



SECTION 1001

GENERAL REQUIREMENTS FOR MATERIAL

1001.1 All requirements of [Sec 106](#) will apply to material hereinafter specified. Material or processes requiring pre-qualification or pre-acceptance shall be in accordance with the applicable sections of these specifications. After approval, the material or process will be placed on either the qualified list or the pre-acceptance list (PAL) maintained on MoDOT's web site by Construction and Materials. The contractor shall select materials or processes from the appropriate list for use in MoDOT work. Final acceptance may be based on field inspection.

1001.2 All packaged material shall be plainly marked showing the quantity and nature of the contents and shall be delivered intact.

1001.3 A description of the classification of deleterious material may be found in MoDOT's EPG 106.3.2.71 on MoDOT's web site.

1001.4 Chat will be defined as aggregate tailings from mills in which metallic minerals have been recovered.

1001.5 Crushed stone will be defined as the product obtained by the artificial reduction in the size of rock that has been mined or excavated from ledge formation. Chat as defined in [Sec 1001.4](#) is not included.

1001.6 Gravel will be defined as the coarse granular material, generally considered as material retained on the No. 4 or No. 10 sieve, but may include finer sizes, resulting from the natural disintegration and abrasion of rock, or from processing of weakly bound conglomerate. Gravel may include such material that has been further reduced in size by artificial means.

1001.7 Porphyry will be defined as a fine-grained, dense, igneous rock generally occurring in the Missouri counties of Iron, Madison, St. Francois and their adjacent counties.

1001.8 Wet bottom boiler slag will be defined as a hard, angular by-product of the combustion of coal in wet bottom boilers.

1001.9 Sieves specified for gradation requirements shall have openings as prescribed in AASHTO M 92.

1001.10 Storage and Handling of Aggregate. Aggregate shall be produced, handled and stockpiled to minimize segregation, degradation and contamination. Regardless of the method of storage and handling, all aggregate that is segregated, degraded or contaminated to the extent that the aggregate does not meet specifications, will be considered unacceptable. Aggregate may be reconditioned by any method that produces satisfactory material.

1001.11 Approval of Aggregate Sources. All sources of aggregate shall be evaluated by the engineer for initial approval and source approval as herein prescribed, prior to acceptance of aggregate from that source.

1001.11.1 Sources of crushed stone shall be evaluated for initial approval on a ledge by ledge basis. Each exposed ledge will be identified, and the engineer will describe the ledge boundaries. Only identified ledges shall be used in the manufacture of the final product. A sample for initial approval will be required from each ledge. Resampling will be required if source approvals indicate a significant change has occurred.

1001.11.2 Source approvals will be required a minimum of every year. Source approval samples will be required for each unique combination of ledges. Resampling will be required at closer intervals if, in the judgment of the engineer, any significant change has occurred to the source. Samples of aggregate for source approval shall be taken while the engineer is present.

1001.11.3 Sources approval of natural sand, gravel and manufactured lightweight aggregate shall be evaluated as the final product .

1001.11.4 Sources of aggregate such as chat, slag and other by-products from previously produced material or any other undefined sources will be evaluated on an individual basis.

1001.12 Mining By-Product Aggregate. Aggregate produced as a by-product from lead or zinc mining operations may be furnished under the following requirements. No blending or dilution of this aggregate with other material will be allowed in order to meet these specifications.

1001.12.1 The supplier shall separate out all aggregate to be furnished into individual stockpiles not exceeding 5,000 cubic yards each. No material will be accepted that has not been moved at least once to a stockpile area specifically for this purpose. The supplier shall randomly sample each stockpile by combining several small samples from the pile into one sample. The sample shall be tested by an approved laboratory for the required lead tests specified in [Sec 1001.12.2](#). A minimum of one set of tests shall be performed for each individual stockpile.

1001.12.2 For aggregate not encapsulated in asphalt or Portland cement mixtures and delivered to MoDOT construction projects or property, the concentration of leachable lead in the aggregate as determined by Method 1311, *Toxicity Characteristics Leaching Procedures (TCLP)*, 40 CFR 261, Appendix II, shall be less than 3.0 ppm, and the total lead content shall be less than 500 ppm as determined by EPA Method 3050A, *Acid Digestion of Sediments, Sludges, and Soils*. For each individual aggregate meeting [Secs 1002, 1004 and 1005](#) which is encapsulated in asphalt or Portland cement mixtures and delivered to MoDOT construction projects or property, there will be no limit on the leachable lead, but the total lead content shall be less than 4,500 ppm. No lead tests will be required and there will be no limits on leachable or total lead content for asphalt or Portland cement material milled from MoDOT projects and reprocessed into a mixture for re-use on MoDOT projects.

1001.12.3 Prior to any approval, shipment or use of this material, the supplier shall furnish to the engineer a report of the laboratory test results. The report shall specifically identify the stockpile, estimated quantity, location, date of sample, date of test and the specific test results for each lead test. Attached to the report shall be a certification from the supplier that the material furnished does not exceed the lead amounts specified. The supplier shall test as necessary beyond the requirements of this specification to ensure that this specification is met. All costs for setting the material aside for testing and for testing shall be borne by the supplier.

1001.13 Dust Suppressants. Approved dust suppressant additives may be used during the crushing or aggregate handling process provided there is no detrimental effect to the aggregate or subsequent products made from the affected aggregate.

