
Special Provision to Item 347

Thin Overlay Mixtures



For this project, Item 347, "Thin Overlay Mixtures," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Section 347.2.5. "Tack Coat." The first paragraph is voided and replaced by the following.

Unless otherwise shown on the plans, furnish CSS-1H, SS-1H, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300, "Asphalts, Oils, and Emulsions." Specialized tack coat materials listed on the Department's MPL are allowed or required when shown on the plans. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use.

Section 347.2.6.2., "Warm Mix Asphalt (WMA)," is voided and replaced by the following.

Warm Mix Additive. Warm mix additives are allowed for use on all projects and are required when shown on the plans to facilitate mixing and compaction. When a warm mix additive is required, no reduction in temperature for the PG grade of the binder will be permitted. Department-approved warm mix additives may be used to facilitate mixing and compaction of HMA produced at target discharge temperatures greater than 275°F.

Section 347.4.1., "Certification." The paragraph is voided and replaced by the following.

Certification. Personnel certified by the Department-approved hot-mix asphalt certification program must conduct all mixture designs, sampling, and testing in accordance with Table 4. Supply the Engineer with a list of certified personnel and copies of their current certificates before beginning production and when personnel changes are made. Provide a mixture design developed and signed by a Level 2 certified specialist. Provide Level 1A certified specialists at the plant during production operations. Provide Level 1B certified specialists to conduct placement tests. Provide Level AGG101 certified specialists for aggregate testing.

Table 4, "Test Methods, Test Responsibility, and Minimum Certification Levels" is voided and replaced by the following.

Table 4
Test Methods, Test Responsibility, and Minimum Certification Levels

Test Description	Test Method	Contractor	Engineer	Level ¹
1. Aggregate Testing				
Sampling	Tex-221-F	✓	✓	1A/AGG101
Dry sieve	Tex-200-F, Part I	✓	✓	1A/AGG101
Washed sieve	Tex-200-F, Part II	✓	✓	1A/AGG101
Deleterious material	Tex-217-F, Part I	✓	✓	AGG101
Decantation	Tex-217-F, Part II	✓	✓	AGG101
Los Angeles abrasion	Tex-410-A		✓	TxDOT
Magnesium sulfate soundness	Tex-411-A		✓	TxDOT
Micro-Deval abrasion	Tex-461-A		✓	AGG101
Crushed face count	Tex-460-A	✓	✓	AGG101
Flat and elongated particles	Tex-280-F	✓	✓	AGG101
Linear shrinkage	Tex-107-E	✓	✓	AGG101
Sand equivalent	Tex-203-F	✓	✓	AGG101
Organic impurities	Tex-408-A	✓	✓	AGG101
2. Asphalt Binder & Tack Coat Sampling				
Asphalt binder sampling	Tex-500-C, Part II	✓	✓	1A/1B
Tack coat sampling	Tex-500-C, Part III	✓	✓	1A/1B
3. Mix Design & Verification				
Design and JMF changes	Tex-204-F	✓	✓	2
Mixing	Tex-205-F	✓	✓	2
Molding (TGC)	Tex-206-F	✓	✓	1A
Molding (SGC)	Tex-241-F	✓	✓	1A
Laboratory-molded density	Tex-207-F, Parts I & VI	✓	✓	1A
Rice gravity	Tex-227-F, Part II	✓	✓	1A
Drain-down	Tex-235-F	✓	✓	1A
Ignition oven correction factors ²	Tex-236-F, Part II	✓	✓	2
Indirect tensile strength	Tex-226-F	✓	✓	1A
Overlay test	Tex-248-F		✓	TxDOT
Hamburg Wheel test	Tex-242-F	✓	✓	1A
Boil test	Tex-530-C	✓	✓	1A
4. Production Testing				
Selecting production random numbers	Tex-225-F, Part I		✓	1A
Mixture sampling	Tex-222-F	✓	✓	1A/1B
Molding (TGC)	Tex-206-F	✓	✓	1A
Molding (SGC)	Tex-241-F	✓	✓	1A
Laboratory-molded density	Tex-207-F, Parts I & VI	✓	✓	1A
Rice gravity	Tex-227-F, Part II	✓	✓	1A
Gradation & asphalt binder content ²	Tex-236-F, Part I	✓	✓	1A
Drain-down	Tex-235-F	✓	✓	1A
Control charts	Tex-233-F	✓	✓	1A
Moisture content	Tex-212-F, Part II	✓	✓	1A/AGG101
Hamburg Wheel test	Tex-242-F	✓	✓	1A
Overlay test	Tex-248-F	✓	✓	TxDOT
Micro-Deval abrasion	Tex-461-A		✓	AGG101
Boil test	Tex-530-C	✓	✓	1A
Abson recovery	Tex-211-F		✓	TxDOT
5. Placement Testing				
Establish rolling pattern	Tex-207-F, Part IV	✓		1B
In-place density (nuclear method)	Tex-207-F, Part III	✓		1B
Control charts	Tex-233-F	✓	✓	1A
Ride quality measurement	Tex-1001-S	✓	✓	Note 3
Thermal profile	Tex-244-F	✓	✓	1B
Permeability	Tex-246-F	✓	✓	1B

