1806 BULK SPECIFIC GRAVITY (DENSITY) OF MARSHALL OR GYRATORY COMPACTED SPECIMENS

(AASHTO-T166 Mn/DOT Modified)

1806.1 APPARATUS

A. Balance - A balance conforming to the requirements of AASHTO M 231 (Class G2) with a minimum capacity of 5000g, a readability and sensitivity of 0.1g and an accuracy of 0.1g or 0.1%.

B. Suspension Apparatus - For the balance and suitable for weighing the specimen while suspended in water.

C. Water Bath - Equipped with an overflow outlet and it is recommended that it be equipped with an immersion heater/circulator capable of maintaining 25 ± 1 °C (77 ± 1.8 °F)

D. Oven - A thermostatically controlled drying oven capable of maintaining a temperature of 110 ± 5 °C (230 ± 9 °F).

E. Absorbent Toweling - Terry cloth has been found to work well.

1806.2 PROCEDURE

A. Specimens should be cooled to room temperature at 25 ± 5 °C (77 ± 9 °F).

B. After measuring the height of the specimens, weigh each of the specimens in air to the nearest 0.1g and record the dry weight as (**A**).

C. Immerse the specimens in water at 25 ± 1 °C (77 ± 1.8 °F) for 3 to 5 minutes.

1. Placing one specimen at a time on the weighing platform below the scale and tipping the specimen to release any air bubbles without lifting the specimen from the water, weigh to the nearest 0.1g and record the immersed weight (**C**) as soon as the balance readout stabilizes.

D. Immediately after obtaining the immersed weight, remove the specimen from the water, surface-dry the specimen by rolling it in and by blotting it on a damp towel.

1. Within 15 seconds of removal from the water bath the specimen's Saturated Surface-Dry (SSD) weight shall be established and the weight recorded in air to the nearest 0.1g as (**B**).

NOTE 1: After the specimen has been surfaced-dried any water that seeps from the specimen during the weighing operation is considered part of the SSD weight.

NOTE 2: Prior to obtaining the SSD weight the towel should be brought to a damp state by lightly spraying with water. This helps to prevent any excessive wicking of water from the specimen.

1806.3 CALCULATION (See Example Worksheets in Sections 1808 & 1820.13.)

A = Weight in grams of specimen in air (dry weight)

B = Weight in grams of surface-dry specimen in air

C = Weight in grams of specimen in water

D = Volume (B **-** C)

E = Bulk Specific Gravity = A ÷ D (Record to the nearest 0.001)

F = Density (kg/m^3) **=** Bulk Specific Gravity **X** 998.0

Density (lbs/ft^3) = Bulk Specific Gravity **X** 62.3

1806.4 TOLERANCE

A. For Marshall specimens, the bulk specific gravity of any individual specimen shall not deviate by more than 0.020 from the average.

If it can be determined that a specific specimen is out of tolerance, recalculate using only two specimens; otherwise, the mix must be re-done.

B. For Gyratory specimens, the bulk specific gravity of any individual specimen shall not deviate by more than 0.020 from another specimen.

If the specimens are out of tolerance from each other, an additional two specimens shall be prepared.