

**MATERIALS SAMPLING & TESTING  
PERFORMANCE CHECKLIST**

**HCMT Program**

**Reviewed Date: March 12, 2025**

## **AASHTO R 90 Sampling Aggregate Products**

### **Sampling Coarse Aggregate**

#### **Procedure**

- 1 Determine the time or location using?
- 2 Ensure equipment and containers are \_\_\_\_?
- 3 Field Sample Size - Coarse Aggregate - #57 (1in. Nom. Max.

Show the evaluator the proper table and determine the minimum size field sample for the requested gradation.

#### **Sampling From A Conveyor Belt**

- 1 Isolate sample increment using \_\_\_\_.
- 2 If one increment is not sufficient?
- 3 Collect how much material from between templates?

#### **Sampling From Conveyor Belt Discharge**

- 1 Avoid sampling from \_\_\_\_.
- 2 Sampling device must pass through \_\_\_\_.
- 3 Material adhering to the sampling device is \_\_\_\_.

#### **Sampling From Roadway - In Place**

- 1 Sample after \_\_\_\_.
- 2 Sample before \_\_\_\_.
- 3 Increments of what depth?
- 4 Do what with underlying material?

## **AASHTO R 90 Sampling Aggregate Products**

### **Sampling From Stockpiles**

#### **Power Pile**

- 1 Direct operator to enter stockpile with bucket at least \_\_\_\_.
- 2 Do what with first bucketful?
- 3 Have operator back drag to make a \_\_\_\_.
- 4 Minimum number of increments?
- 5 Stay at least \_\_\_\_ from the edge.
- 6 Be sure to \_\_\_\_\_ underlying material.

#### **Stockpile Face**

- 1 Create horizontal surfaces with \_\_\_\_\_ faces.
- 2 Prevent sloughing by using \_\_\_\_\_.
- 3 Obtain at least one increment from \_\_\_\_\_.

#### **Sampling Fine Aggregate**

- 1 Minimum diameter of sampling tube?
- 2 Do what with outer layer?
- 3 Minimum number of increments?

## PERFORMANCE CHECKLIST

### AASHTO R 60 Sampling Freshly Mixed Concrete

#### Global Constraints

- 1 Total elapsed time allowable between obtaining first and final portions of the composite sample.
- 2 Before starting tests, individual samples must be \_\_\_\_ & \_\_\_\_.
- 3 Temperature, air, and slump tests should be started within how long after obtaining the final portion of the composite sample?
- 4 Protect the sample from sources of \_\_\_\_ & \_\_\_\_.
- 5 Make samples for strength tests what minimum size?
- 6 Start molding specimens for strength within \_\_\_\_\_ after fabricating composite sample.

#### Sampling from Revolving Drum Truck Mixers or Agitators

- 1 Collect how many portions?
- 2 Specimens for temperature, air, and slump may be taken after at least \_\_\_\_ has been discharged.
- 3 For strength test specimens, avoid sampling what parts of the batch discharge?
- 4 Two methods for obtaining sample.
- 5 Take sample before or after water is added to mix?
- 6 Method for regulating rate of discharge.

## PERFORMANCE CHECKLIST

### Type B Air Meter Calibration

- 1 Insert specified tube into proper opening.
- 2 Prepare cover and introduce water.
- 3 Open petcocks and add water through specified opening.
- 4 Pump up to initial pressure.
- 5 Introduce air as specified.
- 6 Verify initial pressure line and adjust if necessary.
- 7 Adjust gauge if? How? (Verbal)
- 8 Insert specified tube and fill vessel to top.
- 9 Bring air to specified %.  
Open opposite petcock (both open) to drain curved tube.
- 10 Bring gauge to initial pressure reading.
- 11 Take pressure reading.  
wait for hand to stabilize.
- 12 Verify correct reading within specified tolerance.
- 13 If 2 or more determinations show the same variation  
from the correct air content?

## PERFORMANCE CHECKLIST

### AASHTO T-152 Air Content of Freshly Mixed Concrete by Pressure Method

- 1 Prepare measuring bowl.
- 2 Introduce layer of material to specified depth.
- 3 Rod layer specified number, distribution, and depth of strokes using proper rod.
- 4 Consolidate layer properly.
- 5 Repeat steps 2, 3, & 4 for specified number of layers.
- 6 Last layer filled to proper height?
- 7 Strike off excess concrete with proper tool and prepare bowl for cover.
- 8 Prepare cover and clamp to base.
- 9 Petcocks open or closed?
- 10 Fill with water and remove air as specified. Continue injecting water into petcock while jarring and tapping the meter to insure all air is expelled
- 11 Pump up to specified pressure.
- 12 Allow a few seconds for the compressed air to stabilize and adjust the gauge to specified pressure line.

