

**HOT MIX ASPHALT (HMA) PAVEMENT
GUIDE SPECIFICATIONS
FOR
LOCAL GOVERNMENTS**

This guide specification incorporates the latest asphalt pavement technologies. It attempts to present the best practices/procedures and processes, but it is not intended to replace sound engineering knowledge, judgment and experience.

The Indiana Department of Transportation (INDOT) Standard Specifications, Section 402, shall apply with the exceptions as noted herein. The current version of the INDOT Specifications, Recurring Special Provisions, and Supplemental Specifications are applicable.

HMA.01 Description

This work shall consist of one or more courses of Hot Mix Asphalt (HMA) base, intermediate, surface mixtures or other miscellaneous HMA application, produced from an INDOT Certified HMA plant, in accordance with Indiana Test Method (ITM) 583. The mixtures may be produced as warm-mix asphalt (WMA) by using a water injection foaming device or additives per manufactures recommendations.

HMA.02 Quality Control

HMA shall be supplied from a certified HMA plant in accordance with ITM 583 – Certified Volumetric Hot Mix Asphalt Producer Program. HMA shall be transported and placed according to a Quality Control Plan (QCP) prepared by the Contractor in accordance with ITM 803 – contractor Quality Control Plan for HMA Pavement, and submitted to the Architect/Engineer five (5) calendar days prior to commencing HMA paving operations.

HMA.03 Materials

Asphalt Binder

* Only for use in mixtures containing greater than 25% RAP, Refer to HMA.05

Surface Aggregate Type

For Type C Mixtures, surface aggregates shall meet the requirements for less than 3,000,000 ESAL in Section 904.03(d).

For Type D mixtures, surface aggregates shall meet the requirements for less than 10,000,000 ESAL in 904.03(d).R

HMA.04 Design Mix Formula and Mixture Type

The design mix formula, prepared in accordance with 402.05, shall be based on the following table:

Mixture Type	Type A *	Type B*	Type C*	Type D *
<i>Design ESAL</i>	<i>200,000</i>	<i>2,000,000</i>	<i>9,000,000</i>	<i>11,000,000</i>
<i>AADT</i>	<i><4000</i>	<i>4000- 15,000</i>	<i>15,000-30,000</i>	<i>>30,000</i>
<i>Surface</i>	<i>4.75,9.5, 12.5 mm</i>	<i>4.75,9.5, 12.5 mm</i>	<i>4.75,9.5, 12.5 mm</i>	<i>4.75,9.5, 12.5 mm</i>
<i>Surface - PG Binder</i>	<i>64-22</i>	<i>64-22</i>	<i>70-22</i>	<i>70-22,76-22</i>
<i>Intermediate</i>	<i>9.5, 12.5,19.0 mm</i>	<i>9.5, 12.5,19.0 mm</i>	<i>9.5, 12.5, 19.0mm</i>	<i>9.5, 12.5,19.0 mm</i>
<i>Intermediate - PG Binder</i>	<i>64-22</i>	<i>64-22</i>	<i>64-22</i>	<i>70-22,76-22</i>
<i>Base</i>	<i>19.0,25.0 mm,</i>	<i>19.0,25.0 mm</i>	<i>19.0,25.0 mm</i>	<i>19.0,25.0 mm</i>
<i>Base - PG Binder</i>	<i>64-22</i>	<i>64-22</i>	<i>64-22</i>	<i>70-22,64-22</i>

*A higher category mix may be used for a lower category application.

[Return to content page](#)

HMA.05 Volumetric Mix Design

The DMF shall be determined for each HMA mixture from a volumetric mix design in accordance with 401.05.

A DMF developed per 401.05 may be used and the source or grade of the binder may be changed; however, the high temperature grade shall meet the minimum requirements of HMA.05.

HMA.06 Job Mix Formula

A job mix formula (JMF) shall be developed by a Certified HMA Producer. A JMF used in current or previous calendar year that was developed per 401.05 will be allowed. The DMF for each mixture shall be submitted as per HMA.04. Source of the aggregate may be changed as long as the aggregate meets the requirements of 402.03. Notification of changes of binder grade or source and aggregate source shall be provided prior to usage to the Owner Representative.

For mixtures containing 0.0% to 25.0% RAP, changes in the source and grade of specified binders will be permitted; however, the high temperature grade shall meet the minimum requirements of HMA.04.

HMA.07 Mix Criteria

Where ever reference is made to 402.04, it shall read as HMA.04.

HMA.08 Recycled Materials

Recycled materials may consist of reclaimed asphalt pavement (RAP) or recycled asphalt roofing shingles (RAS) or a blend of both. RAP shall be the product of cold milling or crushing of an existing pavement. The RAP shall be processed so that 100% will pass the 2 in. (50mm) sieve when entering the plant. The aggregate in the recycled materials shall be 100% passing the 3/8 in. (9.5mm) sieve and 90% to 100% passing the No. 4 (4.75mm) sieve.

RAS shall consist of waste from a shingle manufacturing facility or tear-off shingles from roofs (post consumer). RAS shall meet AASHTO specification MP 15, Standard Specification for Use of Reclaimed Asphalt Shingle as an Additive in Hot Mix Asphalt and the mix design shall be done according to AASHTO PP 53 Standard Practice for Design Considerations When Using Reclaimed Asphalt Shingles in New Hot Mix Asphalt.

Recycled materials may be used as a substitute for a portion of the new materials required to produce the HMA mixture. When only RAP is used, the RAP shall not exceed 40% by weight (mass) of the total mixture. RAS may be substituted for RAP at a ratio of 1% RAP equal to 5% RAS. Total RAS shall not exceed 5% by weight (mass) of the total mixture. Up to 5% RAS may be used when the source is manufacturer waste. Up to 3% RAS can be used when source is post consumer.

The combined aggregate properties of a mixture with recycled materials shall be determined in accordance with ITM 584 and shall be in accordance with 904. Gradation of the combined aggregates shall be in accordance with TLAS.05.

The low temperature classification of the PG binder for mixtures containing greater than 25% and up to 40% RAP (or equivalent blend of RAP and RAS) shall be -28C, and the high temperature classification may be reduced by 6C.

HMA.09 Acceptance of Mixtures

When required a Type D Certification in accordance with section 916 shall be furnished to the owner's representative. The test results shown on the certification shall be the quality control tests representing the material supplied and include the air voids and binder content.

HMA.10 Remain the same as sections 402.10

HMA.11 Low Temperature Compaction Requirements

Compaction will be as directed by Owner Representative whether the requirements of 402.15 or 402.1 apply to temperatures below the temperatures listed in 402.12.

HMA.12 through HMA.14

Remain the same as sections 402.12 through 402.14

HMA.15 Compaction

The HMA mixture shall be compacted with equipment in accordance with 409.03(d) immediately after the mixture has been spread and finished. Rollers shall not cause undue displacement, cracking, or shoving.

A roller application is defined as one pass of the roller over the entire mat. Compaction operations shall be completed in accordance with the following options.

Rollers	Number of Roller Applications					
	Courses < 440 lb/syd (240 kg/m ²)				Courses > 440 lb/syd (240 kg/m ²)	
	Option 1	Option 2	Option 3	Option 4	Option 1	Option 2
Three Wheel	2		4		4	
Pneumatic Tire	2	4			4	
Tandem	2	2	2		4	
Vibratory Roller				6		8

HMA.16 thru HMA .19

Remain the same as sections 402.17 through 402.19

HMA.20 Basis of Payment

	Per Ton	Per Square Yard	Lump Sum
HMA Surface	X	X	X
HMA Intermediate	X	X	X
HMA Base	X	X	X