

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

MATERIALS PROCEDURE

PROCEDURE FOR MONITORING THE ACTIVITIES RELATED TO SIEVE
ANALYSIS OF FINE AND COARSE AGGREGATE

1.0 PURPOSE

- 1.1 To provide for management a means for checking the adequacy of equipment, procedures and testing techniques employed in the conduct of Sieve Analysis of Fine and Coarse Aggregate. For further emphasis, it is restated that this procedure is designed solely to provide a method for monitoring activities relative to sieve analysis and shall not be used in a manner that would revise or modify acceptance testing procedures for aggregate as set forth in other procedures and instructions.

2.0 SCOPE

- 2.1 This procedure shall be applied to the extent that all activities related to the sieve analysis of fine and coarse aggregate which are regularly conducted outside the District Central Laboratory shall be monitored. These activities are frequently performed at project sites, portland cement concrete batch plants and central mix plants, bituminous concrete plants and district sublabs.

3.0 PROCEDURE

- 3.1 All aggregate samples which have been tested for sieve analysis at locations other than the District Central Laboratory shall be retained until further disposition is determined by the District Materials Engineer/Supervisor. Care shall be taken to prevent loss of material when placing the weighed portions of the original sample into a clean, leak proof bag. If the original sample bag is used for this purpose, it should be leak proof and

clean. Each sample shall be positively identified with a District Laboratory Number or a field sample number or both, whichever is available, and other information as necessary for complete identification. The gradation work sheet should completely identify the sample and a copy of this document placed in the sample bag would be quite adequate.

- 3.2 Approximately once each week, the District Materials Engineer/Supervisor or his authorized representative shall visit each location at which sieve analyses of fine and coarse aggregates have been conducted, and he shall select from the total LOT of samples which have been tested and accumulated since his last visit at least one sample to be tested in the District Central Laboratory. It is most important that the sample selection be made by the District Materials Engineer/Supervisor or his authorized representative in as random a manner as possible and without influences that would tend to give particular samples a greater chance of being selected. To aid in accomplishing the foregoing, all aggregate samples from which the selection is to be made should be prominently displayed, and a frequent check should be made to ascertain that the collection of displayed samples is complete.
- 3.3 Each aggregate sample shall be tested in the District Central Laboratory using the sieves and test procedures set out in the governing specification for the item represented by the sample.

The following statement shall be written on the work sheets:

"MONITOR" test made to check lab. no. _____ where the District Laboratory Number for the original test is written in the blank space. Obtain a copy of the original gradation test report and keep it with the MONITOR test work sheets. No formal reporting of the MONITOR test work sheets. No formal reporting of the MONITOR test data need be done. Testing should be done at the earliest practical time in order to expedite the evaluation.

NOTE: If the MONITOR sample has previously been washed in conformance with the AASHTO T-11 test procedure, then this procedure need not be employed in the District Central Laboratory. Accordingly, the quantity lost in the initial application of the AASHTO T-11 shall be considered the total minus #200 sought and this quantity shall be added to the weight of the MONITOR sample prior to making test computations.

- 3.4 The MONITOR test data shall be compared with the original test data in the following manner:
 - 3.4.1 Determine the differences in test values for each of the specification sieves by subtracting the smaller test value from the larger test value.
 - 3.4.2 Obtain the sum of the differences in test values.
 - 3.4.3 Determine the average difference in test values by dividing the sum of the differences as described in 3.4.2 above by a whole number corresponding to the number of sieves used in the gradation test. The value thus obtained will be called the AVERAGE TEST DIFFERENCE (ATD).
- 3.5 The following guide shall be used as an aid in evaluating the ATD and determining appropriate actions to be taken.
 - 3.5.1 If the value of the ATD is equal to or less than 2.5 ($ATD \leq 2.5$), the comparison would probably be considered favorable and no further investigation would be made. As a consequence, the testing technician should be instructed to discard the LOT of samples from which the MONITOR sample was selected.
 - 3.5.2 If the value of the ATD is greater than 2.5 but equal to or less than 4 ($2.5 < ATD \leq 4$), the comparison would probably be considered questionable and approximately one third of the remaining samples in the LOT from which the MONITOR sample was selected should be tested and they should each comply with the requirement set out in 3.5.1 above. If each of the latter tests does comply, then the action set out in 3.5.1 should be taken. If each of the latter tests does not comply, then all remaining samples should be tested and the action set out in 3.5.3 below should be taken.

- 3.5.3 If the value of the ATD is greater than 4 ($ATD > 4$), all remaining samples in the LOT from which the MONITOR sample was selected should be tested. A sufficiently thorough investigation should be made by the District Materials Engineer/Supervisor to allow him to make a judgement regarding the cause for the unfavorable test comparison. The results of this investigation and all pertinent test data will be reported in a District Materials Inspection Report (DMIR). The investigation and reporting shall be accomplished at the earliest practicable time so that the situation may be most expeditiously resolved. The Materials Control, Soils and Testing Division should be consulted when the action set out in this article is to be taken.
- 3.6 At the end of each fourth evaluation period, approximately four weeks, the District Materials Engineer/Supervisor shall prepare a report entitled "Implementation of Procedures for Monitoring Activities Related to the Sieve Analysis of Fine and Coarse Aggregate". The report will generally consist of a single page on which six columns of information or data is recorded as follows:
- 3.6.1 Column 1 shall be headed "Test Location". Give job location, or plant or sublab location where tests were conducted.
- 3.6.2 Column 2 shall be headed "Date of last Monitor Sample Selection".
- 3.6.3 Column 3 shall be headed "Date of this Monitor Sample Selection".
- 3.6.4 Column 4 shall be headed "Number of Samples in LOT". Give the number of samples in LOT from which the Monitor sample was selected.
- 3.6.5 Column 5 shall be headed "Standard Aggregate Size". Give item number for base course materials.
- 3.6.6 Column 6 shall be headed "Average Test Difference". Report value of ATD to nearest 0.1. The reports shall be identified as having been issued in accordance with this memorandum, ML-25.


3.7 The reports described in article 3.5.3 and subsection 3.6 shall be distributed as follows:

3.7.1 District Materials Inspection Report:

1 copy to District Materials File
1 copy to MCS&T Division
1 copy to Construction Division
1 copy to District Engineer, if requested

3.7.2 Four-Week Reports:

1 copy to District Materials File
1 copy to MCS&T Division
1 copy to Construction Division
1 copy to District Engineer



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