

PERFORMANCE EXAM CHECKLIST

**SAMPLING FRESHLY MIXED CONCRETE
FOP FOR WAQTC TM 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
1. Receptacle dampened and excess water removed?	_____	_____
2. Obtain a representative sample from drum mixer:		
a. Concrete sampled after 1/2 m ³ (1/2 yd ³) discharged?	_____	_____
b. Receptacle passed through entire discharge stream or discharge stream completely diverted into sampling container?	_____	_____
3. Obtain a representative sample from a paving mixer:		
a. Concrete sampled after all the concrete has been discharged?	_____	_____
b. Material obtained from at least 5 different locations in the pile?	_____	_____
c. Avoid contaminating the sample with sub-grade materials.	_____	_____
4. Obtain a representative sample from a pump:		
a. Concrete sampled after 1/2 m ³ (1/2 yd ³) has been discharged?	_____	_____
b. All the pump slurry is out of the lines?	_____	_____
c. Receptacle passed through entire discharge stream or discharge stream completely diverted into sampling container?	_____	_____
d. Do not lower the pump arm from the placement position.	_____	_____
5. Samples transported to place of testing?	_____	_____
6. Sample(s) combined, or remixed, or both?	_____	_____
7. Sample protected?	_____	_____
8. Minimum size of sample used for strength tests 0.03 m ³ (1ft ³)?	_____	_____
9. Completed temperature test within 5 minutes of obtaining sample?	_____	_____
10. Start tests for slump and air within 5 minutes of obtaining sample?	_____	_____
11. Start molding cylinders within 15 minutes of obtaining sample?	_____	_____
12. Protect sample against rapid evaporation and contamination?	_____	_____

OVER

Procedure Element

Trial 1 Trial 2

13. Wet Sieving:

- a. Required sieve size determined for test method to be performed? _____
- b. Concrete placed on sieve and doesn't overload the sieve. _____
- c. Sieve shaken until no more material passes the sieve. _____
- d. Sieving continued until required testing size obtained. _____
- e. Oversized aggregate discarded. _____
- f. Sample remixed. _____

Comments: First attempt: Pass____Fail_____ Second attempt: Pass____Fail_____

Examiner Signature _____ WAQTC #: _____

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PERFORMANCE EXAM CHECKLIST (ORAL)

**SAMPLING FRESHLY MIXED CONCRETE
FOP FOR WAQTC TM 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
1. What is the minimum sample size?		
a. 0.03 m ³ or 1 ft ³	_____	_____
2. Describe the surface of the receptacle before the sample is introduced into it?		
a. It must be dampened.	_____	_____
3. Describe how to obtain a representative sample from a drum mixer.		
a. Sample the concrete after 1/2 m ³ (1/2 yd ³) has been discharged.	_____	_____
b. Pass receptacle through entire discharge stream or completely divert discharge stream into sampling container.	_____	_____
4. Describe how to obtain a representative sample from a paving mixer.		
a. Sample the concrete after all the concrete has been discharged.	_____	_____
b. Obtain the material from at least 5 different locations in the pile.	_____	_____
c. Avoid contaminating the sample with sub-grade materials.	_____	_____
5. Describe how to obtain a representative sample from a pump:		
a. Sample the concrete after 1/2 m ³ (1/2 yd ³) has been discharged.	_____	_____
b. Make sure all the pump slurry is out of the lines.	_____	_____
c. Pass receptacle through entire discharge stream or completely divert discharge stream into sampling container.	_____	_____
d. Do not lower the pump arm from the placement position.	_____	_____
6. After obtaining the sample or samples what must you do?		
a. Transport samples to place of testing.	_____	_____
7. What must be done with the sample or samples once you have transported them to the place of testing?		
a. Combine and remix the sample.	_____	_____
b. Protect sample against rapid evaporation and contamination.	_____	_____

