

ODOT Coarse Aggregate Source Approval Policy

1 Scope:

Aggregates comprise the vast majority of material (volume and tonnage) in transportation projects. Aggregates may have different test requirements and specifications depending on their use. Aggregate uses, specifications and test requirements, can be found in the ODOT Standard Specifications for Highway Construction. An aggregate source must be approved by the ODOT Materials Division, before it can be the source for ODOT projects. Approved aggregate sources will be monitored by the ODOT Materials Division by an ongoing system of random sampling and testing. Acceptance of aggregates at the project level is based primarily on gradation testing of aggregates from approved sources, at defined frequencies by the Resident Engineer. This policy describes the approval process for coarse aggregate sources.

2 Background:

Aggregates used in transportation projects can be divided into two broad categories: Aggregates can be used in bound engineered materials (i.e.: Portland cement concrete, asphaltic concrete), or they can be used in unbound applications (aggregate base, filter sands, riprap, etc.). The approval procedure described in sections 3 and 4, is required for coarse aggregate sources that provide aggregates for many uses, including bound engineered materials. There are two main steps in this approval process. In the first step the aggregate source is responsible for a preliminary assessment (see section 3). Second, ODOT Materials Division reviews the preliminary assessment and makes a final approval decision. Additional testing by ODOT, is usually required in the final approval process.

If an aggregate source provides aggregate for unbound uses only, a simplified approval process may be followed. This is described in section 5.

3 Preliminary assessment:

There are two parts to a preliminary assessment;

- Laboratory testing (section 3.1)
- Geologic assessment report (section 3.2).

3.1 Laboratory Testing:

The aggregate source is responsible for employing the services of a Construction Materials Laboratory (CML) that is accredited by the AASHTO Accreditation Program (AAP). The CML shall be accredited in the specific test procedures described in appendix A, "Instructions for CML". A list of current AASHTO accredited laboratories is available on the [AASHTO re:source website](#). Under the [Accreditation Directory](#), enter the laboratory name or location to find a specific lab and a listing of the accredited procedures for that lab. The CML shall be familiar with ODOT material specifications and testing requirements. The aggregate source is responsible for furnishing a copy of this policy, including appendix A, to the CML, to ensure the CML is aware of its responsibilities and requirements when conducting their portion of the preliminary assessment.

The aggregate source shall crush or process sufficient material to produce a stockpile of standard sized material that is representative of the aggregate that would be produced from that source. A typical standard aggregate is the #57 or #67 size meeting ODOT standard specifications for gradation.

The CML shall follow the instructions outlined in appendix A, in conducting its sampling and testing program for the preliminary assessment. The CML is responsible for making a site visit to the aggregate source to obtain representative samples of the aggregate. The CML shall submit a copy of the report with test results and a material description directly to the office of the [ODOT Materials Division Engineer](#).

3.2 Geologic Assessment:

The purpose of the geologic assessment is to provide to the Department, professional/expert knowledge and opinion concerning the suitability of the aggregate for use in transportation applications. A geologic assessment report shall be prepared by a qualified Engineer and/or Geologist, knowledgeable in Oklahoma geology and ODOT material specifications. The assessment may be done in conjunction with the laboratory testing firm or it could be by someone not associated with the CML. The geologic assessment report shall include as a minimum, discussion and/or recommendations of the following issues:

- a. site visit with detailed description of location (include legal description)
- b. geologic formation
- c. existing or abandoned quarries producing nearby and/or from the same formation
- d. review of available laboratory test data
- e. variability of rock quality at site
- f. suitability for use in transportation applications (asphalt, concrete, base, chip seals, etc.)
- g. potential problems in certain applications related to things like; Alkali aggregate reactivity, particle shape/size, deleterious substances, etc.

A copy of the geologic assessment report shall be submitted to the office of the ODOT Materials Division Engineer.

4 Final Approval:

The final approval is the responsibility of the ODOT Materials Division and consists of two parts; a review of the submitted reports and supplemental testing by ODOT. Laboratory test results from the preliminary assessment will be compared to aggregate material specifications. If the lab testing and geologic reports indicate sufficient quantity of suitable material, the Materials Division will make a site visit, obtain samples and begin supplemental testing. If concrete aggregate approval is requested, material crushed to conform with #57 size aggregate shall be made available for sampling and testing. Most aggregate specifications have testing requirements in addition to the tests performed in the preliminary assessment. Some of these additional tests, such as AASHTO T161 - freeze thaw testing of concrete aggregates, can take several months to complete. The types of additional testing will be based on proposed uses of the aggregate. Final approval for specific uses of the aggregates will be based on information provided during the preliminary assessment and on results from additional laboratory testing by ODOT.

