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

ULTRA-THIN ASPHALT SURFACE (UTAS)

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

All numbered specification references in this document refer to the most recent version of the Indiana Department of Transportation (INDOT) Standard Specifications and current Indiana Test Methods (ITM).

UTAS.01 Description

This work shall consist of construction of a wearing course of 4.75mm Hot Mix Asphalt (HMA) or Warm Mix Asphalt (WMA) Surface mixture placed at a nominal thickness of ¾ inches on existing pavement surfaces prepared in accordance with 402.11.

UTAS.02 Quality Control

UTAS shall be supplied from a certified HMA plant in accordance with ITM 583 – Certified Volumetric Hot Mix Asphalt Producer Program. UTAS 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 prior to commencing HMA paving operations.

UTAS.03 Materials

Asphalt Materials shall be Performance Graded Binder, PG 58-28*, PG 64-22, PG 64-28*, PG 70-22, PG 70-28* or PG 76-22 in accordance with 902.01(a).
*Only for use in mixtures containing greater than 25% RAP.

Fine Aggregates shall be in accordance with 904.02.

Coarse Aggregates shall be Class B or higher in accordance with 904.03

UTAS.04 Mix Design Formula

A Design Mix Formula (DMF) shall be prepared in accordance with 402.04 except that the DMF will be based on the 4.75mm dense graded mixture designation in accordance with 401.05. The DMF shall be submitted in the current INDOT format one week prior to use. The mixture may be produced as Warm Mix Asphalt (WMA) by using a water injection foaming device or additives in accordance with the manufacturer's recommendations. The DMF shall list the minimum plant discharge temperature for HMA and WMA as applicable to the mixture.

UTAS.05 Volumetric Mix Design

The DMF shall be determined for the UTAS mixture from a volumetric mix design for 4.75 mm dense graded mixture in accordance with 401.05. The single percentage of aggregate passing each required sieve shall be within the following limits:

Sieve Size	Percent Passing
12.5 mm (1/2 inch)	100.00
9.5 mm (3/8 inch)	95.0 – 100.0
4.75 mm (No. 4)	90.0 – 100.0
1.18 mm (No. 16)	30.0 - 60.0
75 µm (No. 200)	6.0 - 12.0

UTAS.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 Ndes will be allowed. The DMF for each mixture shall be submitted as per UTAS.04

UTAS.07 Intentionally Left Blank

UTAS.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.

Recycled materials may be used as a substitute for a portion of the new materials required to produce the UTAS 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% RAP. Total RAS shall not exceed 5% by weight (mass) of the total mixture.

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 UTAS.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.

UTAS.09 Acceptance of Mixtures

Acceptance of UTAS mixtures will be based on test results from a minimum of one truck sample per day for up to 600 tons as shown on a type D certification in accordance with 916 furnished by the Certified HMA Supplier. The test results shown on the Type D certification shall be the quality control tests representing the material supplied and include air voids and binder content.

UTAS.10 GENERAL CONSTRUCTION REQUIREMENTS

Equipment for UTAS operations shall be in accordance with 409. Fuel oil, kerosene, or other solvents shall not be transported in open containers on any equipment at any time. Cleaning of equipment and tools shall not be accomplished on the pavement or paved shoulder areas.

Segregation, flushing or bleeding of UTAS mixtures will not be permitted. Corrective action shall be taken to prevent the continuation of these conditions. All areas showing an obvious excess or deficiency of asphalt materials shall be removed and replaced. All mixture that becomes loose and broken, mixed with dirt, or is in any way obviously defective shall be removed and replaced.

UTAS.11 PREPARATION OF SURFACES

Surfaces on which a UTAS mixture is to be placed shall be free from objectionable or foreign materials at the time of placement. Milling of an existing surface shall be in accordance with 306. PCCP, milled asphalt surfaces and asphalt surfaces shall be tack coated in accordance with 406.

UTAS.12 WEATHER LIMITATIONS

UTAS shall be placed when the ambient and surface temperatures are 60F or above. UTAS surface courses may be placed at lower temperatures provided the density of the UTAS surface is in accordance with 402.16.

UTAS.13 SPREADING AND FINISHING

UTAS mixture shall be placed on a prepared surface by means of laydown equipment in accordance with 409.03(c). Mixtures in areas inaccessible to laydown equipment or mechanical devices may be placed by other methods.

The finished thickness of a UTAS course shall be at least one and one-half times but not more than four times the maximum aggregate particle size as shown on the DMF. Feathering may be less than the minimum thickness requirements.

UTAS.14 JOINTS

Longitudinal joints on roads and streets shall be located at the lane lines whenever possible. Transverse joints shall be constructed by exposing a near vertical full depth face of the previous course.

UTAS.15 Compaction

The UTAS 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 one of the following options.

Number of Roller Applications						
Rollers	Courses ≤ 440 lb/syd (240 kg/m^2)					
	Option 1	Option 2	Option 3	Option 4		
Three Wheel	2		4			
Pneumatic Tire	2	4				
Tandem (static)	2	2	2			
Vibratory Roller				4		

The number of passes may be reduced if detrimental results are being observed. Use of Option 4 shall be discontinued if detrimental results are being observed.

UTAS.16 Intentionally Left Blank

UTAS.17 Intentionally Left Blank

UTAS.18 Pavement Smoothness

Irregularities in the smoothness of the finished UTAS course shall be corrected to ¼ inch when checked with a 10 foot long straight edge.

UTAS.19 Method of Measurement

The Architect/Engineer will verify quantity of UTAS placed and accepted.

UTAS.20 Basis of Payment

The accepted quantities of UTAS will be paid for at the unit price specified in the contract.

Pay Item	Pay Unit
Ultra-Thin Asphalt Surface, Type __*__	Ton
Ultra-Thin Asphalt Surface, Type __*__	Square Yard
Ultra-Thin Asphalt Surface, Type __*__	Lump Sum

*Mixture Type

Asphalt Pavement Association of Indiana
5348 W. Vermont Street Suite 300
Indianapolis, IN 46204
Tel. 317-632-2441
www.asphaltindiana.com