1.9	4.5	0.90
2.0	4.6	0.84
	4.7	0.78
	4.8	0.72
	4.9	0.66
	5.0	0.60
> 2.0	> 5.0	Submitted to the Office of Materials Management*
* Test results will be considered and adjudicated as a failed material in accordance with normal Department practice as listed in 105.03.		
** Deviation shall be from 17.5% for OG25.0 mm and OG19.0 mm mixtures and shall be from <del>12.5</del> 14.5% for OG9.5 mm mixtures.		

402-R-702 HMA PAVEMENT

(Adopted 10-17-19)

The Standard Specifications are revised as follows:

SECTION 402, AFTER LINE 38, INSERT AS FOLLOWS:

*A Type D mixture may be used in lieu of a Type C or a Type B mixture and a Type C mixture may be used in lieu of a Type B mixture.*

SECTION 402, BEGIN LINE 99, DELETE AND INSERT AS FOLLOWS:

**402.09 Acceptance of Mixtures**

Acceptance of mixtures will be in accordance with the Frequency Manual on the basis of a type D certification in accordance with 916. The test results shown on the certification shall be the quality control tests representing the material supplied and include air voids and binder content. Air voids tolerance shall be  $\pm 1.52.0\%$  and binder content tolerance shall be  $\pm 0.7\%$  from DMF.

SECTION 402, BEGIN LINE 176, INSERT AS FOLLOWS:

The temperature of each mixture at the time of spreading shall be less than 315°F whenever PG 64-22 or PG 70-22 binders are used. *The temperature of each mixture at the time of spreading shall not be less than 245°F. No mixture shall be placed on a previously paved course that has not cooled to less than 175°F.*