1.0 SCOPE.

1.1 This procedure covers the requirements for a HMA test strip as required in 401.12 as well as the procedure for determining the established aggregate bulk specific gravity (Gsb) of a DMF as required in 401.09.

1.2 This procedure may involve hazardous materials, operations and equipment and may not address all of the safety problems associated with the use of the test method. The user of this ITM is responsible for establishing the appropriate safety and health practices and determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 ITM Standards.

580 Sampling HMA
590 Total Aggregate Bulk Specific Gravity Determination from Extracted HMA or SMA Mixture
802 Random Sampling

3.0 TERMINOLOGY. Definitions for terms and abbreviations will be in accordance with the Department’s Standard Specifications Section 101.

4.0 SIGNIFICANCE AND USE. A test strip is required for dense graded mixtures per 401.12. The Contractor and Engineer will share their respective test results regarding the DMF. The purpose of the test strip is to determine total aggregate Gsb. The test strip Gsb value will be used in conjunction with the DMF Gsb value and production ITM 590 Gsb values to determine the established Gsb value of a DMF.

5.0 SAMPLING. Plate samples shall be obtained from the test strip in accordance with ITM 802 and ITM 580.
6.0 PROCEDURE.

6.1 A test strip shall be required for dense graded 9.5 mm, 12.5 mm, 19.0 mm and 25.0 mm mixtures with original contract pay item quantities greater than or equal to 5,000 t of base and intermediate or 3,000 t of surface. The test strip shall be constructed as part of the first 300 t of DMF production or maybe be located off the paving project if requested by the contractor.

6.2 A maximum ten-business day production shutdown for the DMF shall accompany the completion of the test strip in order for the Contractor and Engineer to conduct mixture testing.

6.3 One test strip is required for each submitted DMF per calendar year. The Engineer may allow the test strip construction to be located on the project, on another project, or off the paving project if requested by the Contractor. The Engineer may allow additional test strips for a DMF as requested by the Contractor.

6.4 Total aggregate bulk specific gravity, Gsb, value will be determined by the department in accordance with ITM 590.

7.0 DETERMINING PRODUCTION GSB

7.1 The total aggregate bulk specific gravity, Gsb, value will be determined from a combination of the DMF Gsb value, test strip Gsb value, and acceptance plate sample Gsb values. The Gsb values from acceptance plate samples will be determined in accordance with ITM 590 for dense graded 9.5 mm, 12.5 mm, 19.0 mm, and 25.0 mm mixtures following every 5,000 t of base and intermediate or every 3,000 t of surface produced for a DMF at a certified HMA plant. The frequency of the Gsb testing may be altered at the direction of the Engineer.

7.2 The total Gsb value for initial production of a DMF will be established as the average of the Gsb value submitted on the DMF and the Gsb value determined from the test strip value determined in 6.4. If no test strip is required, the total Gsb value for initial production of a DMF will be established as the Gsb value submitted on the DMF.

7.3 The first three-point moving average Gsb value will be calculated using the DMF Gsb value, the test strip Gsb value, and the Gsb value of sublot one of lot one.

7.4 A three-point moving average Gsb value will then be calculated from the three most recent Gsb values for a DMF.

7.5 Established Gsb

(a) If the three-point moving average Gsb has deviated no more than ± 0.010 from the established Gsb value, the established Gsb value will not change.
(b) If the three-point moving average Gsb value has deviated more than ± 0.010 from the established Gsb value, the three-point moving average Gsb value will be set as the new established Gsb value for a DMF. The Department will notify the Contractor in writing of the new established Gsb value. The new established Gsb value will replace the previous established Gsb value on subsequent sublots following the date of notification.

7.6 Outliers

(a) If a single tested Gsb value changes more than 0.050 from the established Gsb value and the Gse value also changes by more than 0.030 in the same direction from the established Gse, the single Gsb value will be considered valid and will be used in the three-point moving average Gsb.

(b) If a single tested Gsb value changes more than 0.050 from the established Gsb and the Gse value does not change by more than 0.030 in the same direction from the established Gse, the single Gsb value will be verified by additional Gsb testing at the Office of Materials Management. The three-point moving average Gsb will not be updated until the verification testing is complete.

(c) The established Gse will be the average of the three effective specific gravities associated with the established Gsb.

(d) The contractor may request additional Gsb testing contingent on provided supporting aggregate QC data. A new established Gsb may be determined based on a single department obtained Gsb value with the agreement of the contractor.

8.0 REPORT.

8.1 Aggregate Gsb of the HMA is reported to the nearest 0.001.

8.2 The mixture tests will include determining, as a minimum: aggregate gradation, binder content, voids in mineral aggregate and air voids. The mixture tests are for information only. The Contractor and Engineer will share their respective test results regarding the DMF before resuming production and should discuss any points of discrepancy.