

**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.**

<b>Procedure Element</b>	<b>Trial 1</b>	<b>Trial 2</b>
<b>Conveyor Belts – Method A (From the Belt)</b>		
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?	_____	_____
<b>Conveyor Belts – Method B (From the Belt Discharge)</b>		
5. Sampling device passed through full stream of material twice (once in each direction) as it runs off end of belt?	_____	_____
<b>Transport Units</b>		
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?	_____	_____
<b>Roadways Method A (Berm or Windrow)</b>		
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?	_____	_____
<b>Roadways Method B (In-place)</b>		
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**

**Stockpile Method A– (Loader sampling)**

- 17. Loader operator directed to enter the stockpile with the bucket at least 150 mm (6 in.) above ground level without contaminating the stockpile? \_\_\_\_\_
- 18. First bucketful discarded? \_\_\_\_\_
- 19. The loader re-entered the stockpile and obtained a full loader bucket of the material with the bucket tilted back and up? \_\_\_\_\_
- 20. A small sampling pile formed at the base of the stockpile by gently rolling the material out of the bucket with the bucket just high enough to permit free-flow of the material? \_\_\_\_\_
- 21. A flat surface created by the loader back dragging the small pile? \_\_\_\_\_
- 22. Increment sampled from each quadrant by fully inserting the shovel into the flat pile as vertically as possible, care taken to exclude the underlying material? \_\_\_\_\_

**Stockpile Method B (Stockpile Face)**

- 23. Created horizontal surfaces with vertical faces? \_\_\_\_\_
- 24. At least one increment taken from each of the top, middle, and bottom thirds of the stockpile. \_\_\_\_\_

**Stockpile Method C – Alternate Tube Method (Fine Aggregate)**

- 25. Outer layer removed? \_\_\_\_\_
- 26. Increments taken from at least five locations with a sampling tube? \_\_\_\_\_

**General**

- 27. Increments mixed thoroughly to form sample? \_\_\_\_\_

Comments: First attempt: Pass\_\_\_\_ Fail\_\_\_\_ Second attempt: Pass\_\_\_\_ Fail \_\_\_\_\_

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Examiner Signature \_\_\_\_\_ WAQTC #: \_\_\_\_\_

**PERFORMANCE EXAM CHECKLIST (ORAL)**

**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.

<b>Procedure Element</b>	<b>Trial 1</b>	<b>Trial 2</b>
<b>1. How is a sample obtained from a conveyor belt using Method A?</b>		
a) Stop the belt.	_____	_____
b) Set the sampling template on belt, avoiding intrusion of adjacent material.	_____	_____
c) All the material is removed from belt including all fines.	_____	_____
d) Take at least approximately three equal increments.	_____	_____
<b>2. How is a sample obtained from a conveyor belt using Method B?</b>		
a) Pass the sampling device through a full stream of material as it runs off the end of the belt.	_____	_____
b) The device must be passed through at least twice (once in each direction).	_____	_____
<b>3. How is a sample obtained from a Transport Unit?</b>		
a) Divide the unit into four quadrants.	_____	_____
b) Dig 0.3 m (1 ft.) below surface.	_____	_____
c) Obtain an increment from each quadrant.	_____	_____
<b>4. Describe the procedure for sampling from roadways Method A (Berm or Windrow).</b>		
a) Sample prior to spreading	_____	_____
b) Sample the material full depth without obtaining underlying material.	_____	_____
c) Take at least three approximately equal increments.	_____	_____
<b>5. Describe the procedure for sampling from roadway Method B (In-place).</b>		
a) Sample after spreading, prior to compaction.	_____	_____
b) Sample the material full depth without obtaining underlying material.	_____	_____
c) Take at least three approximately equal increments.	_____	_____
<b>6. Describe the procedure for sampling a stockpile Method A (Loader Sampling).</b>		
a) Loader creates sampling pile with a flat surface.	_____	_____
b) Divide the flat surface into four quadrants.	_____	_____
c) Take an approximately equal increment from each quadrant, excluding the underlying material.	_____	_____

