

**HCMTCB MATERIALS SAMPLING & TESTING  
PERFORMANCE CHECKLIST**

**Release Date: January 7, 2014**

## PERFORMANCE CHECKLIST

### AASHTO T-2 Sampling of Aggregates

#### Sampling Coarse Aggregate

##### Sampling From A Stockpile

- 1 When sampling from stockpiles, every effort should be made to \_\_\_\_\_.

##### Power Pile

- 1 Power equipment draws materials from?
- 2 Field sample combined from?

##### By Hand

- 1 When should you sample by hand?
- 2 Sample increments taken from where in the pile?
- 3 How to prevent segregation?

##### Sampling From A Conveyor Belt

- 1 Sampling locations selected how?
- 2 Number and relative size of increments?
- 3 Isolate sample increment using . . . ?
- 4 Collect how much material from between templates?
- 5 What to do with fines?

##### Field Sample Size - Coarse Aggregate

Show the evaluator the proper table in T 2 and determine the minimum size field sample for the requested gradation.

## PERFORMANCE CHECKLIST

### AASHTO T-2 Sampling of Aggregates

#### **Sampling From Flowing Aggregate Stream**

- 1 Sampling locations selected how?
- 2 Number and relative size of increments?
- 3 Take each increment from . . . ?
- 4 Reduce segregation by what method?  
Avoid first and last of stream.

#### **Sampling From Roadway**

- 1 Sampling locations selected how?
- 2 Number and relative size of increments?
- 3 Increments of what depth?
- 4 Do what with underlying material?

#### **Sampling Fine Aggregate**

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

#### **Field Sample Size - Fine Aggregate**

Have the applicant show the examiner the proper table in T - 2 and determine the minimum size field sample for fine aggregate.

## 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 T-23 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

### AASHTO T-168 Sampling of Bituminous Material

#### Funnel Device

- 1 Select units to be sampled by what method?
- 2 Relative size and number of increments.
- 3 Collect sample units how?
- 4 Form field sample how?

#### Roadway after compaction

- 5 Select units to be sampled by what method?
- 6 Relative size and number of increments.
- 7 Samples taken to what depth?
- 8 Acceptability determined how?

- 9 Oklahoma Sampling location preference

#### **Sample from truck transport. (Performance)**

- 10 Select sampling locations how?
- 11 Top surface removed.
- 12 Obtain specified number and relative size of increments.

## PERFORMANCE CHECKLIST

### OHD L-14 Alternate Method (Nuc Gauge)

- 1 When gauge is first turned on, before using, allow it to \_\_\_\_\_.
- 2 Place gauge on standard block correctly.
- 3 Minimum density of material beneath block?
- 4 Take standard count.
- 5 Set instrument for specified count.
- 6 Proper depth set.
- 7 Maximum void between gauge and surface that will be filled with fine sand, fly ash, etc. (Verbal)
- 8 Properly position gauge on surface.
- 9 Set gauge to backscatter.
- 10 Take and record specified number of counts.
- 11 If surface is hot, do you need to let the gauge cool between measurements? (Verbal)
- 12 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.

pg 2

## 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.