OVER

Procedure Element	Trial 1	Trial 2
8. What are the two time parameters associated with sampling?		
a. Complete temperature test and start tests for slump and air within 5 minutes of sample being obtained?	_____	_____
b. Start molding cylinders within 15 minutes of sample being obtained?	_____	_____
9. What test methods may require wet sieving?		
a. Slump, air content, and strength specimens?	_____	_____
10. The sieve size used for wet sieving is based on?		
a. The test method to be performed.	_____	_____
11. How long must you continue wet sieving?		
a. Until a sample of sufficient size for the test being performed is obtained.	_____	_____
12. What is done with the oversized aggregate?		
a. Discard it.	_____	_____
13. What must be done to the sieved sample before testing?		
a. Remix.	_____	_____

Comments: First attempt: Pass _____ Fail _____ Second attempt: Pass _____ Fail _____

Examiner Signature _____ WAQTC #: _____

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PERFORMANCE EXAM CHECKLIST

**TEMPERATURE OF FRESHLY MIXED CONCRETE
FOP FOR AASHTO T 309**

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
1. Obtain sample of concrete large enough to provide a minimum of 75 mm (3 in.) of concrete cover around sensor in all directions?	_____	_____
2. Place temperature measuring device in sample with a minimum of 75 mm (3 in.) cover around sensor?	_____	_____
3. Gently press concrete around thermometer?	_____	_____
4. Read temperature after a minimum of 2 minutes or when temperature reading stabilizes?	_____	_____
5. Complete temperature measurement within 5 minutes of obtaining sample?	_____	_____
6. Record temperature to nearest 0.5°C (1°F)?	_____	_____

Comments: First attempt: Pass _____ Fail _____ Second attempt: Pass _____ Fail _____

Examiner Signature _____ **WAQTC #:** _____

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PERFORMANCE EXAM CHECKLIST

**SLUMP OF HYDRAULIC CEMENT CONCRETE
FOP FOR AASHTO T 119**

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
First layer		
1. Mold and floor or base plate dampened?	_____	_____
2. Mold held firmly against the base by standing on the two foot pieces? Mold not allowed to move in any way during filling?	_____	_____
3. Representative sample scooped into the mold, moving a scoop around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____
4. Mold approximately one third (by volume), 67 mm (2 5/8 in.) deep?	_____	_____
5. Layer rodded throughout its depth 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
Second layer		
6. Representative samples scooped into the mold, moving a scoop around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____
7. Mold filled approximately two thirds (by volume), 155 mm (6 1/8 in.), deep?	_____	_____
8. Layer rodded throughout its depth 25 times with hemispherical end of rod, uniformly distributing strokes, penetrate approximately 25 mm (1 in.) into the bottom layer?	_____	_____
Third layer		
9. Representative sample scooped into the mold, moving a scoop around the perimeter of the mold to evenly distribute the concrete as discharged??	_____	_____
10. Mold filled to just over the top of the mold?	_____	_____
11. Layer rodded throughout its depth 25 times with hemispherical end of rod, uniformly distributing strokes, penetrate approximately 25 mm (1 in.) into the second layer?	_____	_____
12. Excess concrete kept above the mold at all times while rodding?	_____	_____
13. Concrete struck off level with top of mold using tamping rod?	_____	_____

OVER

Procedure Element

Trial 1 Trial 2

- 14. Concrete removed from around the outside bottom of the mold? _____
- 15. Mold lifted upward 300 mm (12 in.) in one smooth motion, without a lateral or twisting motion of the mold, in 5 ±2 seconds? _____
- 16. Test performed from start of filling through removal of the mold within 2 1/2 minutes? _____
- 17. Slump immediately measured to the nearest 5 mm (1/4 in.) from the top of the mold to the displaced original center of the top surface of the specimen? _____

