Standard Practice for

Sample Preparation and Polishing of Unbound Aggregates for Dynamic Friction Testing

AASHTO Designation: PP 103-20[1]

Technical Section: 1c, Aggregates

Release: Group 3 (July)

AASHTO

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1. SCOPE

1.1. This method covers the sample preparation and polishing of unbound aggregates for dynamic friction testing using a three-wheel polishing device (TWPD).

1.2. The values stated in SI units are to be regarded as the standard.

1.3. *This standard does not purport to address all the safety concerns associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to its use.*

2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 231, Weighing Devices Used in the Testing of Materials
- R 90, Sampling Aggregate Products
- T 279, Accelerated Polishing of Aggregates Using the British Wheel

2.2. *ASTM Standards*:

- ASTM C778, Standard Specification for Standard Sand
- ASTM E1911, Standard Test Method for Measuring Surface Frictional Properties Using the Dynamic Friction Tester

3. SIGNIFICANCE AND USE

3.1. This test method simulates the polishing of vehicular traffic on coarse aggregates used in asphalt or concrete pavements or fine aggregates used for various pavement surface treatments.

4. TERMINOLOGY

4.1. *initial friction value*—the initial friction measurement on aggregate test specimens before being polished in the TWPD.

4.2. *terminal friction value*—the friction measurement on the aggregate test specimens at which point additional cycles of polishing in the TWPD will have negligible effects on the resulting friction value of the surface.

5. APPARATUS

5.1. *Three-Wheel Polishing Device (TWPD)*—A polishing device that has three patterned pneumatic tires and is capable of exerting 0.65 ± 0.02 kN (146 ± 5 lbs) through the tires to the test surfaces. The device's height shall be adjustable to accommodate sample heights of 25 mm (1.0 in.) to 50 mm (2.0 in.). The device shall be capable of accommodating a 508 mm × 508 mm (20 in. × 20 in.) sample holder (Figures 1, 2, and 3).

5.1.1. The tire size shall be 2.80/2.50-4 and shall maintain a pressure of 240 ± 34 kPa (35 ± 5 psi) and a tread depth of no less than 2 mm (0.1 in.). The tire tread shall be free of any visible contamination. When replacement is necessary, all tires shall be replaced at the same time.

5.1.2. The driving mechanism for the vertical shaft shall be an electric motor geared to rotate the shaft and wheel assembly at a speed of 6.28 ± 0.5 rad./s (60 ± 5 rpm).

Note 1—The path of polishing should coincide with the direction of friction testing.

5.1.3. The device shall be equipped with an automatic counter that can shut off the machine at a predetermined number of revolutions.

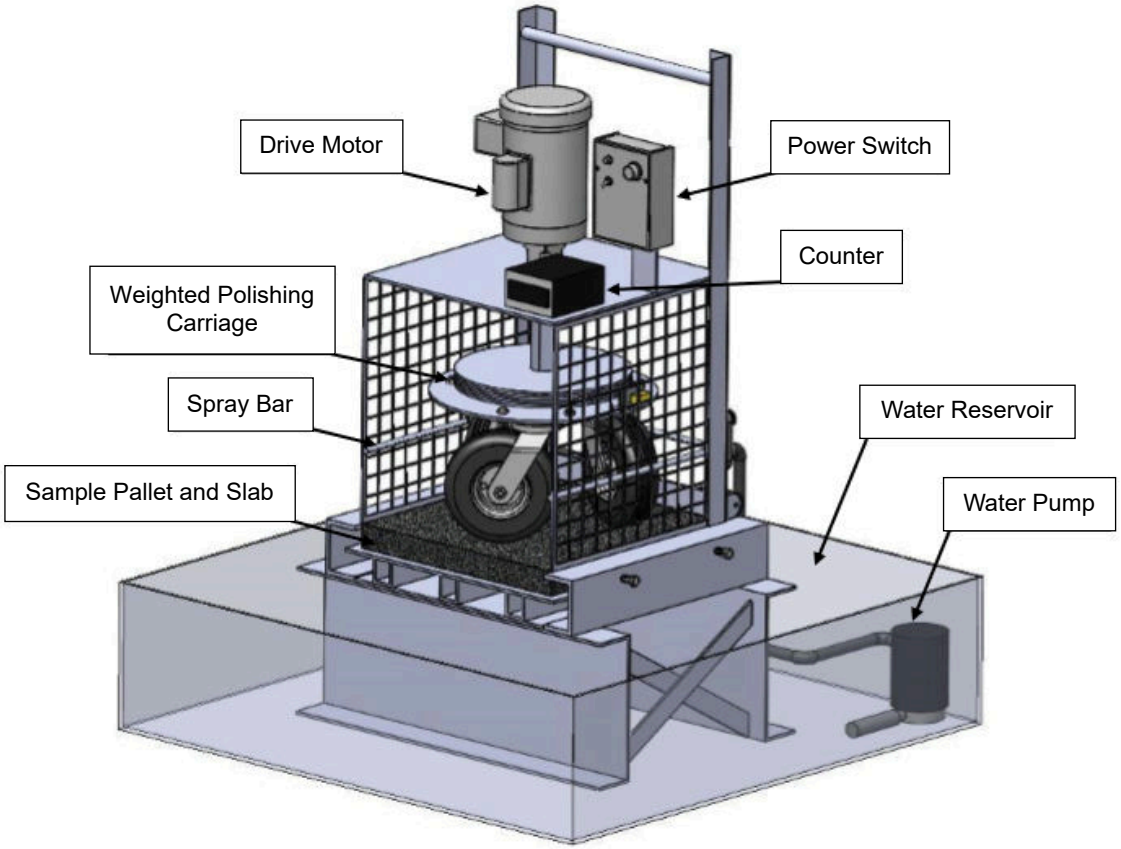

Figure 1—Three-Wheel Polishing Device (*Source: National Center for Asphalt Technology*)