**OVER**

**7. Describe the procedure for sampling a stockpile Method B (Stockpile Face Sampling).**

- a) Create horizontal surfaces with vertical faces and at least one increment taken from each of the top, middle, and bottom thirds of the stockpile. \_\_\_\_\_

**8. Describe the procedure for sampling a stockpile Method C – Alternate Tube Method (Fine Aggregate).**

- a) Remove the outer layer and increments taken from at least five locations. \_\_\_\_\_

**9. After obtaining the increments what should you do before performing R 76?**

- a) Increments mixed thoroughly to form sample. \_\_\_\_\_

Comments: First attempt: Pass\_\_\_\_Fail\_\_\_\_\_ Second attempt: Pass\_\_\_\_Fail\_\_\_\_\_

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Examiner Signature \_\_\_\_\_ WAQTC #: \_\_\_\_\_

**PERFORMANCE EXAM CHECKLIST**

**REDUCING FIELD SAMPLES OF AGGREGATES TO TESTING SIZE  
FOP FOR AASHTO R 76**

Participant Name \_\_\_\_\_ Exam Date \_\_\_\_\_

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

**Trial 1 Trial 2**

**Method A - Splitting**

- 1. Material spread uniformly on feeder? \_\_\_\_\_
- 2. Rate of feed slow enough so that sample flows freely through chutes? \_\_\_\_\_
- 3. Material in one pan re-split until desired mass is obtained? \_\_\_\_\_

**Method B - Quartering**

- 1. Sample placed on clean, hard, and level surface? \_\_\_\_\_
- 2. Mixed by turning over 4 times with shovel or by pulling sheet horizontally over pile? \_\_\_\_\_
- 3. Conical pile formed? \_\_\_\_\_
- 4. Diameter equal to about 4 to 8 times thickness? \_\_\_\_\_
- 5. Pile flattened to uniform thickness and diameter? \_\_\_\_\_
- 6. Divided into 4 equal portions with shovel or trowel? \_\_\_\_\_
- 7. Two diagonally opposite quarters, including all fine material, removed? \_\_\_\_\_
- 8. Cleared space between quarters brushed clean? \_\_\_\_\_
- 9. Process continued until desired sample size is obtained when two opposite quarters combined? \_\_\_\_\_

*The sample may be placed upon a sheet and a stick or pipe may be placed under the sheet to divide the pile into quarters.*

Comments: First attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_ Second attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_

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Examiner Signature \_\_\_\_\_ WAQTC #: \_\_\_\_\_



**PERFORMANCE EXAM CHECKLIST**

**TOTAL MOISTURE CONTENT OF AGGREGATE BY DRYING  
FOP FOR AASHTO T 255**

Participant Name \_\_\_\_\_ Exam Date \_\_\_\_\_

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

<b>Procedure Element</b>	<b>Trial 1</b>	<b>Trial 2</b>
1. Representative sample of appropriate mass obtained?	_____	_____
2. Mass of container determined to 0.1 percent or 0.1 g?	_____	_____
3. Sample placed in container and wet mass determined to 0.1 percent or 0.1 g?	_____	_____
4. Test sample mass conforms to the required mass?	_____	_____
5. Wet mass of sample determined to 0.1 percent or 0.1 g?	_____	_____
6. Loss of moisture avoided prior to mass determination?	_____	_____
7. Sample dried by a suitable heat source?	_____	_____
8. If aggregate heated by means other than a controlled oven, is sample stirred to avoid localized overheating?	_____	_____
9. Is aggregate heated for the additional, specified time (forced draft, ventilated, convection – 30 minutes; microwave – 2 minutes; other – 10 minutes) and then mass determined and compared to previous mass – showing less than 0.10 percent loss?	_____	_____
10. Sample cooled prior to dry mass determination to 0.1 percent or 0.1 g?	_____	_____
11. Calculations performed properly and results reported to the nearest 0.1 percent?	_____	_____

Comments: First attempt: Pass\_\_\_\_Fail\_\_\_\_ Second attempt: Pass\_\_\_\_Fail\_\_\_\_  
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Examiner Signature \_\_\_\_\_ WAQTC #: \_\_\_\_\_