- Level 1A, 1B, AGG101, and 2 are certification levels provided by the Hot Mix Asphalt Center certification program.
- Refer to Section 347.4.9.2.3., "Production Testing" for exceptions to using an ignition oven.
- Profiler and operator are required to be certified at the Texas A&M Transportation Institute facility when Surface Test Type B is specified.

Table 7, “Laboratory Mixture Design Properties,” is voided and replaced by the following.

Table 7
Laboratory Mixture Design Properties

Mixture Property	Test Method	Requirement
Target laboratory-molded density, % (TGC)	Tex-207-F	97.5 ¹
Design gyrations (N _{design} for SGC)	Tex-241-F	50 ²
Hamburg Wheel test, passes at 12.5 mm rut depth for PG 70 mixtures	Tex-242-F	15,000 Min
Hamburg Wheel test, passes at 12.5 mm rut depth for PG 76 mixtures	Tex-242-F	20,000 Min
Drain-down, %	Tex-235-F	0.20 Max

1. Unless otherwise shown on the plans or approved by the Engineer.
2. May be adjusted within the range of 35–100 gyrations when shown on the plans or specification or when mutually agreed between the Engineer and Contractor.

Table 7A
Overlay Test Requirements

Mixture Property	Test Method	TOM-C	TOM-F
Crack Progression Rate ¹	Tex-248-F	0.45 Max	0.45 Max
Critical Fracture Energy, lb.-in/sq. in ¹		1.0 Min	1.5 Min

1. If the requirement is not meet, the Engineer may approve the mix if the average number of cycles is ≥ 300 cycles.

Section 347.4.4.2.1.13., “Trial Batch Testing,” is voided and replaced by the following.

Test the trial batch to ensure the mixture produced using the proposed JMF1 meets the mixture requirements in Table 8. Ensure the trial batch mixture is also in compliance with the Hamburg Wheel test, Overlay test, and drain-down requirements listed in Tables 7 and 7A. Use a Department-approved laboratory listed on the MPL to perform the Hamburg Wheel test on the trial batch mixture or request that the Department perform the Hamburg Wheel test. Obtain and provide approximately 50 lb. of trial batch mixture in sealed containers, boxes, or bags labeled with the CSJ, mixture type, lot, and subplot number in accordance with [Tex-222-F](#) for the Overlay test. The Engineer will be allowed 10 working days to provide the Contractor with Hamburg Wheel test and Overlay test results on the trial batch. Provide the Engineer with a copy of the trial batch test results.

Section 347.4.4.2.1.14., “Development of JMF2,” is voided and replaced by the following.

