

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

PROCEDURE FOR THE INDEPENDENT ASSURANCE PROGRAM

1. PURPOSE

- 1.1 To provide a procedure for the WVDOH to meet FHWA's requirements for the Independent Assurance (IA) program.
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2. SCOPE

- 2.1 This procedure applies to the following IA Materials:
- 2.1.1 Portland Cement Concrete (PCC)
- 2.1.2 Asphalt
- 2.1.3 Aggregate
- 2.1.4 Compacted Soil, Aggregate and Asphalt Materials
- 2.1.4.1 The WVDOH is in the process of evaluating the method to incorporate this testing into the IA program.
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3. REFERENCED DOCUMENTS

- 3.1 Office of Pavement Technology Publication No. [FHWA-HIF-12-001](#)¹, October 2011. Included as Attachment 2.
- 3.2 23 CFR - [PART 637—CONSTRUCTION INSPECTION AND APPROVAL](#)²
- 3.3 MP 106.03.50 - General Information Guide for Technician and Inspector Certification Program (TICP).
- 3.4 AASHTO R44-07.
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4. DEFINITIONS

- 4.1 QA – Quality Acceptance: The Division test used for the acceptance of material on a project.
- 4.2 IA Sampler: The employee at MCS&T Division who oversees the IA program. This person may perform 1:X testing when the population (X) is not large enough to compare samples statistically. The IA Sampler may, at the discretion of the Director of MCS&T, delegate this task to a qualified Division employee.
- 4.3 Evaluation Period: The calendar year in which the IA program is evaluated. This begins on January 1st and ends on December 31st of the same year.

¹ <https://www.fhwa.dot.gov/pavement/materials/hif12001.pdf>

² <https://www.ecfr.gov/current/title-23/chapter-I/subchapter-G/part-637>

- 4.4 IA Material: Each unique material that is evaluated by the IA program. These materials are listed in Section 2.1 of this document.
- 4.5 IA Test: A test that is performed by a QA Tester which is evaluated either directly or indirectly by the IA sampler to demonstrate both the QA Tester and their QA Testing Equipment's proficiency.
- 4.6 QA Tester: Each individual who performs an IA Test on an IA Material for QA, during the Evaluation Period. Each unique instance of these must be evaluated based on the frequency noted in Section 5.
- 4.7 QA Testing Equipment: Each primary piece of equipment used to perform an IA Test on an IA Material for QA, during the Evaluation Period. This equipment is noted in the respective sections of this document. Each unique instance of these must be evaluated based on the frequency noted in Section 5.
- 4.8 AASHTO: The American Association of State Highway and Transportation Officials, a nonprofit organization that sets technical standards for highway systems and acts as a liaison between state and federal transportation departments.
- 4.9 [AASHTO re:source](https://aashtoresource.org/)³: A technical services program that provides audits and accreditation to material testing laboratories. This program distributes proficiency samples nationally and evaluates the results. The WVDOT uses the evaluations from this program for both asphalt and aggregate IA Tests.
- 4.10 Proficiency Sample: A single (homogeneous) sample that is distributed by an agency or designated agent to be tested at multiple laboratories. The distributing agency will provide a "score", which statistically compares results amongst the laboratories.
- 4.11 Split Sample: A single sample taken by a single entity that is divided into two or more separate sub-samples for subsequent laboratory analysis. The division shall be done such that these sub-samples are equivalent.
- 4.12 Satisfactory Evaluation: If the results of a test fall within the guidelines established in Section 13 of this document, the test will be considered satisfactory.
- 4.13 Non-Satisfactory Evaluation: If the results of a test do not fall within the guidelines established in Section 13 of this document, the test will be considered non-satisfactory.
- 4.14 Corrective Action Report (CAR): An action report identifying the probable source of a Non-Satisfactory Evaluation. This report identifies the non-conformance, explains issues which lead to this non-conformance, and explains corrective actions to address this non-conformance.

5. SYSTEM APPROACH FOR IA SAMPLING AND TESTING

- 5.1 The WVDOT IA program shall operate under the system approach as described in Office of Pavement Technology Publication No. [FHWA-HIF-12-001](#) and [AASHTO R44-07](#).