**PERFORMANCE EXAM CHECKLIST**

**METHOD A  
SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES  
FOP FOR AASHTO T 27  
MATERIALS FINER THAN 75 µm (No. 200) SIEVE IN MINERAL AGGREGATE  
BY WASHING  
FOP FOR AASHTO T 11**

Participant Name \_\_\_\_\_ Exam Date \_\_\_\_\_

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

<b>Procedure Element</b>	<b>Trial 1</b>	<b>Trial 2</b>
1. Minimum sample mass meets requirement of Table 2?	_____	_____
2. Test sample dried to a constant mass by FOP for AASHTO T 255?	_____	_____
3. Test sample cooled and mass determined to nearest 0.1 percent or 0.1 g?	_____	_____
4. Sample placed in container and covered with water? (If specification requires that the amount of material finer than the 75 µm (No. 200) sieve is to be determined.)	_____	_____
5. Contents of the container vigorously agitated?	_____	_____
6. Complete separation of coarse and fine particles achieved?	_____	_____
7. Wash water poured through nested sieves such as 2 mm (No. 10) and 75 µm (No. 200)?	_____	_____
8. Operation continued until wash water is clear?	_____	_____
9. Material retained on sieves returned to washed sample?	_____	_____
10. Washed aggregate dried to a constant mass by FOP for AASHTO T 255?	_____	_____
11. Washed aggregate cooled and mass determined to nearest 0.1 percent or 0.1 g?	_____	_____
12. Sample placed in nest of sieves specified? (Additional sieves may be used to prevent overloading as allowed in FOP.)	_____	_____
13. Material sieved in verified mechanical shaker for proper time?	_____	_____
14. Mass of residue on each sieve and pan determined to 0.1 g?	_____	_____
15. Total mass of material after sieving agrees with mass before sieving to within 0.3 percent?	_____	_____

**OVER**

**Procedure Element**

**Trial 1 Trial 2**

16. Percentages calculated to the nearest 0.1 percent and reported to the nearest whole number, except 75 μm (No.200) which is reported to the nearest 0.1 percent?

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17. Percentage calculations based on original dry sample mass?

\_\_\_\_\_

18. Calculations performed properly?

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Comments: First attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_ Second attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_

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Examiner Signature \_\_\_\_\_

WAQTC #: \_\_\_\_\_

**PERFORMANCE EXAM CHECKLIST**

**METHOD B  
SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES  
FOP FOR AASHTO T 27  
MATERIALS FINER THAN 75 µm (No. 200) SIEVE IN MINERAL AGGREGATE  
BY WASHING  
FOP FOR AASHTO T 11**

Participant Name \_\_\_\_\_ Exam Date \_\_\_\_\_

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

<b>Procedure Element</b>	<b>Trial 1</b>	<b>Trial 2</b>
1. Minimum sample mass meets requirement of Table 2?	_____	_____
2. Test sample dried to a constant mass by FOP for AASHTO T 255?	_____	_____
3. Test sample cooled and mass determined to nearest 0.1 percent or 0.1 g?	_____	_____
4. Sample placed in container and covered with water? (If specification requires that the amount of material finer than the 75 µm (No. 200) sieve is to be determined.)	_____	_____
5. Contents of the container vigorously agitated?	_____	_____
6. Complete separation of coarse and fine particles achieved?	_____	_____
7. Wash water poured through nested sieves such as 2 mm (No. 10) and 75 µm (No. 200)?	_____	_____
8. Operation continued until wash water is clear?	_____	_____
9. Material retained on sieves returned to washed sample?	_____	_____
10. Washed aggregate dried to a constant mass by FOP for AASHTO T 255?	_____	_____
11. Washed aggregate cooled and mass determined to nearest 0.1 percent or 0.1 g?	_____	_____
12. Sample placed in nest of sieves specified? (Additional sieves may be used to prevent overloading as allowed in FOP.)	_____	_____
13. Material sieved in verified mechanical shaker for proper time?	_____	_____
0.1 Mass of residue on each sieve and pan determined to the nearest percent or 0.1 g?	_____	_____
15 Total mass of material after sieving agrees with mass before sieving to within 0.3 percent?	_____	_____

