ASPHALT BINDER

Section 12 – Bulk Specific Gravity of Compacted Bituminous Material

Bulk Specific Gravity
T 166

Bulk Specific Gravity of Compacted Bituminous Material

AASHTO T 166
WYDOT MTM 418.0

- Make sure balance is level and readable to four figures.
- Make sure the suspension wire or chain is hanging freely from the bottom of the scale.
- Make sure that there is sufficient water to fully immerse the specimen and that the temperature of the water is (77° ± 1.8°F)

Bulk Specific Gravity of Compacted Bituminous Material (continued)

- Carefully trim the core to isolate the lift for which the bulk specific gravity is to be determined.
- Submerge the core in the water for 3 – 5 minutes and determine the mass while the sample is in the water.
- Determine the saturated surface-dry mass after using a damp towel to quickly blot away excess surface water.

Bulk Specific Gravity of Compacted Bituminous Material (continued)

- **Dry the core to a constant mass (less than .05% change) at temperature of 125° ± 5°F using successive mass determinations at 2 hour intervals.**
- **Determine the mass of the dry core in air.**
  - Note: if the sample is known to be completely dry, determine the mass of the dry core in the air first, the mass of the core second, and SSD mass third
- **Calculate the percent of water absorbed. (B-A)/(B-C) X (100) = % water absorbed**

Bulk Specific Gravity of Compacted Bituminous Material (continued)

- If the percent of water absorbed is less than 2% than the bulk specific gravity may be calculated.

$$\text{Density (lb/ft}^3\text{)} = \text{S. G. x } 62.4$$

$$\text{S.G.} = A / (B-C)$$

Bulk Specific Gravity of Compacted Bituminous Material (continued)

- If greater than 2% water is absorbed the the waxed core procedure should be used. Calculations:

  Density (lb/ft^3) = S. G. x 62.4

  S.G. = A / ((D – E) – ((D-A) / F)))

Bulk Specific Gravity of Compacted Bituminous Material (continued)

A = Mass of sample in air

B = Saturated surface dry mass

C = Mass of sample in water

D = Mass of waxed core sample in air

E = Mass of waxed core sample in water

F = Specific gravity of wax (0.90)

SG. = Bulk specific gravity