³ <https://aashtoresource.org/>

- 5.2 Each QA Test Equipment and each QA Tester shall be evaluated for each Evaluation Period. Redundant testing shall be avoided unless a failure or faulty testing is reported during the testing.
- 5.2.1 If a QA Tester is testing and the equipment fails, they shall complete the test on another piece of equipment. If this occurs, it shall be noted in a corrective action report.
- 5.3 The goal of the IA program is to meet a 90% evaluation threshold for each QA Tester and QA Test Equipment. Each of these entities is considered separate and independent of each other.
- 5.3.1 QA Testers shall be evaluated for each unique IA Material they test during the evaluation period. If a person tests multiple IA Materials during the evaluation period, they will be required to be evaluated for each material independently.
- 5.3.2 The evaluation procedure for tests is described in Section 13 of this document.
- 5.4 If the 90% evaluation threshold is not met, a corrective action summary shall be included in the IA report.

6. POPULATION OF QUALITY ACCEPTANCE TESTERS AND EQUIPMENT

- 6.1 Once per year, before any work is performed by District QA Testers, a signed letter stating the names of each of their QA Testers shall be submitted by the District Construction Engineer to the Director of MCS&T Division. In lieu of this letter, Districts may utilize an MCS&T provided online form.
- 6.2 If, during the calendar year, additional QA Testers are added to the District's roster, the District Construction Engineer shall submit an amended list to the Director of MCS&T Division. This shall be done before any quality assurance work is performed by the tester.
- 6.3 In the event where a project incorporates non-DOH QA Testers and/or QA Testing Labs, the District Construction Engineer shall submit to the Director of MCS&T a signed letter stating the names of each of the QA Testers. As part of their duties, this person must participate in the IA program for each evaluation period.
- 6.4 All QA Testing Equipment shall be inventoried yearly and entered into the Division's approved equipment tracking system. If additional testing equipment is acquired, it shall be added to this system.

7. PORTLAND CEMENT CONCRETE (PCC)

- 7.1 Each QA Tester who tests PCC during the evaluation period shall perform an IA Test corresponding to the test they performed during that evaluation period.
- 7.2 The minimum required IA Sample test frequency for each QA Tester and QA Test Equipment is as follows:

PCC IA Samples Frequency	
Air – AASHTO T 152	1/Year
Compressive Strength Testing - AASHTO T 22	1 Set/Year
Slump – AASHTO T119	1/Year

- 7.3 For PCC, the Division will host at least one in-house proficiency sample style test of plastic concrete. This event shall be a group event where plastic concrete is provided, and each QA Tester is present. The QA Tester will test the material using the equipment they typically use to test concrete. If a QA Tester cannot attend this event, they shall attend a make-up event or be individually evaluated by the IA sampler.
- 7.4 Plastic Concrete Testing:
- 7.4.1 For plastic concrete testing, each QA Tester, their testing equipment, as well as their results shall be recorded.
- 7.4.2 During the event described in Section 7.3, the IA Sampler as well as representatives from MCS&T Division will observe the QA Testers to ensure proper testing procedures are followed.
- 7.4.3 If a QA Tester is observed deviating significantly from testing procedures, the IA Sampler or an MCS&T Division representative may note that test as a Non-Satisfactory Evaluation, regardless of the QA Tester's results. In this case, the test shall be considered Non-Satisfactory, and a CAR will be required. Also, the QA Tester's results shall be discarded from the population of results.
- 7.5 Cylinder Testing:
- 7.5.1 At the event described in Section 7.3, a standard set of 4"x8" cylinders shall be created for each of the QA Testers who performs the AASHTO T22 test at each District. This set of cylinders shall be fabricated by a tester from that District, if one is present. If a District has more than 1 QA Tester or more than 1 set of testing equipment, additional sets of cylinders shall be fabricated for each instance.
- 7.5.2 In the instance of a non-DOH testing laboratory, a certified individual from the lab's primary District shall fabricate the cylinders as they would for their own District testing laboratory.
- 7.5.3 If a QA Tester for a particular District does not attend, a set of cylinders shall be fabricated for that District by either the IA Sampler or another District. This set of cylinders will be tested by that District but will only be considered a "back-up" case if that District cannot attend another session.
- 7.5.4 The fabricator and testing equipment shall be noted for cylinder testing.
- 7.5.5 Upon testing of the cylinders, the Tester, testing equipment and results shall be documented and sent to the IA Sampler.
- 7.6 For PCC the QA Testing Equipment is as follows:
1. Compressive Strength Testing Machine
 2. Type B Pressure Meter
 3. Slump Cone

8. ASPHALT CONTENT – IGNITION OVEN – BURN OFF

- 8.1 Each QA Tester who tests for Asphalt Content during the evaluation period shall perform a yearly burn off IA Test.

