



**DEVELOPMENTAL SPECIFICATIONS
FOR
HMA MIXTURES - JOB MIX FORMULA APPROVAL BY TEST STRIP METHOD**

**Effective Date
October 20, 2009**

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09001.01 DESCRIPTION.

- A.** Produce HMA mixture in limited amounts for the purpose of confirming the properties of the mixture and subsequent approval of the Job Mix Formula (JMF). Apply this procedure to all paving mixtures with plan quantities of at least 5000 tons (5000 Mg) except shoulders, detours, temporary pavement, patching, or base widening. A JMF approved for a project may be used on other projects without additional test strip confirmation, if production quality control test results show consistent compliance with the requirements. These Developmental Specifications are intended to modify the specification requirements for test strips to establish roller patterns in Article 2303.03, C, 5, of the Standard Specifications and the requirements for JMF approval in Article 2303.03, D, 1, of the Standard Specifications.
- B.** Prior to constructing the test strip, submit a laboratory tested JMF for each mixture to be approved for use on the project.

09001.02 MATERIALS.

In the construction of the test strip, use the same aggregates and asphalt binder used as identified on the laboratory JMF.

09001.03 CONSTRUCTION.

The test strip may be constructed either on the project, or off site. When constructed on the project, place the test strip for the intermediate course as part of the base course or intermediate course. Place test strips for surface courses as part of the intermediate course. Test strips on the project will be limited to a maximum of 1250 tons (1250 Mg). Adjustments to the mixture proportions may be made during the construction of the test strip in order to refine the JMF. Upon completion of the test strip, cease production of the JMF mixture being evaluated for the project until test results are provided to the Engineer and the JMF is approved.

Provide documentation of the compaction procedures used.

The Engineer may require additional test strips if a successful rolling pattern was not established.

09001.04 QUALITY CONTROL.

A. Sampling.

1. Notify the Engineer at least 24 hours in advance of placing the test strip. Obtain at least three 60 pound (27 kg) loose HMA samples from the test strip according to Materials I.M. 322. Obtain at least one sample of the cold feed aggregate for gradation testing. The Engineer may require additional cold feed samples if a change is made to the aggregate proportions during the placement of the test strip. Split all samples and retain for verification.
2. The Engineer may require the Contractor to submit samples of the individual aggregate stockpiles when needed to confirm the aggregate properties shown on the JMF.
3. The number of density core samples obtained for the test strip will be increased by one and the low core result will not be used in the Quality Index (Q.I.) density formula for payment for the test strip quantity.
4. If the specifications for the surface mixture require an anti-strip agent, the test strip for the surface mixture will be used to evaluate the effectiveness of, or need for, the anti-strip agent. When moisture sensitivity testing is required, approval of the JMF includes compliance of the moisture sensitivity testing. In this case, construct the surface test strip far enough in advance of placing the surface course so that moisture sensitivity testing can be completed prior to placing the surface course. The Engineer may require extra mixture samples be obtained for the evaluation of anti-strip agents.

B. Testing.

1. Test at least two of the uncompacted HMA samples obtained for JMF analysis and approval. Test at least one cold feed aggregate sample for gradation. The Engineer will select split samples to test for JMF review.
2. If the ignition oven method is being used for gradation control, calibrate the oven for each mixture prior to or during test strip construction. Test at least one of the uncompacted HMA samples in the ignition oven and perform a gradation of the resulting aggregate sample.

C. JMF Approval.

1. JMF approval will be based on testing of plant produced mixture for compliance with Article 2303.02 of the Standard Specifications.
 - If the test strip test results show reasonable compliance with the mix design requirements, the JMF will be approved and the Contractor may proceed with full production.
 - If the tests indicate the JMF needs adjustment and the Contractor can demonstrate a reasonable probability to meet the requirements, the Contractor will be allowed one day's full production to adjust the mixture and establish compliance with the specified mixture criteria. If compliance is not established after one day's production, construct additional test strips as needed to prove the acceptability of the JMF.
 - If the test strip test results indicate that extraordinary adjustments are needed to bring the mixture into compliance, construct a second test strip to prove the acceptability of the JMF. If the test strip results from the second test strip fail to comply, submit a new laboratory tested JMF prior to placing a third test strip for approval.
 - If changing aggregate sources, submit a new laboratory tested JMF prior to constructing a test strip for approval of the JMF.
2. JMF approval will normally be granted the same day that acceptable test results are provided to the Engineer.

3. The Engineer may examine the correlation of test results between the Contractor and the District Materials Laboratory; however, noncorrelation will not be used as the sole basis for rejection of the JMF. When noncorrelation occurs for one or more tests, the District Materials Laboratory test results for those tests will be used for evaluation of the JMF. Correlation will be established before the Contractor's test results can be used for acceptance of the mixture.

09001.05 METHOD OF MEASUREMENT.

The Engineer will measure the quantities of the various items of work involved in the construction of the test strips according to Article 2303.04 of the Standard Specifications. Test strips constructed off site will not be measured for payment.

09001.06 BASIS OF PAYMENT.

Payment will be the contract unit price for the HMA mixture and the asphalt binder incorporated into the test strip on the project according to Article 2303.05 of the Standard Specifications. Test strips constructed off site will not be paid for. Payment for intermediate course mixture incorporated into the base course as a test strip will be at the contract unit price for intermediate mixture. Payment for surface mixture incorporated into the intermediate course as a test strip will be at the contract unit price for surface mixture.