Evaluate the trial batch test results after the Engineer grants full approval of JMF1 based on results from the trial batch, determine the optimum mixture proportions, and submit as JMF2. Adjust the asphalt binder content or gradation to achieve the specified target laboratory-molded density. The asphalt binder content established for JMF2 is not required to be within any tolerance of the optimum asphalt binder content established for JMF1; however, mixture produced using JMF2 must meet the voids in mineral aggregates (VMA) requirements for production shown in Table 6. If the optimum asphalt binder content for JMF2 is more than 0.5% lower than the optimum asphalt binder content for JMF1, the Engineer may perform the Overlay test in accordance with [Tex-248-F](#) on Lot 1 production to verify compliance with the Overlay test requirements in Table 7A.

Table 8, “Operational Tolerances,” is voided and replaced by the following.

Table 8
Operational Tolerances

Description	Test Method	Allowable Difference between Trial Batch and JMF1 Target	Allowable Difference from Current JMF Target	Allowable Difference between Contractor and Engineer ¹
Individual % retained for #8 sieve and larger	Tex-200-F or Tex-236-F	Must be Within Master Grading Limits in Table 6	±3.0 ^{2,3}	±5.0
Individual % retained for sieves smaller than #8 and larger than #200			±3.0 ^{2,3}	±3.0
% passing the #200 sieve			±2.0 ^{2,3}	±1.6
Asphalt binder content, % ⁴	Tex-236-F	±0.3	±0.3 ³	±0.3
Laboratory-molded density, %	Tex-207-F	±1.0	±1.0	±1.0
Laboratory-molded bulk specific gravity		N/A	N/A	±0.020
VMA, % Min	Tex-204-F	Note 5	Note 5	N/A
Theoretical maximum specific (Rice) gravity	Tex-227-F	N/A	N/A	±0.020
Drain-down, %	Tex-235-F	Note 6	Note 6	N/A

- Contractor may request referee testing only when values exceed these tolerances.
- When within these tolerances, mixture production gradations may fall outside the master grading limits; however, the % passing the #200 will be considered out of tolerance when outside the master grading limits.
- Only applies to mixture produced for Lot 1 and higher.
- Binder content is not allowed to be below the limits shown in Table 6. May be obtained from asphalt meter readouts.
- Verify that Table 6 requirements are met.
- Test and verify that Table 7 requirements are met.

Section 347.4.4.2.2.3., “Hamburg Wheel and Overlay Testing of JMF1,” is voided and replaced by the following.

If the Contractor requests the option to have the Department perform the Hamburg Wheel test on the laboratory mixture, the Engineer will mold samples in accordance with [Tex-242-F](#) to verify compliance with the Hamburg Wheel test requirement in Table 7. The Engineer will perform the Overlay test and mold samples in accordance with [Tex-248-F](#) to verify compliance with the Overlay test requirements in Table 7A.

Section 347.4.4.2.2.5., “Testing the Trial Batch,” is voided and replaced by the following.

Within 1 full working day, the Engineer will sample and test the trial batch to ensure that the mixture meets the requirements in Table 8. The Engineer will mold samples in accordance with [Tex-242-F](#) if the Contractor requests the option to have the Department perform the Hamburg Wheel test on the trial batch mixture to verify compliance with Hamburg Wheel test requirements in Table 7. The Engineer will mold samples for the Overlay test in accordance with [Tex-248-F](#) to verify compliance with the Overlay test requirement in Table 7A.

The Engineer will have the option to perform the following tests on the trial batch:

- [Tex-248-F](#), to confirm the mixture meets the Overlay test requirement shown in Table 7A; and
- [Tex-530-C](#), to retain and use for comparison purposes during production.

Section 347.4.4.2.2.6., “Full Approval of JMF1,” is voided and replaced by the following.

The Engineer will grant full approval of JMF1 and authorize the Contractor to proceed with developing JMF2 if the Engineer’s results for the trial batch meet the requirements in Tables 7 and 7A. The Engineer will notify the Contractor that an additional trial batch is required if the trial batch does not meet these requirements.