8.1.1 Since most Districts operate multiple ignition ovens, MCS&T Division shall obtain and distribute a split sample for each of the District's ignition ovens. The QA Tester, the QA Testing Equipment as well as the results shall be documented and sent to the IA Sampler.

8.1 The minimum required IA Sample test frequency for each QA Tester and QA Test Equipment is as follows:

Asphalt IA Samples	
Asphalt Content by Ignition - AASHTO T308	1/year

9. SUPERPAVE ASPHALT CONCRETE

9.1 Each QA Tester who tests SuperPave Asphalt Concrete during the evaluation period shall perform an IA Test corresponding to each test they performed during that evaluation period.

9.2 The minimum required IA Sample test frequency for each QA Tester and QA Test Equipment is as follows:

SuperPave IA Samples	
Air Voids - AASHTO T 269	1/year
Asphalt Content by Ignition - AASHTO T308	1/year*
Bulk Specific Gravity, Vacuum - AASHTO T331	1/year
Bulk Specific Gravity, SSD - AASHTO T166	1/year
Maximum Specific Gravity - AASHTO T209	1/year
Percent Passing the #200 Sieve - AASHTO T30	1/year

*NOTE. This burn off evaluation is in addition to that described in Section 8.

9.3 Each QA Tester shall participate in the AASHTO re:source proficiency program for SuperPave Asphalt Material. This shall apply to all the tests listed in Section 9.2.

9.4 If a District has multiple QA Testers and/or QA Testing Equipment, that District shall request additional AASHTO re:source samples to ensure that all QA Testers and QA Testing Equipment are evaluated.

9.5 For SuperPave Asphalt Concrete the QA Testing Equipment is as follows:

1. Gyratory Compactor
2. Core Lok - Asphalt Density Measurement System
3. Ignition Oven

10. MARSHALL ASPHALT CONCRETE

10.1 Each QA Tester who tests Marshall Asphalt Concrete during the evaluation period shall perform an IA Test corresponding to each test they performed during that evaluation period.

- 10.2 The minimum required IA Sample test frequency for each QA Tester and QA Test Equipment is as follows:

Marshall IA Samples	
Bulk Specific Gravity, SSD - AASHTO T166	1/year
Marshall Stability/Flow - AASHTO T245	1/year
Maximum Specific Gravity - AASHTO T209	1/year

- 10.3 Each QA Tester shall participate in the AASHTO re:source proficiency program for SuperPave Asphalt Material. This shall apply to all the tests listed in the Table in Section 10.2.
- 10.4 If a District has multiple QA Testers and/or QA Testing Equipment, that District shall request additional AASHTO re:source samples to ensure that all QA Testers and QA Testing Equipment are evaluated.
- 10.5 For Marshall Asphalt Concrete the QA Testing Equipment is as follows:
1. Marshall Hammer
 2. Marshall Stabilometer.

11. AGGREGATE GRADATION

- 11.1 Each QA Tester who tests Aggregate during the evaluation period shall perform an IA Test corresponding to the test they performed during that evaluation period.
- 11.2 The minimum required IA Sample test frequency for each QA Tester and each piece of QA Testing Equipment is as follows:

Aggregate Gradation Samples	
AASHTO T27 and T11	1/year

- 11.3 AASHTO re:source
- 11.3.1 Each District QA Tester shall participate in the AASHTO re:source proficiency program for Aggregate.
- 11.3.2 If there are more QA Testers in a District than distributed samples, the District shall request additional AASHTO re:source aggregate samples.
- 11.4 MCS&T Distributed Samples:
- 11.4.1 Because the Districts have multiple shakers, in addition to the AASHTO re:source samples, MCS&T shall distribute a homogeneously split sample to each testing lab for each set of QA testing equipment. Any QA Tester in the District may test these samples.
- 11.4.2 MCS&T shall also distribute a sample of this material to Non-DOH laboratories for each QA Tester and QA testing equipment.
- 11.4.3 The specific class and type of material shall be selected by the IA Sampler. The material shall consist of AASHTO specified gradation.
- 11.5 All specified sieves will be evaluated for the material passing. For the AASHTO re:source proficiency sample, all scored sieves will be evaluated.

11.6 For Aggregate Gradations the QA Testing Equipment is as follows:

1. Aggregate Shaker

12. COMPACTION

12.1 The WVDOH is currently evaluating the process of adding Asphalt and/or Aggregate/Soil Compaction to the IA program. The goal is to add this to the program for the 2025 evaluation period.