Comments: First attempt: Pass_____Fail_____ Second attempt: Pass_____Fail_____

Examiner Signature _____ WAQTC #: _____

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PERFORMANCE EXAM CHECKLIST

**DENSITY (UNIT WEIGHT), YIELD, AND AIR CONTENT (GRAVIMETRIC) OF CONCRETE
FOP FOR AASHTO T 121**

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
1. Mass and volume of empty measure determined?	_____	_____
First Layer		
2. Dampened measure filled approximately one third full, moving a scoop around the perimeter of the measure to evenly distribute the concrete as discharged?	_____	_____
3. Layer rodded throughout its depth 25 times, without forcibly striking the bottom of the measure, with hemispherical end of rod, uniformly distributing strokes?	_____	_____
4. Perimeter of the measure tapped 10 to 15 times with the mallet after rodding?	_____	_____
Second layer		
5. Measure filled approximately two thirds full, moving a scoop around the perimeter of the measure to evenly distribute the concrete as discharged?	_____	_____
6. Layer rodded throughout its depth, just penetrating the previous layer (approximately 25 mm (1 in.) 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
7. Perimeter of the measure tapped 10 to 15 times with the mallet after rodding?	_____	_____
Third layer		
8. Measure slightly overfilled, moving a scoop around the perimeter of the measure to evenly distribute the concrete as discharged?	_____	_____
9. Layer rodded throughout its depth, just penetrating the previous layer (approximately 25 mm (1 in.) 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
10. Perimeter of the measure tapped 10 to 15 times with the mallet after rodding each layer?	_____	_____
11. Any excess concrete removed using a trowel or a scoop, or small quantity of concrete added to correct a deficiency, after consolidation of final layer?	_____	_____

OVER

Procedure Element

Trial 1 Trial 2

- 12. Strike-off plate placed flat on the measure covering approximately 2/3 of the surface, then sawing action used to withdraw the strike-off plate across the previously covered surface? _____
- 13. Strike-off plate placed flat on the measure covering approximately 2/3 of the surface, then sawing action used to advance the plate across the entire measure surface? _____
- 14. Strike off completed using the inclined edge of the plate creating a smooth surface? _____
- 15. All excess concrete cleaned off and mass of full measure determined? _____
- 16. Net mass calculated? _____
- 17. Density calculated correctly? _____

Comments: First attempt: Pass _____ Fail _____ Second attempt: Pass _____ Fail _____

Examiner Signature _____ WAQTC #: _____

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PERFORMANCE EXAM CHECKLIST

**AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE PRESSURE METHOD
FOP FOR AASHTO T 152**

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
1. Representative sample selected?	_____	_____
First Layer		
2. Dampened measure filled approximately one third full, moving a scoop around the perimeter of the measure to evenly distribute the concrete as discharged?	_____	_____
3. Layer rodded throughout its depth 25 times, without forcibly striking the bottom of the measure, with hemispherical end of rod, uniformly distributing strokes?	_____	_____
4. Perimeter of the measure tapped 10 to 15 times with the mallet after rodding?	_____	_____
Second layer		
5. Measure filled approximately two thirds full, moving a scoop around the perimeter of the measure to evenly distribute the concrete as discharged?	_____	_____
6. Layer rodded throughout its depth, just penetrating the previous layer (approximately 25 mm (1 in.)) 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
7. Perimeter of the measure tapped 10 to 15 times with the mallet after rodding?	_____	_____
Third layer		
8. Measure slightly overfilled, moving a scoop around the perimeter of the measure to evenly distribute the concrete as discharged?	_____	_____
9. Layer rodded throughout its depth, just penetrating the previous layer (approximately 25 mm (1 in.)) 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
10. Perimeter of the measure tapped 10 to 15 times with the mallet after rodding each layer?	_____	_____
11. Concrete struck off level with top of the measure using the bar or strike-off plate and rim cleaned off?	_____	_____
12. Top flange of base cleaned?	_____	_____

OVER

Procedure Element

Trial 1 Trial 2

Using a Type B Meter:

- 13. Both petcocks open? _____
- 14. Air valve closed between air chamber and the measure? _____
- 15. Inside of cover cleaned and moistened before clamping to base? _____
- 16. Water injected through petcock until it flows out the other petcock? _____
- 17. Water injection into the petcock continued while jarring and or rocking the meter to insure all air is expelled? _____
- 18. Air pumped up to just past initial pressure line? _____
- 19. A few seconds allowed for the compressed air to stabilize? _____
- 20. Gauge adjusted to the initial pressure? _____
- 21. Both petcocks closed? _____
- 22. Air valve opened between chamber and measure? _____
- 23. The outside of measure tapped smartly with the mallet? _____
- 24. With the main air valve open, gauge lightly tapped and air percentage read to the nearest 0.1 percent? _____
- 25. Air valve released or closed and then petcocks opened to release pressure before removing the cover? _____
- 26. Aggregate correction factor applied if required? _____
- 27. Air content recorded to 0.1 percent? _____