**OVER**

Procedure Element	Trial 1	Trial 2
16. Material in pan reduced in accordance with FOP for AASHTO R 76 to a minimum sample size of 500 g and weighed to the nearest 0.1 g?	_____	_____
17. Sample placed in nest of sieves specified? (Additional sieves may be used to prevent overloading as allowed in FOP.)	_____	_____
18. Material sieved in verified mechanical shaker for proper time?	_____	_____
19. Mass of residue on each sieve and pan determined to the nearest percent or 0.1 g?	_____	_____
20. Total mass of material after sieving agrees with mass before sieving to within 0.3 percent?	_____	_____
21. Percentages calculated to the nearest 0.1 percent and reported to the nearest whole number, except 75 μm (No.200) which is reported to the nearest 0.1 percent?	_____	_____
22. Percentage calculations based on original dry sample mass?	_____	_____
23. Calculations performed properly?	_____	_____

Comments:      First attempt:    Pass\_\_\_\_\_Fail\_\_\_\_\_      Second attempt:    Pass\_\_\_\_\_Fail\_\_\_\_\_

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Examiner Signature \_\_\_\_\_

WAQTC #: \_\_\_\_\_

**PERFORMANCE EXAM CHECKLIST**

**METHOD C  
SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES  
FOP FOR AASHTO T 27  
MATERIALS FINER THAN 75 µm (No. 200) SIEVE IN MINERAL AGGREGATE  
BY WASHING  
FOP FOR AASHTO T 11**

Participant Name \_\_\_\_\_ Exam Date \_\_\_\_\_

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

Procedure Element	Trial 2	Trial 1
1. Minimum sample mass meets requirement of Table 2?	_____	_____
2. Test sample dried to a constant mass by FOP for AASHTO T 255?	_____	_____
3. Test sample cooled and mass determined to the nearest 0.1 percent or 0.1 g?	_____	_____
4. Sample placed in nest of sieves specified? (Additional sieves may be used to prevent overloading as allowed in FOP.)	_____	_____
5. Material sieved in verified mechanical shaker for proper time?	_____	_____
6. Mass of residue on each sieve and in pan determined to the nearest 0.1 percent or 0.1 g?	_____	_____
7. Complete separation of coarse and fine particles achieved?	_____	_____
8. Total mass of material after sieving agrees with mass before sieving to within 0.3 percent?	_____	_____
9. Material in pan reduced to test size for washing in accordance with FOP for AASHTO R 76?	_____	_____
10. Mass of the fine aggregate wash sample determined to nearest 0.1 g?	_____	_____
11. Sample placed in container and covered with water?	_____	_____
12. Contents of the container vigorously agitated?	_____	_____
13. Complete separation of coarse and fine particles achieved?	_____	_____
14. Wash water poured through a set of nested sieves, such as a No. 10 over the No. 200?	_____	_____
15. Operation continued until wash water is clear?	_____	_____
16. Material retained on sieves returned to washed sample?	_____	_____



**PERFORMANCE EXAM CHECKLIST**

**DETERMINING THE PERCENTAGE OF FRACTURE IN COARSE AGGREGATE FOP FOR AASHTO T 335**

Participant Name \_\_\_\_\_ Exam Date \_\_\_\_\_

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

<b>Procedure Element</b>	<b>Trial 1</b>	<b>Trial 2</b>
1. Sample properly sieved through specified sieve(s)?	_____	_____
2. Sample reduced to correct size?	_____	_____
3. Sample dried and cooled, if necessary?	_____	_____
4. Particles separated into fractured, unfractured, and questionable categories?	_____	_____
5. Dry mass of each category determined to nearest 0.1 g?	_____	_____
6. Questionable category resorted if more than 15 percent of total mass falls in that category?	_____	_____
7. Fracture calculation performed correctly?	_____	_____

Comments: First attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_ Second attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_

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Examiner Signature \_\_\_\_\_ WAQTC #: \_\_\_\_\_