## AASHTO T-152 Air Content of Freshly Mixed Concrete by Pressure Method

- 13 Close both petcocks.
- 14 Open air valve between chamber and bowl.
- 15 Relieve local constraints.
- 16 Stabilize the gauge hand.
- 17 Read the air percentage.
- 18 Release pressure as specified and remove cover.  
pressure before removing the cover.
- 19 Calculate air content correctly:

## PERFORMANCE CHECKLIST

### AASHTO T-196 Air Content of Freshly Mixed Concrete by Volumetric Method

- 1 Prepare measuring bowl.
- 2 Introduce layer of material to specified depth.
- 3 Rod layer specified number, distribution, and depth of strokes using proper rod.
- 4 Consolidate layer properly.
- 5 Repeat steps 2, 3, & 4 for specified number of layers.
- 6 Last layer filled to proper height?
- 7 Strike off excess concrete with proper tool and prepare bowl for cover.
- 8 Clamp the top section into position and add water and alcohol using the funnel.
- 9 Adjust the liquid level using rubber syringe.
- 10 Attach cap as specified.



## PERFORMANCE CHECKLIST

### AASHTO T-196 Air Content of Freshly Mixed Concrete by Volumetric Method

- 11 Invert and agitate for specified minimum time.
- 12 Tilt, turn, and roll as specified.
- 13 Stabilize liquid level as specified.
- 14 Repeat step 12 and 13 until two consecutive readings do not change by more than specified amount.
- 15 Take reading to specified tolerance.
- 16 Do what if liquid level does not reach window? (Verbal)
- 17 Calculate the air content.

## PERFORMANCE CHECKLIST

### AASHTO T-119 Slump of Hydraulic Concrete

- 1 Describe proper conditions for base and prepare cone and base.
- 2 Stabilize apparatus as specified.
- 3 Ensure sample is representative.
- 4 Introduce layer of material to specified depth.
- 5 Rod layer specified number, distribution, and depth of strokes using proper rod.
- 6 Repeat steps 4 & 5 for specified number of layers.
- 7 Level of concrete in mold for last layer.
- 8 Strike off excess concrete with proper tool.
- 9 Lift cone as specified.
- 10 Measure slump to specified tolerance.

## PERFORMANCE CHECKLIST

### AASHTO R 100 Making and Curing Concrete Test Specimens in the

#### Field

- 1 Place mold on surface meeting specification.
- 2 Select a representative sample.
- 3 Place layer in mold as specified.
- 4 Rod layers as specified.
- 5 Consolidate as specified.
- 6 Strike off the surface with a tamping rod or, if necessary, finish with a trowel or float. Use the minimum amount of manipulation necessary to produce a flat even surface.
- 7 Cover specimens with a non absorptive, non reactive sheet, cap, or plate.
- 8 If specimen will be used for acceptance testing, quality control, or trial batching mix designs, which curing method should be used?
- 9 If specimen will be used to determine when a structure can be put into service or when shoring can be removed, which curing method should be used?
- 10 Which three tests must always be performed when making test specimens?

## PERFORMANCE CHECKLIST

### ASTM C1064 Temperature of Freshly Mixed Concrete

- 1 Sample must be large enough to provide how much cover around sensor?
- 2 Tolerance (accuracy) of approved thermometer?
- 3 Place thermometer in sample as specified.
- 4 Gently press concrete around sensor.
- 5 Read temperature within time constraints.
- 6 Record temperature to within specified tolerance.

## PERFORMANCE CHECKLIST

### AASHTO T-121 Weight per Cubic Foot, Yield, And Air Content of Concrete

- 1 Determine the weight of the empty 0.5 ft<sup>3</sup> measure.
- 2 Introduce layer of material to specified depth.
- 3 Rod layer specified number, distribution, and depth of strokes using proper rod.
- 4 Consolidate layer properly.
- 5 Repeat steps 2, 3, & 4 for specified number of layers.
- 6 Last layer filled to proper height?
- 7 Strike off the concrete to a smooth surface with a flat strike off plate.
- 8 Clean off all excess concrete and determine the weight of the full measure.
- 9 Calculate net weight.
- 10 Calculate the unit weight in lbs/ft<sup>3</sup>

