Standard Practice for

Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories

AASHTO Designation: R 18-23[1]

Technically Revised: 2023

Technical Subcommittee: 5c, Quality Assurance and Environmental

AASHTO

American Association of State Highway and Transportation Officials
555 12th Street NW, Suite 1000
Washington, DC 20004

Standard Practice for

Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories

AASHTO Designation: R 18-23[1]

Technically Revised: 2023

Technical Subcommittee: 5c, Quality Assurance and Environmental

1. SCOPE

1.1. This document contains criteria and guidelines for establishing and implementing a quality management system (QMS) for use by a construction materials testing (CMT) laboratory.

1.2. The criteria in this document only apply to the following testing areas: soil, aggregate, asphalt binder, cutback asphalt, emulsified asphalt, asphalt mixtures, hydraulic cement, portland cement concrete, unit masonry, metals, plastic pipe, and sprayed fire-resistive material.

2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 152M/M 152, Flow Table for Use in Tests of Hydraulic Cement
- R 28, Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)
- R 39M/R 39, Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
- R 59, Recovery of Asphalt Binder from Solution by Abson Method
- R 61, Establishing Requirements for Equipment Calibrations, Standardizations, and Checks
- R 68, Preparation of Asphalt Mixtures by Means of the Marshall Apparatus
- R 100M/R 100, Making and Curing Concrete Test Specimens in the Field
- T 19M/T 19, Bulk Density ("Unit Weight") and Voids in Aggregate
- T 22M/T 22, Compressive Strength of Cylindrical Concrete Specimens
- T 48, Flash Fire Points of Asphalt Binder by Cleveland Open Cup
- T 49, Penetration of Bituminous Materials
- T 50, Float Test for Bituminous Materials
- T 51, Ductility of Asphalt Materials
- T 53, Softening Point of Bitumen (Ring-and-Ball Apparatus)
- T 59, Emulsified Asphalts
- T 79, Flash Point with Tag Open-Cup Apparatus for Use with Material Having a Flash Point Less Than 93ºC (200ºF)
- T 84, Specific Gravity and Absorption of Fine Aggregate
- T 88, Particle Size Analysis of Soils

- T 89, Determining the Liquid Limit of Soils
- T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- T 98M/T 98, Fineness of Portland Cement by the Turbidimeter
- T 99, Moisture–Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop
- T 100, Specific Gravity of Soils
- T 104, Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
- T 106M/T 106, Compressive Strength of Hydraulic Cement Mortar (Using 50-mm or 2-in. Cube Specimens)
- T 119M/T 119, Slump of Hydraulic Cement Concrete
- T 121M/T 121, Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
- T 129, Amount of Water Required for Normal Consistency of Hydraulic Cement Paste
- T 131, Time of Setting of Hydraulic Cement by Vicat Needle
- T 134, Moisture–Density Relations of Soil–Cement Mixtures
- T 135, Wetting-and-Drying Test of Compacted Soil–Cement Mixtures
- T 136, Freezing-and-Thawing Tests of Compacted Soil–Cement Mixtures
- T 137, Air Content of Hydraulic Cement Mortar
- T 152, Air Content of Freshly Mixed Concrete by the Pressure Method
- T 153, Fineness of Hydraulic Cement by Air Permeability Apparatus
- T 154, Time of Setting of Hydraulic Cement Paste by Gillmore Needles
- T 162, Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency
- T 167, Compressive Strength of Hot Mix Asphalt
- T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
- T 179, Effect of Heat and Air on Asphalt Materials (Thin-Film Oven Test)
- T 180, Moisture–Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
- T 186, Early Stiffening of Hydraulic Cement (Paste Method)
- T 190, Resistance R-Value and Expansion Pressure of Compacted Soils
- T 192, Fineness of Hydraulic Cement by the 45-µm (No. 325) Sieve
- T 193, The California Bearing Ratio
- T 196M/T 196, Air Content of Freshly Mixed Concrete by the Volumetric Method
- T 201, Kinematic Viscosity of Asphalts (Bitumens)
- T 202, Viscosity of Asphalts by Vacuum Capillary Viscometer
- T 209, Theoretical Maximum Specific Gravity (G_{mm}) and Density of Hot Mix Asphalt (HMA)
- T 228, Specific Gravity of Semi-Solid Asphalt Materials
- T 231, Capping Cylindrical Concrete Specimens
- T 240, Effect of Heat and Air on a Moving Film of Asphalt Binder (Rolling Thin-Film Oven Test)
- T 245, Resistance to Plastic Flow of Asphalt Mixtures Using Marshall Apparatus
- T 246, Resistance to Deformation and Cohesion of Hot Mix Asphalt (HMA) by Means of Hveem Apparatus
- T 247, Preparation of Test Specimens of Hot Mix Asphalt (HMA) by Means of California Kneading Compactor
- T 300, Force Ductility Test of Asphalt Materials
- T 301, Elastic Recovery Test of Asphalt Materials by Means of a Ductilometer