THINLAY ASPHALT CONCRETE
September 19, 2017

Notes to Designers:

THINLAY ASPHALT CONCRETE is a pavement preservation material. The THINLAY specification was developed for use on all traffic applications ranging from interstate highway to arterial pavement and low volume rural roads. It provides a value-competitive alternative to chip sealing and microsurfacing all the while providing a superior driving experience. A THINLAY pavement surface is smooth, eliminates dust, is free of loose stone chips, and is quiet and completely reusable into new asphalt pavement.

THINLAY ASPHALT CONCRETE is a minimum 3/4-inch thick asphalt overlay that preserves a pavement by correcting minor surface distresses, provides increased pavement strength that resists pavement fatigue, enhances ride comfort, and improves road profile and driver safety. (Note: A variable-depth intermediate course is recommended where profile or crown are excessive.)

THINLAY ASPHALT CONCRETE is non-proprietary and can be furnished by any asphalt producer. THINLAY is produced as either a hot mix asphalt or warm mix asphalt product.

THINLAY ASPHALT CONCRETE has been designed to be rich in asphalt binder, fine-textured with a tight surface matrix to resist aging. THINLAYs used in lighter traffic applications require a softer grade asphalt binder (PG58-28) and a minimum of 50% of the virgin fine aggregate to be natural sand. This facilitates attaining mix density, flexibility, and resilience. These are necessary properties for ensuring longevity and successful mix performance on light traffic roadways where oxidation and cracking are the primary pavement distresses.

To ensure longevity and flexibility on the lightest trafficked roadways the specification introduces Performance Graded binder PG52-28. An oft mentioned positive attribute of seals and other cold asphalt treatments is the effect of soft asphalt binders with respect to sealing and providing resistance to surface cracking. THINLAY ASPHALT CONCRETE ULT is designed with this feature in mind by using PG52-28.

The mix specified must be appropriate for the traffic conditions to which it will be subjected and the following guidelines should be applied:

Mix Type:	HT (High Traffic)	MED (Medium Traffic)	LT (Light Traffic)	ULT (Ultralight Traffic)
ADT:			<2,500	<500
ADTT:	>1,500	250-1,499	<250	<25

Agencies are requested to contact Flexible Pavements of Ohio for additional guidance and to obtain the most current specification in an MSWord file. Contact Flexible Pavements of Ohio at 1-888-4HOT MIX (446-8649) or info@flexiblepavements.org

Item Special - THINLAY ASPHALT CONCRETE

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.01 Description. This work consists of constructing a surface course of aggregate and asphalt binder mixed in a central plant and spread and compacted on a prepared surface. The requirements of 401 apply, except as modified by this specification.

.02 Composition. Establish a Job Mix Formula (JMF) by combining coarse aggregate, fine aggregate, reclaimed asphalt pavement (RAP) and asphalt binder in proportions that result in an asphalt mixture meeting the blend limits in **Table .02-1** for the mix types shown.

TABLE.02-1 – MIXTURE COMPOSITION

Property	**Type HT[2]**	**Type MED[2]**	**Type LT**	**Type ULT**
Fine Aggregate (703.05A)	65% Mech. Crush / 35% Natural Sand	50% Mech. Crush / 50% Natural Sand [3]	≥ 50% Natural Sand	≥ 50% Natural Sand
RAP (max. %)	25	25	25	25
Total binder content min. (% by weight of mix)	6.4	6.4	6.6	6.6
Virgin binder min. (% by weight of mix)	5.2	5.2	5.2	5.2
Asphalt Binder Grade (PG)	70-22M	64-22	58-28	52-28
F/A Ratio, max	1.2	1.2	1.2	1.2
Blows	75	50	50	50
Stability, min., pounds (N)	1800 (8006)	1200 (5338)	750 (3336)	750 (3336)
Flow, 0.25mm	8 to 14	8 to 16	8 to 18	8 to18
Design Air Voids	3.5	3.5	3.5	3.5
VMA, min.	15	16	16	16
Sieve Size	**Total Percent Passing [1]**			
1/2 inch (12.5 mm)	100			
3/8 inch (9.5 mm)	95 to 100			
No. 4 (4.75 mm)	72			
No. 8 (2.36 mm)	42 to 60			
No. 16 (1.18 mm)	27 to 45			
No. 50 (300 µm)	10 to 22			
No. 200 (75 µm)	0 to 8			

[1] Gradation includes any mineral filler and is specified in percent passing.
[2] Provide coarse aggregate with a minimum of 90 percent fractured (two or more faces) according to ASTM D5821
[3] Provide fine aggregate as a 50% crushed/50% nat. sand blend. Ensure crushed fine aggregate meets FAA of 44 or is crushed carbonate stone, trap rock or air cooled blast furnace slag.
[4] Provide fine aggregate as a 65% crushed/35% nat. sand blend. Ensure crushed fine aggregate meets FAA of 44 or is crushed carbonate stone, trap rock or air cooled blast furnace slag.

.03 Materials. Furnish clean, uncoated aggregate conforming to the applicable requirements of Table.03-1 and quality requirements of 703.05. Provide mineral filler conforming to 703.07. Provide binders conforming to 702.01. For PG52-28 binder: Comply with AASHTO M320 except that Flash Point is 260°C min. and Mass Change is 0.75% max. Process RAP according to Method 2 (extended) RAP, Table 401.04-2. Only incorporate RAP passing the 9/16 inch sieve into the mix.

.04 Mixing. Ensure the mixing plant conforms to 402.

.05 Weather Limitations. Do not place the asphalt concrete when the surface of the existing pavement is less than 60 °F (15 °C) or the air temperature is less than 60 °F (15 °C).

.06 Spreading Compacting and Finishing. Only use static (non-vibratory) compaction methods. Use a minimum of two rollers. Compact mixes conforming to 401.13 and 401.16. Three wheel rollers per 401.16 will not be required. Double the maximum capacity square yards per hour provided in Table 401.13-1 for course thickness one inch or less.

Ensure that the mix temperature immediately before rolling is not less than 260 °F (127 °C). Complete rolling, with full coverage of the roller train, before the mix temperature reaches 175 °F (80 °C). Provide an analysis to the Engineer using PaveCool software to model asphalt cooling under actual placement conditions at the start of each paving day. Ensure the placement rate and roller coverage are coordinated to allow full roller train coverage in the recommended rolling times. Do not allow traffic on the compacted mixture until it has cooled sufficiently to prevent damage.

.07 Surface Tolerances. Ensure the completed surface course conforms to 401.19. Prior to placing asphalt concrete, pre-fill the depression caused by the removal of the casting with material meeting this specification.

.08 Acceptance. Comply with all requirements of 448 except 448.02 Density. Do not conduct density gauge quality control testing per Supplement 1055.

.09 Basis of Payment.

Payment for accepted quantities, completed in place, at the contract price will be as follows:

Item	Unit	Description
Special	Cubic Yard (Cubic Meter)	Thinlay Asphalt Concrete, Type HT
Special	Cubic Yard (Cubic Meter)	Thinlay Asphalt Concrete, Type MED
Special	Cubic Yard (Cubic Meter)	Thinlay Asphalt Concrete, Type LT
Special	Cubic Yard (Cubic Meter)	Thinlay Asphalt Concrete, Type ULT