**PERFORMANCE EXAM CHECKLIST**

**PLASTIC FINES IN GRADED AGGREGATES AND SOILS BY THE USE OF THE SAND EQUIVALENT TEST  
FOP FOR AASHTO T 176**

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
<b>Sample Preparation</b>		
1. Sample passed through 4.75 mm (No. 4) sieve?	_____	_____
2. Material in clods broken up and re-screened?	_____	_____
3. Split or quarter 1,000 to 1,500g of material passing the 4.75 mm (No. 4) sieve? NOTE: If necessary, the material may be dampened before splitting to avoid segregation or loss of fines.	_____	_____
4. No fines lost?	_____	_____
5. Working solution dated?	_____	_____
6. Temperature of working solution 22 ±3°C (72 ±5°F)?	_____	_____
7. Working calcium chloride solution 915 ±25 mm (36 ±1in) above the work surface?	_____	_____
8. 101.6 ±2.5 mm (4 ±0.1in) working calcium chloride solution siphoned into cylinder?	_____	_____
9. Material checked for moisture condition by tightly squeezing small portion in palm of hand and forming a cast?	_____	_____
10. Sample at proper water content?		
a. If too dry (cast crumbles easily) water added, re-mixed, covered, and allowed to stand for at least 15 minutes?	_____	_____
b. If too wet (shows free water) sample drained, air dried and mixed frequently?	_____	_____
11. Sample placed on splitting cloth and mixed by alternately lifting each corner of the cloth and pulling it over the sample toward diagonally opposite corner, causing material to be rolled?	_____	_____
12. Is material thoroughly mixed?	_____	_____
13. When material appears to be homogeneous, mixing finished with sample in a pile near center of cloth?	_____	_____
14. Fill the 85 mL (3 oz) tin by pushing through base of pile with other hand on opposite side of pile?	_____	_____
15. Material fills tin to overflowing?	_____	_____

**OVER**

Procedure Element	Trial 1	Trial 2
16. Material compacted into tin with palm of hand?	_____	_____
17. Tin struck off level full with spatula or straightedge?	_____	_____
18. Prepared sample funneled into cylinder with no loss of fines?	_____	_____
19. Bottom of cylinder tapped sharply on heel of hand several times to release air bubbles?	_____	_____
20. Wetted sample allowed to stand undisturbed for 10 min. ±1 min.?	_____	_____
21. Cylinder stoppered and material loosened from bottom by shaking?	_____	_____
22. Stoppered cylinder placed properly in mechanical shaker and cylinder shaken 45 ±1 seconds?	_____	_____
23. Following shaking, cylinder set vertical on work surface and stopper removed?	_____	_____
24. Irrigator tube inserted in cylinder and material rinsed from cylinder walls as irrigator is lowered?	_____	_____
25. Irrigator tube forced through material to bottom of cylinder by gentle stabbing and twisting action?	_____	_____
26. Stabbing and twisting motion applied until cylinder filled to 381 mm (15 in.) mark?	_____	_____
27. Liquid raised and maintained at 381 mm (15 in.) mark while irrigator is being withdrawn?	_____	_____
28. Liquid at the 381 mm (15 in.) mark?	_____	_____
29. Contents let stand 20 minutes ±15 seconds?	_____	_____
30. Timing started immediately after withdrawal of irrigator?	_____	_____
31. No vibration or disturbance of the sample?	_____	_____
32. Readings taken at 20 minutes or up to 30 minutes, when a definite line appears?	_____	_____
33. Clay level correctly read, rounded, and recorded?	_____	_____
34. Weighted foot assembly lowered into cylinder without hitting mouth of cylinder?	_____	_____
35. Sand level correctly read, rounded, and recorded?	_____	_____
36. Calculations performed correctly?	_____	_____

Comments: First attempt: Pass\_\_\_\_\_Fail\_\_\_\_\_ Second attempt: Pass\_\_\_\_\_Fail\_\_\_\_\_

Examiner Signature \_\_\_\_\_

WAQTC #: \_\_\_\_\_