

VIRGINIA DEPARTMENT OF TRANSPORTATION

MATERIALS DIVISION

MEMORANDUM

GENERAL SUBJECT: Atterberg limits testing for Central Mix Aggregate (CMA)	NUMBER: MD 434-20
SPECIFIC SUBJECT: Revision to Chapter 3 of the Manual of Instructions - Section 308.05(a) Quality Control (Producer) Samples and Tests	DATE: May 22, 2020
	SUPERSEDES:
APPROVED:	Charles A. Babish, PE State Materials Engineer Approved: _____

EFFECTIVE DATE

- This memorandum is effective June 1, 2020
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PURPOSE/NEED/SCOPE/REQUIREMENTS

- To provide guidance on when Quality Control Atterberg limits testing may be waived based on historical test results
 - Some minor editorial changes/clarifications are also made.
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Changes are **Shaded**

PROCEDURES

308.05 Sampling, Testing, and Acceptance of CMA

Sampling, testing, and acceptance of CMA shall be in accordance with the procedures designated herein, and shall consist of Producer Quality Control (QC) sampling and testing, VDOT Independent

Assurance (IA) sampling and testing, and VDOT Verification (VST) sampling and testing (VST). All of these components together comprise the quality assurance program.

(a) Quality Control (Producer) Samples and Tests

Quality Control samples are those obtained by the Producer's Certified Central Mix Aggregate Technician at the plant and tested in the plant laboratory (or a third party lab) for gradation, Atterberg Limits, water content, and cement content (if applicable).

~~In the production of these materials, the optimum water content, plus or minus two (2) percentage points, shall be required.~~

A statistically acceptable method of randomization shall be used to determine the time and location for taking stratified random samples of the aggregate or select material. See the Central Mix Aggregate Certification Study Guide for an approved randomization method. Testing shall be in accordance with ~~the VDOT Road and Bridge Specifications Sections 207 and 208.~~ The frequency of sampling shall be at a rate of 4 samples per lot (either 2000 or 4000 tons). Lot size shall be chosen, upon request by the Producer or District Materials Engineer (DME) and at the discretion of the DME, from either 2000 or 4000 ton lots. Lots shall be chosen in order to match Producer shipping rates, to reduce unnecessary testing, when past performance indicates stability, and when lot sizes/shipping rates are appropriate to ensure statistical significance will be obtained. ~~Samples shall be taken after the material has been mixed according to Sections 207.04 and 208.05 of the VDOT Road and Bridge Specifications to satisfy the blending and water content requirements (optimum water content plus or minus two (2) percentage points). The size of the sample shall be 30 to 40 lbs.~~

The representative sample, secured from the randomly selected material that is being shipped to the project site and weighing 30 to 40 pounds, shall be obtained by one of the following methods: (1) The sample shall be obtained from the approximate center of the loaded truck; (2) A loaded truck shall dump at a convenient location within the plant facility to create a representative mini-stockpile. The top of the dumped load shall be struck with the bucket of a front-end loader to create a flat spot on top of the pile from which the representative sample shall be obtained; (3) A mini-stockpile shall be created by material extracted from the post-pugmill shipping stockpile. When the truck containing the load that will be sampled is in the process of being loaded, a randomly selected front-end loader bucket of aggregate being taken from the post-pugmill shipping stockpile shall be dumped at a convenient location within the plant facility to create the mini-stockpile. The top of the mini-stockpile shall be struck with the bucket of the front-end loader to create a flat spot from which the representative sample shall be obtained. Separate the sample into two (2) approximately equal portions by processing the sample through a sample splitter or split by the quartering method. If no IA sample is being taken, as detailed in Paragraph (b) below, the Producer's Technician shall still split the sample as noted above before running the tests on one of the split portions.

~~QC Atterberg limits testing may be waived at the discretion of the DME if historical test results of the job mix show no plastic issue for the job mix. A job mix may be considered not having a plastic issue if the liquid limit does not exceed 23 and the plasticity index does not exceed 2 on any of the samples tested by the Department in the previous two years (i.e. VDOT VST samples) or the previous 8 VST samples, whichever number of samples is larger. Such historical data will be provided by the Materials Division Soils Laboratory upon request by the DME.~~

~~The Department will continue to monitor plasticity of the job mix for which the testing is waived by performing a minimum of one Atterberg limit test quarterly. The test results (minimum 4 tests per year) will be used by the DME to determine whether or not to continue to waive QC Atterberg limits testing for the following year. The test results will be entered into and shared with the producers~~

through the VDOT aggregate database system (MITS/PLAID). In the event the test result from one of the VDOT VST samples shows plasticity (i.e. either LL>23 or PI>2) the producer or DME may request that Atterberg limits be re-tested on another sample in that lot (or next lot if the lot is completed). If it is verified by the re-testing that the job mix has plasticity, the frequency of the Atterberg limits testing will go back to the normal rate immediately (i.e. at a rate of four QC samples and minimum one VDOT VST sample per lot).

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NOTES

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REFERENCES

- _____

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