Comments: First attempt: Pass _____ Fail _____ Second attempt: Pass _____ Fail _____

Examiner Signature _____ WAQTC #: _____

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PERFORMANCE EXAM CHECKLIST

**MAKING AND CURING CONCRETE TEST SPECIMENS IN THE FIELD
FOP FOR AASHTO T 23 (4 X 8)**

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
1. Molds placed on a level, rigid, horizontal surface free of vibration?	_____	_____
2. Representative sample selected?	_____	_____
3. Making of specimens begun within 15 minutes of sampling?	_____	_____
First layer		
4. Concrete placed in the mold, moving a scoop or trowel around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____
5. Mold filled approximately half full?	_____	_____
6. Layer rodded throughout its depth 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
7. Sides of the mold tapped 10-15 times after rodding?		
a. With mallet for reusable steel molds	_____	_____
b. With the open hand for flexible light-gauge molds	_____	_____
Second layer		
8. Concrete placed in the mold, moving a scoop or trowel around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____
9. Mold slightly overfilled on the last layer?	_____	_____
10. Layer rodded 25 times with hemispherical end of rod, uniformly distributing strokes and penetrating 25 mm (1 in.) into the underlying layer?	_____	_____
11. Sides of the mold tapped 10-15 times after rodding each layer?		
a. With mallet for reusable steel molds	_____	_____
b. With the open hand for flexible light-gauge molds	_____	_____
12. Concrete struck off with tamping rod, float or trowel?	_____	_____
13. Specimens covered with non-absorptive, non-reactive cap or plate?	_____	_____
14. Initial curing addressed?	_____	_____

OVER

Comments: First attempt: Pass ____ Fail ____ Second attempt: Pass ____ Fail ____

Examiner Signature _____ WAQTC #: _____

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PERFORMANCE EXAM CHECKLIST

**MAKING AND CURING CONCRETE TEST SPECIMENS IN THE FIELD
FOP FOR AASHTO T 23 (6 X 12)**

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
1. Molds placed on a level, rigid, horizontal surface free of vibration?	_____	_____
2. Representative sample selected?	_____	_____
3. Making of specimens begun within 15 minutes of sampling?	_____	_____
First layer		
4. Concrete placed in the mold, moving a scoop or trowel around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____
5. Mold filled approximately one third full?	_____	_____
6. Layer rodded throughout its depth 25 times with hemispherical end of rod, uniformly distributing strokes?	_____	_____
7. Sides of the mold tapped 10-15 times after rodding each layer?		
a. With mallet for reusable steel molds	_____	_____
b. With the open hand for flexible light-gauge molds	_____	_____
Second layer		
8. Concrete placed in the mold, moving a scoop or trowel around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____
9. Mold filled approximately two thirds full?	_____	_____
10. Layer rodded 25 times with hemispherical end of rod, uniformly distributing strokes and penetrating 25 mm (1 in.) into the underlying layer?	_____	_____
11. Sides of the mold tapped 10-15 times after rodding?		
a. With mallet for reusable steel molds	_____	_____
b. With the open hand for flexible light-gauge molds	_____	_____
Third layer		
12. Concrete placed in the mold, moving a scoop or trowel around the perimeter of the mold to evenly distribute the concrete as discharged?	_____	_____

OVER

Procedure Element	Trial 1	Trial 2
13. Mold slightly overfilled on the last layer?	_____	_____
14. Layer rodded 25 times with hemispherical end of rod, uniformly distributing strokes and penetrating 25 mm (1 in.) into the underlying layer?	_____	_____
15. Sides of the mold tapped 10-15 times after rodding?		
a. With mallet for reusable steel molds	_____	_____
b. With the open hand for flexible light-gauge molds	_____	_____
16. Concrete struck off with tamping rod, straightedge, float, or trowel?	_____	_____
17. Specimens covered with non-absorptive, non-reactive cap or plate?	_____	_____
18. Initial curing addressed?	_____	_____

Comments: First attempt: Pass_____Fail_____ Second attempt: Pass_____Fail_____

Examiner Signature _____ WAQTC #: _____

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