## PERFORMANCE CHECKLIST

### AASHTO T-22 Compressive Strength of Cylindrical Concrete Specimens

- 1 Check the ends of the cylinder and verify they do not depart from perpendicularity by more than tolerance.
- 2 Check the ends of the cylinder for depressions outside tolerance.
- 3 Measure diameter of specimen at 2 right angles at mid height of cylinder.
- 4 Individual diameters cannot differ by more than \_\_\_\_\_?
- 5 Examine the pads for splits or cracks.
- 6 Pads may be reused how many times?
- 7 All lab cured cylinders shall be tested in the \_\_\_\_\_ condition.
- 8 Concrete cylinder, caps, bearing surfaces of extrusion controllers, and bearing blocks of the test machine must be free of \_\_\_\_\_?
- 9 Align the axis of the cylinder with the center of thrust of the testing machine by centering the upper retaining ring on the spherically seated bearing block.
- 10 Turn on the testing machine and allow it to warm up. When the machine has warmed up, zero reading before applying load to specimen.
- 11 Rotate movable upper bearing block to attain uniform seating on top of specimen.
- 12 Apply load at Full Advance until one-half of the anticipated maximum load is attained, then slow to a rate of movement corresponding to a stress rate of \_\_\_\_\_?
- 13 Apply the compressive load until \_\_\_\_\_?
- 14 Record the maximum load and compressive strength to the specified accuracy.
- 15 Note the type of failure and the appearance of the concrete.

## PERFORMANCE CHECKLIST

### OHD L-65 Sampling Asphalt Mixtures

#### L-65

ODOT Standard Method for Sampling Asphalt Mixtures

- 1 Determine un-compacted sample locations according to?
- 2 Oklahoma Sampling location preference
- 3 The distance between two or more cores at a location must be between?
- 4 In filling core holes, the main difference between R 97 and OHD L-65 is the use of?

#### R 67

Obtaining Cores

- 1 Coring bit must be cooled by, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.
- 2 Keep core bit \_\_\_\_\_ to the surface.
- 3 Continue drilling to \_\_\_\_\_.
- 4 Remove core without \_\_\_\_\_ or \_\_\_\_\_ the sample.

#### R 97

##### Sampling from truck transport.

- 5 Select sampling locations.
- 6 Top surface removed to specified depth.
- 7 Obtain sample from truck bed. (Simulated.)

## PERFORMANCE CHECKLIST OHD

### L-14 Method 2 (Nuc Gauge)

- 1 When gauge is first turned on, before using, allow it to \_\_\_\_\_.
- 2 Place gauge on standard block correctly.
- 3 Take standard count. (Verbal)
- 4 Set instrument for specified count.
- 5 Proper depth set.
- 6 Properly position gauge on surface.
- 7 Set gauge to backscatter.
- 8 Take and record specified number of counts.
- 9 Number of test locations required for correlation? (Verbal)



## PERFORMANCE CHECKLIST

### OHD L 5 Liquid AC

#### Containers (Verbal)

- 1 Type of container used for AC.
- 2 Type of container used for emulsions.

#### 3 Sample Care (Verbal)

- 3a Take care that samples are not \_\_\_\_\_.
- 3b Container must be perfectly \_\_\_\_ and \_\_\_\_.
- 3c Emulsions must be protected from \_\_\_\_\_.
- 3d Mark for identification on \_\_\_\_ or \_\_\_\_.
- 3e Clean outside of container with only \_\_\_\_\_.

#### Sampling Locations (Verbal)

- 4 Truck transport.
  - 4a Valve located in the \_\_\_\_ or \_\_\_\_.
  - 4b Sample taken from what part of load?
- 5 Mixing Plant Valve Location
- 6 Storage Tank (Circulating)

Continued on next page.

### OHD L 5 Liquid AC

pg 1

- 7 Storage Tank (Not Circulating)
  - 7a Obtain sample by means of \_\_\_\_\_.
  - 7b Lower to near \_\_\_\_\_.
  - 7c Withdraw at rate so that \_\_\_\_\_.
  - 7d Sampling device should be \_\_\_\_\_ and \_\_\_\_\_ before taking the sample.

#### Sampling Procedure (Performance)

**Tell applicant - Gloves, heavy long sleeves, and face shield must be used**

- 8 Treatment of first portion of material from valve.
- 9 Container filled to appropriate level.
- 10 Container properly sealed and cleaned.

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## PERFORMANCE CHECKLIST

### AASHTO T-310 In Place Density and Moisture Content of Soil and Soil Aggregate by Nuclear Method (Shallow Method)

- 1 Turn on Unit.
- 2 Warm up unit for specified time (Ram Test) (Verbal)
- 3 Place standard block on material with minimum density of \_\_\_?
- 4 Take Standard Count
- 5 If standard count fails? (Verbal)
- 6 Enter Standard Density (Proctor)
- 7 How to correct for surface voids. (Verbal)
- 8 Make hole and set unit to proper depth
- 9 Make intimate contact between source rod and edge of hole in measurement path.
- 10 Take readings for specified time.
- 11 Read and record results.