1001.13.1 Manufacturer and Brand Name Approval. Prior to approval and use of a dust suppressant additive, the manufacturer shall submit to Construction and Materials a certified test report from an approved independent testing laboratory showing specific test results when tested in accordance with MoDOT Test Method TM 62. The certified test report shall contain the manufacturer's name, brand name of material, date tested, date of manufacture and dosage rate of the additive used. In addition, the manufacturer shall submit to Construction and Materials a sample representing the additive tested by the independent testing laboratory and accompanied by a material data sheet, an MSDS showing the brand name, composition or description of the product, the normal and maximum recommended dosage rates, the manner of identification on containers and a copy of the infrared spectrum. The manufacturer shall certify that the material, when used at or below the maximum dosage rate, does not affect the properties of the aggregate or subsequent products made from the treated aggregate. The manufacturer shall also guarantee that as long as the material is furnished under that brand and designation, the material will be of the same composition as originally approved and will in no way be altered or changed. Upon approval of the additive, the manufacturer and brand name will be placed on a list of qualified dust suppressant additives for aggregate.

1001.13.2 The aggregate supplier shall keep the inspector advised of the use of any dust suppressant material and shall provide for the inspection of such facilities. No dust suppressant shall be applied above the manufacturer's maximum recommended rate.

1001.14 PRODUCER QUALITY MANAGEMENT PLAN

1001.14.1 Scope. This specification covers the acceptance criteria for material items produced under the producer Quality Management Plan (QMP). The producer shall develop a QM plan for MoDOT's acceptance as defined by one of the following:

- a) Producer QC and membership in an industry recognized audit program.
- b) Producer QC and independent QA testing.

1001.14.2 MoDOT shall perform audits including testing, inspection, and documentation review. QC testing, independent assurance testing, documentation, and conformance to product specifications may be subject to verification by MoDOT at the production facility or at the jobsite. MoDOT may audit the QMP of the producer at any time.

1001.14.3 QUALITY MANAGEMENT PLAN REQUIREMENTS. The producer's QMP shall include the minimum following requirements:

- a) Frequency of QC sampling and testing.
- b) Frequency of the producer's QA sampling and testing and identification of a third party testing firm if applicable.
- c) Organizational structure of QC staff, job duties, and responsibilities including the identification of a QC manager.
- d) Method of documenting product compliance. The producer shall provide documentation of the material meeting specification.
- e) Type of material to be produced.
- f) An independent dispute resolution testing firm (company name), contact person, address, and phone number.

- g) A process for tracking deficient work and corrective actions in accordance with [Sec 1001.14.8](#).
- h) A process for addressing non-conforming work and corrective action requests in accordance with [Sec 1001.14.9](#).
- i) A list of hold points for QC in accordance with [Sec 1001.14.10](#).
- j) A list of MoDOT hold points in accordance with [Sec 1001.14.10](#).

1001.14.4 Third Party Resolution. The third party shall be independent of the producer, contractor, MoDOT, consultants, and all project subcontractors or suppliers. All testing of material for dispute resolution shall be performed by a laboratory that is AASHTO Accreditation Program certified in the areas of the material being tested.

1001.14.5 Testing Personnel. Where applicable, testing shall be performed by individuals who are certified by the MoDOT Technician Certification program or an accredited laboratory.

1001.14.6 Record Retention. The producer shall maintain copies of the plant QMP, applicable AASHTO, ASTM, MoDOT, and/or LPA standards and approved production drawings. The records shall include information related to all components used to produce the final product such as aggregate tests, steel certifications and mill tests, PAL numbers, QC test results and other material component documentation such as the bill of lading for material used in the production of the finished product. Records related to QC tester qualifications shall be retained. Records shall be retained for a minimum of three years and provided to the engineer in electronic form upon request.

1001.14.7 PRODUCER QUALITY ASSURANCE. When required, QA testing by a third party shall be performed at the frequency required in each specification. Participation in an industry recognized auditing organization may be substituted for a third party QA testing.

1001.14.8 CONTROL OF DEFICIENT WORK. Deficient work is considered work that is found to be not specification compliant by QC. Deficient work may be corrected to be specification compliant as defined in the QMP. It is the responsibility of QC to identify, document, and correct deficient work. When QC personnel discovers deficient work that cannot be corrected the work becomes non-conforming. For non-conforming work, QC shall submit a Non-Conformance Report (NCR) to the engineer and contractor for acceptance or rejection.

1001.14.9 CONTROL OF NON-CONFORMING WORK. Non-conforming work are items that are not compliant with the specifications and have gone through the QC process undiscovered or uncorrected. When non-conforming work is identified by QC, independent QA, MoDOT QA testing, or auditing of the contractor, a solution will be proposed by the producer in writing and approved or rejected by both the engineer and contractor.

1001.14.9.1 Reoccurring non-conforming work shall be addressed by the producer and Construction and Materials Division by one of the following methods:

- a) The producer develops a corrective action plan.
- b) Alteration of the QMP by the producer with the engineer's approval.
- c) Review producer's QC results with producer's associated independent organization. Producer to be re-audited by independent organization.

1001.14.10 HOLD POINTS

1001.14.10.1 Hold points are events that require approval prior to continuation of work. Hold points occur at definable stages of work or progress phases when the succeeding work depends on acceptance of the preceding work. QC staff shall provide complete inspection reports and checklists to MoDOT personnel prior to all MoDOT hold points.

1001.14.10.2 QC hold points are established by the QMP for compliance verification prior to any MoDOT hold point. At a minimum, a QC hold point shall occur just prior to or simultaneous with each MoDOT hold point.

1001.14.10.3 A list of MoDOT hold points will be determined by the engineer. The engineer may make changes to the MoDOT hold point list at any time. Following a MoDOT hold point inspection, all non-conforming work identified by MoDOT shall be corrected prior to continuing work and a new hold point shall be scheduled.

1001.14.10.4 MoDOT may waive hold points at any time. Waivers will be in writing sent to the producer as soon as possible from the engineer.