

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

MATERIALS PROCEDURE

GUIDE FOR QUALITY CONTROL AND
ACCEPTANCE PLANS FOR BASE COURSE

1.0 PURPOSE

1.1 Testing of highway construction materials has traditionally been a two-phased activity; that done by industry in their Quality Control Program and that done by the purchaser to determine the acceptability of the material. In the case of crushed aggregate base course, and related items, the contractor (whether or not he/she is actually the manufacturer) is by positive statement in the specifications responsible for quality control, and the Division of Highways, as purchaser, is responsible for acceptance (verification) testing. The purpose of this Materials Procedure (MP) is to present guidelines for adequate Quality Control and Acceptance Plans.

2.0 SCOPE

2.1 This procedure is intended to apply to crushed aggregate products as listed on Attachment 1.

3.0 QUALITY CONTROL PLAN

3.1 As stated in the specifications, a Quality Control Plan should be designed by the contractor and submitted to the Engineer at the Pre-Construction Conference. The plan should clearly describe the methods by which the Quality Control Program will be conducted. As a minimum, a Quality Control Plan should include the following.

3.1.1 Name of company official responsible for quality control.

- 3.1.2 Name of person(s) actually conducting the sampling and/or testing. These should be Certified Aggregate Sampling Inspectors or Certified Aggregate Technicians/Inspectors depending upon their assigned responsibilities. If they are not certified, a clear and complete resume' of their qualifications should be included for review prior to approval. All persons sampling and/or testing on National Highway System (NHS) projects will be a Certified Aggregate Sampling Inspector and/or Certified Aggregate Inspector depending upon their assigned responsibilities with the following exception: In the event a person has successfully conducted a test during AASHTO accreditation, or a comparable qualifying program approved by the Division, that person will be considered qualified to conduct that specific test for NHS projects without further certification for that test. In all cases, where applicable, the Technician/Inspector's certification identification number should be included along with any other supporting information.
- 3.1.3 The items to be controlled and the tests to be performed. Each test should be listed separately.
- 3.1.4 The Sampling and Testing Plan: As a minimum, the sampling and testing plan should detail sampling locations, methods, and test frequencies to be used (see Attachment 1). To facilitate the Division of Highways' monitoring activities, which are described in Section 4.1, all completed gradation samples must be retained by the contractor until further disposition is designated by the District Materials Engineer/Supervisor. The Quality Control Plan should state where and how these samples will be maintained. Applicable sections of Materials Letter (ML) 25 should be used for guidance.
- 3.1.5 Testing Facility: The plan should state the location of the testing facility and any qualifying information identified with said facility.
- 3.1.6 The Documentation Plan: The method by which the contractor will document and distribute test results must be described.

- 3.1.7 Forms and Distribution: Approved processing forms furnished by the Division will be used to record the test data. Gradation tests will be recorded on Form T300. The laboratory number will always start with a "C" for all quality control samples taken and tested by the contractor. One copy of each completed form should be retained by the contractor until the work is completed and accepted. One copy will be delivered to the District Materials Engineer/Supervisor. To be an effective quality control function, tests must be completed and results distributed in a regular and timely manner. The plan, therefore, should state what action will be taken in the event that testing and reporting are not completed in a reasonable period of time - say 72 hours after the sample is taken.
- 3.1.8 Control Charts: The specifications require the plotting of gradation test results on control charts using the moving average concept as described in MP 300.00.51. The Quality Control Plan should state where and how the charts will be maintained and made available to Division personnel. These charts are part of the Division's acceptance procedures and should be accessible to the Division when the project is completed.
- 3.1.9 A detailed plan of action regarding the disposition of non-specification material. Such a plan should provide for the immediate notification of all parties involved in the event that nonconforming situations are detected.
- 3.1.10 The Quality Control Plan for compaction will be in accordance with applicable sections of MP 717.04.21.
- 4.0 THE ACCEPTANCE PLAN
- 4.1 The specifications state that acceptance (verification) sampling and testing is the responsibility of the Division. Quality control tests are the responsibility of the contractor. Acceptance activities (sampled and tested at the frequency given in Section 4.1.2) may be accomplished by conducting verification sampling and testing completely independent of the contractor and, in some cases, by witnessing tests performed by the contractor, or by a combination of the two. The following guidelines provide a system which should result in sufficient confidence in the contractor's documentation of his quality control operations to permit acceptance of the material in accordance with the procedure set forth in the specifications.

- 4.1.1 Review all information supplied by the contractor on the Quality Control Plan. Note in particular the qualifications of the sampler and/or tester and the location and other qualifying statements about the testing facility. In the event the testing facility is such that little qualifying information is supplied or known, this facility should be visited prior to the work and reviewed relative to the availability, type, and suitability (including applicable calibration checks) of the testing equipment. This information should be documented and kept available at the District Materials Section.
- 4.1.2 Sample and test for applicable items completely independent of the contractor at a frequency equal to approximately ten (10) percent of the frequency for testing given in the approved Quality Control Plan. Witnessing the contractor's sampling and testing activities may also be a part of the acceptance procedure, but only to the extent that such tests are considered "in addition to" the ten (10) percent independent tests.
- 4.1.3 Plot the results of gradation tests performed by the Division on the contractor's quality control charts with a red circle, but do not include these values in the moving average. When the contractor's tests are witnessed, circle the contractor's test result on the control chart with red. These values are, of course, used in the moving average calculations. The laboratory number will always start with an "M" for all acceptance (verification) samples taken and tested in this manner by the Division, and will always start with an "O" for all of the contractor's tests which are witnessed by the Division.
- 4.1.4 Evaluate the results of acceptance (verification) tests, whether performed or witnessed by the Division, in accordance with MP 700.00.54.
- 4.1.5 If the evaluation indicates similarity with the quality control test, the control chart will be considered acceptable to that point.
- 4.1.6 If a dissimilarity is determined, an immediate investigation will be conducted in an effort to determine the cause. Until the situation is resolved, any samples held in accordance with ML 25 will be retained and may be used in whatever manner deemed appropriate during the investigation.

- 4.2 Implement ML 25 for aggregate gradations.
- 4.3 Acceptance testing for compaction will be in accordance with applicable sections of the specifications.



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ATTACHMENT

GUIDELINES FOR CONTRACTOR'S QUALITY CONTROL

Item Description	Property	Minimum Frequency
307 Crushed Aggregate Base & Shoulder Course	Gradation	One sample per each one-half day of operation. Note 1
	Other tests required by the Contract documents: percent face fracture, unit weight, Atterburg limits, etc.	One test at the beginning of operation and then each 10,000 tons thereafter (this includes one or more projects)
	Thickness	One per layer (each working width) per 1200 linear feet
307 Crushed Aggregate Shoulder Course for Re-surfacing Projects	Gradation	One sample per day of operation. Note 1
	Other tests required by the Contract documents: percent face fracture, unit weight, Atterburg limits, etc.	One test at the beginning of operation and then each 10,000 tons thereafter (this includes one or more projects)
	Thickness	One per layer (each working width) per 1200 linear feet.

Note 1 – In the event project activities are such that relatively small quantities of material are being placed per placement date, and to prevent over sampling, the Engineer may approve the following alternate sampling method: During one or more consecutive placement dates, one sample shall be taken to represent up to each 170 cubic yards (250 tons). In this case the sample shall be taken at a random time and place, represent the same material and production, and shall represent material placed in a reasonable time period.