Section 347.4.4.2.2.7., “Approval of JMF2,” is voided and replaced by the following.

The Engineer will approve JMF2 within one working day if the gradation meets the master grading limits shown in Table 6 and is within the operational tolerances of JMF1 listed in Table 8. The asphalt binder content established for JMF2 is not required to be within any tolerance of the optimum asphalt binder content established for JMF1; however, mixture produced using JMF2 must meet the VMA requirements shown in Table 6. The Engineer may perform [Tex-248-F](#) on Lot 1 to confirm the mixture meets the Overlay test requirement shown in Table 7 if the optimum asphalt binder content for JMF2 is more than 0.5% lower than the optimum asphalt binder content for JMF1.

Section 347.4.4.2.2.9., “Approval of JMF3 and Subsequent JMF Changes,” is voided and replaced by the following.

JMF3 and subsequent JMF changes are approved if they meet the master grading limits shown in Table 6, mixture requirements shown in Tables 7 and 7A, and are within the operational tolerances of JMF2 shown in Table 8.

Section 347.4.5.2., “Mixing and Discharge of Materials,” is voided and replaced by the following.

Notify the Engineer of the target discharge temperature and produce the mixture within 25°F of the target. Monitor the temperature of the material in the truck before shipping to ensure that it does not exceed 350°F and is not lower than 275°F. The Department will not pay for or allow placement of any mixture produced above 350°F.

Control the mixing time and temperature so that substantially all moisture is removed from the mixture before discharging from the plant. Determine the moisture content, if requested, by oven-drying in accordance with [Tex-212-F](#), Part II, and verify that the mixture contains no more than 0.2% of moisture by weight. Obtain the sample immediately after discharging the mixture into the truck, and perform the test promptly.

Table 9, “Compacted Lift Thickness,” is voided and replaced by the following.

**Table 9
Compacted Lift Thickness**

Mixture Type	Compacted Lift Thickness ¹	
	Minimum (in.)	Maximum (in.)
TOM-C	0.75	1.25
TOM-F	0.5	1.00

1. Compacted target lift thickness will be specified on the plans.

Section 347.4.7.1.1., “When Using a Thermal Imaging System,” is voided and replaced by the following:

The Contractor may pave any time the roadway is dry and the roadway surface temperature is at least 60°F; however, the Engineer may restrict the Contractor from paving surface mixtures if the ambient temperature is likely to drop below 32°F within 12 hr. of paving. Provide output data from the thermal imaging system to demonstrate to the Engineer that no recurring severe thermal segregation exists in accordance with Section 347.4.7.3.1.2., “Thermal Imaging System.”

Section 347.4.7.1.2., “When Not Using a Thermal Imaging System,” is voided and replaced by the following.

Place mixture when the roadway surface temperature is at or above 70°F unless otherwise approved. Measure the roadway surface temperature with a hand-held thermal camera or infrared thermometer. The Engineer may allow mixture placement to begin before the roadway surface reaches the required temperature requirements if conditions are such that the roadway surface will reach the required temperature within 1 hr. of beginning placement operations. Place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable as determined by the Engineer. The Engineer may restrict the Contractor from paving if the air temperature is 70°F and falling.

Section 347.4.7.2., “Tack Coat.” The paragraph is voided and replaced by the following.

4.7.2.1. Application. Clean the surface before placing the tack coat. The Engineer will set the rate between 0.04 and 0.10 gal. of residual asphalt per square yard of surface area. Apply a uniform tack coat at the specified rate unless otherwise directed. Apply the tack coat in a uniform manner to avoid streaks and other irregular patterns. Apply the tack coat to all surfaces the will come in contact with the subsequent HMA placement, unless otherwise directed. Allow adequate time for emulsion to break completely before placing any material. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use.

4.7.2.2. Sampling. The Engineer will obtain at least one sample of the tack coat binder per project in accordance with Tex-500-C, Part III, and test it to verify compliance with Item 300, “Asphalts, Oils, and Emulsions.” The Engineer will obtain the sample from the asphalt distributor immediately before use.

