
Standard Method of Test for

Evaluating the Workability of Slip Form Concrete Paving with the Box Test

AASHTO Designation: T 396-22¹

Adopted: 2022

Technical Subcommittee: 3b, Fresh Concrete



**American Association of State Highway and Transportation Officials
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1. SCOPE

- 1.1. This test method describes the workability measurement of hydraulic-cement concrete in slip formed paving applications, both in the laboratory and in the field.
 - 1.2. The values stated in either inch-pound units or SI units are to be regarded separately as the standard. Within the text, the SI units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.
 - 1.3. *This standard does not purport to address all the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.*
 - 1.4. The text of this standard references notes and endnotes that provide explanatory information. These notes and footnotes shall not be considered as requirements of this standard.
 - 1.5. *The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of R 18 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with R 18 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of R 18 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.*
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2. REFERENCED STANDARDS

- 2.1. *AASHTO Standards:*
 - R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
 - R 60, Sampling Freshly Mixed Concrete
 - T 119M/T 119, Slump of Hydraulic Cement Concrete
- 2.2. *Other Documents:*
 - Alturki, R. Quantitative Evaluation in the Box Test and Evaluation of Field Mixtures by the Tarantula Curve. Oklahoma State University at Stillwater, OK, M.S. Thesis, December 2016.

- Cook, M., M. Ley, and A. Ghaezadah. A Workability Test for Slip Formed Concrete Pavements. *Construction and Building Materials*, Vol. 68, 2014, pp. 376–383.

3. SUMMARY OF TEST METHOD

- 3.1. This test method composes a two-part measurement to assess the dynamic behavior (i.e., ability to flow) of plastic concrete through vibration and the static behavior (i.e., ability to hold an edge) of plastic concrete mixtures through removal of forms.
- 3.2. First, a sample of unconsolidated concrete is filled into a standard box.
- 3.3. Second, a vibrator is used to consolidate the concrete using the standard procedure.
- 3.4. Third, the forms are removed and the amount of voids are determined. This parameter indicates the responsiveness of a mixture to vibration.
- 3.5. Last, a straightedge is used to measure edge slumping at the top and bottom. This parameter indicates the potential of a mixture to edge slump in practice.

4. SIGNIFICANCE AND USE

- 4.1. This test method provides a simple approach to determine the workability of slip formed paving applications. This test method measures the response of a pavement mixture to vibration and the ability of the concrete to hold an edge.
- 4.2. This test method is not considered applicable to mixtures with a slump greater than 3 in. (75 mm) as measured in T 119M/T 119.

5. APPARATUS

- 5.1. The box test apparatus is composed of a platform, box test forms, form holders, a vibrator, and a straightedge as shown in Figure 1.
- 5.2. *Box Test Forms*—For enclosing a 1-ft³ (0.028-m³) sample as shown in Figure 2; shall be made of 0.5-in. (12.5-mm) plywood with an inside measurement for length, width, and height of 12 in (300 mm) when connected together for a box shape with an open top and bottom. Install two form clamps in two of the four corners of the forms to create L-shaped forms as shown in Figure 2.