13. EVALUATION PROCEDURE

13.1 IA Samples will be evaluated statistically when the population of results is 5 or greater. If the IA Sample is not provided by AASHTO re:source in the form of a Proficiency Sample, it will be evaluated by the WVDOH IA Sampler. The calculation method used by ASHTO re:source shall be followed. The calculation method is shown in Attachment 3.

13.2 If the samples are provided by AASHTO re:source a rating of 3, 4, 5, as assigned by the testing agency, shall be considered satisfactory.

13.3 In the event where the population is less than 5, samples will be evaluated by averaging the tests results and using the respective AASHTO Precision and Bias Table as the acceptable range of values between the IA Sampler and the QA Tester(s). In this event, the evaluation method will be specifically described in that year's IA report.

13.3.1 For example, if the average is 5.0 and the table provides a precision and biased of 1.2, the test values must fall between 3.8 and 6.2 to be considered satisfactory.

13.4 If the results of an evaluation are satisfactory, the evaluation will be considered successful. A successful evaluation will verify both the QA Tester and the QA Testing Equipment used during the IA Test.

13.5 If the results of an evaluation are deemed non-satisfactory, the IA Test will be reviewed by the IA Sampler and/or the respective District Materials Supervisor. Within 30 days of notification of the non-satisfactory evaluation, the reviewer shall submit a Corrective Action Report to the Director of Materials Control Soils and Testing Division. This Corrective Action Report will be included in the yearly IA Report. A sample of this Corrective Action Report is provided in Attachment 1. The live version of the file is in the [WVDOH MCS&T Toolbox](#)⁴.

13.5.1 If possible, an additional IA Sample will be tested by the QA Tester in that calendar year, using the same QA Testing Equipment. This IA Test will be closely observed by the IA Sampler or their designee to help establish the root cause.

13.5.2 If this cannot be accomplished during the calendar year, the process will be followed for the subsequent calendar year's IA Sample.

13.6 The evaluation criteria in this section shall be evaluated every three years. The most recent evaluation of this criterion was on :

January 6, 2025, by Michael Mance Digitally signed by Michael Mance
Date: 2025.01.06 12:43:12 -05'00' (Director of MCS&T)**.

⁴ <https://transportation.wv.gov/highways/mcst/Pages/tbox.aspx>

**** Note:** This document shall be effective as per the signature date at the end of this document. However, the live version of this document will be updated as indicated above. This review date will not affect the signature nor effective date of the procedure, but rather provide documentation of WVDOH's compliance with Federal guidelines.

14. RECIPROCITY OF IA TESTING AND TECHNICIAN CERTIFICATION.

- 14.1 If the practical exam portion of the technician certification program (as described in MP 106.03.50) is equivalent to that of an IA Sample, reciprocity between these tests can be applied if agreed upon by both the Technician Certification Coordinator and the IA Sampler.
- 14.2 At the discretion of the Technician Certification and Training Coordinator, a successful IA sample may be considered the "Practical" portion of a technician's recertification for the respective material.
- 14.3 At the discretion of the IA sampler, the practical portion of either a certification or recertification may be considered a successful IA sample.

15. REPORTING

- 15.1 The evaluation period shall be the calendar year, starting with January 1st and ending December 31st.
- 15.2 The annual IA report shall be submitted to FHWA. The due date for the report is April 1st of the year following the evaluation year. The annual report shall include the following information: the number of certified technicians, the number of testing equipment used for QA, the number of active technicians, the number of technicians covered by the IA program, the number of IA Samples that were Non-Satisfactory, and a summary of the Corrective Action Reports along with the potential systematic solutions to reoccurring deficiencies (FHWA-HIF-12-001).

Michael Mance Digitally signed by Michael Mance
Date: 2025.01.06 12:43:26 -05'00'

Michael A Mance, PE
Director
Materials Control, Soils & Testing Division

Attachment 1: Sample Corrective Action Report

WVDOH Independent Assurance Corrective Action Report					
Form 2025-IA-CAR					
Date of Occurrence:					
Date Submitted:					
Name of Tester:					
Testing Equipment:					
Material Tested:					
Describe the issue reported:					
Sample					
			What was the root cause of the issue?		
What actions have been done to correct this issue?					
Signature of QA Tester					
Signature of District Materials Supervisor					
Signature of District Construction Engineer		Review: MCST			

Attachment 2: Office of Pavement Technology Publication No. [FHWA-HIF-12-001](#)⁵, October 2011.

⁵ <https://www.fhwa.dot.gov/pavement/materials/hif12001.pdf>