For emulsions, the Engineer may test as often as necessary to ensure the residual of the emulsion is greater than or equal to the specification requirement in Item 300, “Asphalts, Oils, and Emulsions.”

Section 347.4.7.3.1.3., “Thermal Camera,” is voided and replaced by the following.

Take immediate corrective action to eliminate recurring moderate thermal segregation when a hand-held thermal camera is used. Evaluate areas with moderate thermal segregation by performing water flow testing in accordance to [Tex-246-F](#) and verify the water flow is greater than 120 sec. Provide the Engineer with the thermal profile of every subplot within one working day of the completion of each lot. When requested by the Engineer, provide the electronic files generated using the thermal camera. Report the results of each thermal profile in accordance with Section 347.4.2., “Reporting and Responsibilities.” The Engineer will use a hand-held thermal camera to obtain a thermal profile at least once per project. Suspend operations and take immediate corrective action to eliminate severe thermal segregation unless otherwise directed. Resume operations when the Engineer determines that subsequent production will meet the requirements of this Section. Evaluate areas with severe thermal segregation by performing water flow testing in accordance to [Tex-246-F](#) and verify the water flow is greater than 120 sec. Remove and replace the material in any areas that have both severe thermal segregation and a failing result for water flow test unless otherwise directed.

Table 10, “Production and Placement Testing Frequency,” is voided and replaced by the following.

Table 10
Production and Placement Testing Frequency

Description	Test Method	Minimum Contractor Testing Frequency	Minimum Engineer Testing Frequency
Individual % retained for #8 sieve and larger	Tex-200-F or Tex-236-F	1 per subplot	1 per 12 sublots
Individual % retained for sieves smaller than #8 and larger than #200			
% passing the #200 sieve	Tex-207-F	N/A	1 per subplot
Laboratory-molded density			
Laboratory-molded bulk specific gravity			
VMA	Tex-204-F	When directed	
Moisture content	Tex-212-F, Part II		
Theoretical maximum specific (Rice) gravity	Tex-227-F	N/A	1 per subplot
Asphalt binder content	Tex-236-F	1 per subplot	1 per lot
Overlay test ¹	Tex-248-F	N/A	1 per project
Hamburg Wheel test	Tex-242-F	N/A	1 per project
Thermal profile	Tex-244-F	1 per subplot	
Asphalt binder sampling and testing ¹	Tex-500-C	1 per subplot (sample only)	
Boil test ²	Tex-530-C	1 per subplot	
Water flow	Tex-246-F		

1. Testing performed by the Materials and Tests Division or as directed.

2. The Engineer may reduce or waive the sampling and testing requirements based on a satisfactory test history.

Section 347.5., "Measurement," is supplemented by the following.

- 5.3 Tack Coat.** Tack coat will be measured at the applied temperature by strapping the tank before and after road application and determining the net volume in gallons from the calibrated distributor. The Engineer will witness all strapping operations for volume determination. All tack, including emulsions, will be measured by the gallon applied.

The Engineer may allow the use of a metering device to determine asphalt volume used and application rate if the device is accurate within 1.5% of the strapped volume.

Section 347.6., "Payment," the first paragraph is voided and replaced with the following.

The work performed and materials furnished in accordance with this Item and measured as provided under Article 347.5.1 and Article 347.5.2, "Measurement," will be paid for at the unit bid price for "TOM (Asphalt)" of the binder specified and for "TOM (Aggregate)" of the grade and SAC specified. These prices are full compensation for surface preparation, materials, placement, equipment, labor, tools, and incidentals.

Section 347.6., "Payment," is supplemented by the following.

The work performed and materials furnished in accordance with this Item and measured as provided under Article 347.5.3, "Measurement," will be paid for at the unit bid price for "Tack Coat" of the tack coat provided. These prices are full compensation for materials, placement, equipment, labor, tools, and incidentals.