5 Simplified Approval Process for Unbound Aggregate Uses:

It is recognized that aggregates used in certain unbound applications do not have an extensive set of material specification requirements and can come from locally available sources. For project specific uses, a detailed geologic assessment and extensive laboratory testing would be unnecessarily expensive and time consuming for making an approval decision. Aggregate uses that would fall under this category could include aggregates in sections 703, 705 and 713 of the ODOT Standard Specifications. Even for aggregates used in unbound applications, there is usually at least one laboratory test required by ODOT specifications, in addition to gradation, to determine some type of hardness or durability characteristic. Some of these additional tests can be time consuming such as freeze/thaw requirements for riprap and gabion stone.

The approval process consists of a preliminary visual inspection and aggregate sampling by the Resident Engineer, and then testing by the Materials Division. The Resident Engineer shall make a visit to the site where the aggregate is located, and make a reasonable effort to verify sufficient material is available to supply the needs of the project and is of reasonable uniformity in regards to quality and appearance (no quality control concerns). Contact the Materials Division if assistance is needed for the preliminary inspection. If the preliminary visual inspection indicates a sufficient quantity of quality material, a representative sample shall be submitted to the Materials Division for laboratory testing and evaluation. The sample submission shall be made far in advance of anticipated use to ensure laboratory testing and evaluation can be completed before any material is delivered to the project and/or incorporated in the work.

Appendix A

Instructions for Construction Materials Laboratory (CML)

Preliminary Assessment: Coarse Aggregate

A coarse aggregate producer (quarry) interested in getting their material qualified for use in ODOT projects is required to hire a CML to conduct a preliminary assessment of the quality of the aggregate. The intent of this document is to describe the sampling and testing requirements that as a minimum must be completed to meet the requirements of the preliminary assessment (section 3.1). For the purpose of the preliminary assessment of coarse aggregates, the CML shall have sufficient experience and knowledge to be proficient in the test methods described below. ODOT reserves the right to ascertain the proficiency of a CML in the test methods. The CML shall be accredited by the AASHTO Accreditation Program (AAP) for the procedures listed below.

The CML shall sample a representative quantity of aggregate from a stockpile at the quarry. Enough material shall be obtained so a split sample remains (untested) for subsequent examination and testing by ODOT if deemed necessary. A copy of the test report shall be submitted by the CML directly to the office of the Materials Division Engineer. The report shall contain as a minimum all of the information listed in Tables 1 and 2 of AASHTO R 18. The report shall contain a visual description of the material addressing any visual observations, deleterious substances, or unusual test results. A copy of these instructions and the accompanying policy and procedures document should be included with the report. The list of test procedures given below are a minimum, and may need to be supplemented by other testing as deemed necessary based on visual observations or test results.

Required Tests:

T 2	Standard Practice for Sampling Aggregates
R 76	Reducing Samples of Aggregate to Testing Size
T 11/ T 27	Sieve Analysis
T 85	Specific Gravity and Absorption of Coarse Aggregate (Report the Bulk Specific Gravity - SSD, and Absorption)
T 96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine, (B Grading)
T 210	Aggregate Durability Index

Revision History:

2/12/2007: The second paragraph of section 5, "Simplified Approval Process for Unbound Aggregate uses", added language further defining the role and responsibility of the Resident Engineer in making an initial visual evaluation of the material prior to submitting a sample to Materials Division.

1/23/2014: Revised several sections changing "Materials Division" to "Materials and Research Division". In section 4, clarified the need to supply #57 size aggregate for concrete aggregate approval. In Appendix A, revised reference to specific tables in R 18.

3/5/2015: Changed all instances of "Materials Engineer" to "Materials and Research Division Engineer". Changed wording of the fourth sentence (fifth line) under section "3.1 Laboratory Testing" from "Choose the AASHTO R18 link under the Accreditation Directory" to "Under the Accreditation Directory, enter the laboratory name or location" and made "Accreditation Directory" a hyperlink. Changed "(AMRL) website" hyperlink (located under section "3.1 Laboratory Testing"), to new URL.

6/24/2016: Changed all instances of "Materials and Research Division" to "Materials Division" and all instances of "Materials and Research Division Engineer" to "Materials Division Engineer".

7/7/2016: Made "ODOT Materials Division Engineer" (located at the end of section "3.1 Laboratory Testing") into a hyperlink.

10/18/2016: Changed "AASHTO Materials Reference Laboratory (AMRL) web site" to "AASHTO re:source website" and made "AASHTO re:source website" a hyperlink to go to the current URL. Also updated "Accreditation Directory" hyperlink to the new URL (all located near the middle of the paragraph of section "3.1 Laboratory Testing"). Changed "T 248" to "R 76" due to reclassification of the test procedure by AASHTO (located in the second row of the table named "Required Tests" of "Appendix A").

1/13/2021: Changed "ODOT Materials Division Engineer" hyperlink to new URL (located at the end of section "3.1 Laboratory Testing").