

WSDOT FOP for AASHTO T 2

Standard Practice for Sampling Aggregates

1. Scope

- 1.1 This practice covers sampling of coarse and fine aggregates for the following purposes:
 - 1.1.1 Preliminary investigation of the potential source of supply.
 - 1.1.2 Control of the product at the source of supply.
 - 1.1.3 Control of the operations at the site of use.
 - 1.1.4 Acceptance or rejection of the materials.
- 1.2 The values stated in English units are to be regarded as the standard.
- 1.3 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

- 2.1 AASHTO Standards
 - T 248 – Reducing Samples of Aggregate to Testing Size
- 2.2 ASTM Standards
 - C 702 – Practice for Reducing Field Samples of Aggregate to Testing Size
 - D 2234 – Test Method for Collection of a Gross Sample of Coal
 - D 3665 – Practice for Random Sampling of Construction Materials
 - E 105 – Practice for Probability Sampling of Materials
 - E 122 – Practice for Choice of Sample Size to Estimate the Average Quality of a Lot or Process
 - E 141 – Practice for Acceptance of Evidence Based on the Results of Probability Sampling

3. Significance and Use

- 3.1 Sampling is equally as important as the testing, and the sampler shall use every precaution to obtain samples that will show the nature and condition of the materials which they represent.
- 3.2 Samples taken for preliminary testing of aggregate sources must be witnessed or taken by a designated representative of the Regional Materials Engineer or the State Materials Laboratory. A qualified tester employed by the contracting agency or their designated qualified representative will take the acceptance samples.

Note 1: For more comprehensive guidance, on preliminary investigation and sampling of potential aggregate sources see the Appendix 1.

4. General Procedures

- 4.1 Where practicable, samples to be tested for quality shall be obtained from the finished product.
- 4.2 Samples of the finished product taken for testing abrasion loss shall not be subject to further crushing or manual reduction in particle size in preparation for the abrasion test unless the size of the finished product is such that it requires further reduction for testing purposes.
- 4.3 Native soils within the contract limits used for embankment construction and/or backfill material do not require sampling by a qualified tester. For material that requires gradation testing, such as but not limited to manufactured aggregates and Gravel Borrow, a qualified tester shall be required for sampling.
- 4.4 The number of field samples required depends on the testing required.
- 4.5 Generally, the sample sizes specified in Table 1 will provide adequate material for routine grading and quality analysis.
- 4.6 Reduce the field sample to test size in accordance with T 248 or as required by other applicable test methods.

Nominal Maximum Size*in (mm)		Minimum Mass lb (kg)	
US No. 4	(4.75)	5	(2)
¼	(6.3)	10	(4)
⅜	(9.5)	10	(4)
½	(12.5)	20	(8)
⅝	(16.0)	20	(8)
¾	(19.0)	30	(12)
1	(25.0)	55	(25)
1¼	(31.5)	70	(30)
1½	(37.5)	80	(36)
2	(50)	90	(40)
2½	(63)	110	(50)
3	(75)	140	(60)
3½	(90)	180	(80)

*For aggregate, the nominal maximum size sieve is the largest standard sieve opening listed in the applicable specification upon which more than 1 percent of the material is permitted to be retained. For concrete aggregate, the nominal maximum size sieve is the smallest standard sieve opening through which the entire amount of aggregate is permitted to pass.

Size of Samples
Table 1

Note 2: For an aggregate specification having a generally unrestrictive gradation (i.e., wide range of permissible upper sizes), where the source consistently fully passes a screen substantially smaller than the maximum specified size, the nominal maximum size, for the purpose of defining sampling and test specimen size requirements may be adjusted to the screen, found by experience to retain no more than 5 percent of the materials.

5. Procedure

- 5.1 Sampling From A Flowing Aggregate Stream (Bins or Belt Discharge) – A mechanical, automatic, or semi-automatic sampling device is required for processed materials.
 - 5.1.1 Obtain a field sample with a mass equal to or greater than the minimum recommended mass in Table 1.
 - 5.1.2 Take the sample from the entire cross section of the flowing stream.
 - 5.1.3 Avoid sampling from the beginning or end of the aggregate run due to the potential for segregation.
- 5.2 Sampling From the Conveyor Belt (Stopped) – Avoid sampling at the beginning or end of the aggregate run due to the potential for segregation.
 - 5.2.1 Select sample by a random method.
 - 5.2.2 Stop the conveyor belt.
 - 5.2.3 Set the sampling template(s) on the belt. The template(s) must have enough space between the sides such that, the material contained between the sides will yield an increment of the required weight.
 - 5.2.4 Carefully scoop all material between the sides of the template(s) into a suitable container being sure to include all fines.
 - 5.2.5 Obtain a minimum of 3 approximately equal increments
 - 5.2.6 Combine increments to form a single sample.
- 5.3 Sampling From Transportation Units
 - 5.3.1 Visually divide the unit into four quadrants.
 - 5.3.2 Identify one sampling location in each quadrant.
 - 5.3.3 Dig down and remove approximately 0.3 m (1 ft.) of material to avoid surface segregation. Obtain each increment from below this level.
 - 5.3.4 Combine the increments to form a single sample.
- 5.4 Sampling From Stockpile – Method A – Coarse, Fine, or a Combination of Coarse and Fine Aggregates:
 - 5.4.1 Sampling From a Flat Surface Created by a Loader
 - 5.4.1.1 With a loader form a small sampling pile at the base of the stockpile
 - 5.4.1.2 Create a flat surface by having the loader back drag the small pile.
 - 5.4.1.3 Divide the flat surface into four quadrants.
 - 5.4.1.4 Collect a representative sample from each quadrant by fully inserting the shovel into the flat pile as vertically as possible, take care to exclude the underlying material, roll back the shovel and lift the material slowly out of the pile to avoid material rolling off the shovel.
 - 5.4.1.5 Combine the increments to form a single sample.