

SAMPLING OF AGGREGATES FOP FOR AASHTO T 2 (11)

Scope

This procedure covers sampling of coarse, fine, or a combination of coarse and fine aggregates (CA and FA) in accordance with AASHTO T 2. Sampling from conveyor belts, transport units, roadways, and stockpiles is covered.

Apparatus

- Shovels and/or scoops
- Sampling tubes of acceptable dimensions
- Mechanical sampling systems: normally a permanently attached device that allows a sample container to pass perpendicularly through the entire stream of material or diverts the entire stream of material into the container by manual, hydraulic, or pneumatic operation
- Belt template
- Sampling containers

Procedure - General

Sampling is as important as testing, and the technician shall use every precaution to obtain samples that will show the true nature and condition of the materials the sample represents. In all situations, determine the time or location for sampling in a random manner.

1. Wherever samples are taken, obtain multiple increments of approximately equal size.
2. Mix the increments thoroughly to form a field sample that meets or exceeds the minimum mass recommended in Table 1.

TABLE 1
Sample Sizes

Nominal Maximum Size* mm (in.)		Minimum Mass g (lb)	
2.36	(No. 8)	10,000	(25)
4.75	(No. 4)	10,000	(25)
9.5	(3/8)	10,000	(25)
12.5	(1/2)	15,000	(35)
19.0	(3/4)	25,000	(55)
25.0	(1)	50,000	(110)
37.5	(1 1/2)	75,000	(165)
50	(2)	100,000	(220)
63	(2 1/2)	125,000	(275)
75	(3)	150,000	(330)
90	(3 1/2)	175,000	(385)

* One sieve larger than the first sieve to retain more than 10 percent of the material using an agency specified set of sieves based on cumulative percent retained. Where large gaps in specification sieves exist, intermediate sieve(s) may be inserted to determine nominal maximum size. Maximum size is one size larger than nominal maximum size.

Note 1: Based upon the tests required, the sample size may be four times that shown in Table 2 of the FOP for AASHTO T 27/T 11, if that mass is more appropriate. As a general rule the field sample size should be such that, when split twice will provide a testing sample of proper size.

Procedure – Specific Situations

- **Conveyor Belts**

Avoid sampling at the beginning or end of the aggregate run due to the potential for segregation. Be careful when sampling in the rain. Make sure to capture fines that may stick to the belt or that the rain tends to wash away.

Method A (From the Belt):

1. Stop the belt.
2. Set the sampling template in place on the belt, avoiding intrusion by adjacent material.
3. Scoop off the sample, including all fines.
4. Obtain a minimum of 3 approximately equal increments.
5. Combine the increments to form a single sample.

Method B (From the Belt Discharge):

1. Pass a sampling device through the full stream of the material as it runs off the end of the conveyor belt. The sampling device may be manually, semi-automatic or automatically powered.
2. The sampling device shall pass through the stream at least twice, once in each direction, without overflowing while maintaining a constant speed during the sampling process.
3. When emptying the sampling device into the sample container, include all fines.
4. Combine the increments to form a single sample.

- **Transport Units**

1. Visually divide the unit into four quadrants.
2. Identify one sampling location in each quadrant.
3. Dig down and remove approximately 0.3 m (1 ft) of material to avoid surface segregation. Obtain each increment from below this level.
4. Combine the increments to form a single sample.

- **Roadways**

Method A (Berm or Windrow):

1. Sample prior to spreading.
2. Take the increments from a minimum of three random locations along the fully-formed windrow or berm. Do not take the increments from the beginning or the end of the windrow or berm.
3. Obtain full cross-section samples of approximately equal size at each location. Take care to exclude the underlying material.
4. Combine the increments to form a single sample.

Note 2: Sampling from berms or windrows may yield extra-large samples and may not be the preferred sampling location.

Method B (In-Place):

1. Sample after spreading and prior to compacting.
2. Take the increments from three random locations.
3. Obtain full-depth samples of approximately equal size from each location. Take care to exclude the underlying material.
4. Combine the increments to form a single sample.

- **Stockpiles**

Method A – Coarse, Fine, or a Combination of Coarse and Fine Aggregates:

1. Create, with a loader if one is available, horizontal surfaces with vertical faces in the top, middle, and bottom third of the stockpile. When no equipment is available a shovel may be used to create the horizontal surfaces with vertical faces.
2. Prevent continued sloughing by shoving a flat board in against the vertical face. Sloughed material will be discarded to create the horizontal surface.
3. Sample from the horizontal surface as close to the intersection as possible of the horizontal and vertical faces.
4. Obtain at least one increment of equal size from each of the top, middle, and bottom thirds of the pile.
5. Combine the increments to form a single sample.

Method B – Fine Aggregate (Alternate Tube Method):

1. Remove the outer layer that may have become segregated.
2. Using a sampling tube, obtain one increment of equal size from a minimum of five random locations on the pile.
3. Combine the increments to form a single sample.

Note 3: Sampling at stockpiles should be avoided whenever possible due to problems involved in obtaining a representative gradation of material.

PERFORMANCE EXAM CHECKLIST

**SAMPLING OF AGGREGATES
FOP FOR AASHTO T 2**

Participant Name _____ Exam Date _____

Record the symbols “P” for passing or “F” for failing on each step of the checklist.

Procedure Element	Trial 1	Trial 2
Conveyor Belts – Method A (From the Belt)		
1. Belt stopped?	_____	_____
2. Sampling template set on belt, avoiding intrusion of adjacent material?	_____	_____
3. Sample, including all fines, scooped off?	_____	_____
4. Samples taken in at least three approximately equal increments?	_____	_____
Conveyor Belts – Method B (From the Belt Discharge)		
5. Sampling device passed through full stream of material twice (once in each direction) as it runs off end of belt?	_____	_____
Transport Units		
6. Unit divided into four quadrants?	_____	_____
7. Increment obtained from each quadrant, 0.3 m (1ft.) below surface?	_____	_____
8. Increments combined to make up the sample?	_____	_____
Roadways (berm or windrow)		
9. Sample taken prior to spreading?	_____	_____
10. Full depth of material taken?	_____	_____
11. Underlying material excluded?	_____	_____
12. Samples taken in at least three approximately equal increments?	_____	_____
Roadways (in-place)		
13. Sample taken after spreading?	_____	_____
14. Full depth of material taken?	_____	_____
15. Underlying material excluded?	_____	_____
16. Samples taken in at least three approximately equal increments?	_____	_____

OVER

Stockpiles

- 17. Created horizontal surfaces with vertical faces? _____
- 18. At least one increment taken from each of the top, middle, and bottom thirds of the stockpile. _____
- 19. When using a sampling tube, outer layer removed and increments taken from at least five locations with a sampling tube? _____

General

- 20. Increments mixed thoroughly to form sample? _____

Comments: First attempt: Pass____ Fail____ Second attempt: Pass____ Fail _____

Examiner Signature _____WAQTC #:_____