

**HCMTCB CONCRETE CERTIFICATION**

**KEY ELEMENTS LIST**

Release Date: March 17, 2010

## PERFORMANCE CHECKLIST

### AASHTO T-141 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?

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

- 1 Collect how many portions?
- 2 Take portions omitting what parts of the batch?
- 3 Two methods for obtaining sample.
- 4 Take sample before or after water is added to mix?

## 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 %.
- 10 Bring gauge to initial pressure reading.
- 11 Take pressure reading.
- 12 Verify correct reading.

**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.
- 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.

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- 13 Close both petcocks.
- 14 Open air valve between chamber and bowl.
- 15 Take air reading as specified.
- 16 Release pressure as specified and remove cover.
- 17 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 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, & 6 for specified number of layers.
- 7 Repeat for subsequent layers.
- 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.

## PERFORMANCE CHECKLIST

### AASHTO T-309 Temperature of Freshly Mixed Concrete

- 1 Sample must be large enough to provide how much cover around sensor?
- 2 Range and tolerance of ASTM approved thermometer?
- 3 Place thermometer in sample as specified.
- 4 Gently press concrete around sensor.
- 5 Read temperature after minimum time allowed.
- 6 Complete temperature measurement within time constraint.
- 7 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 Examine the pads for splits or cracks.
- 4 Pads may be reused how many times?
- 5 All lab cured cylinders shall be tested in the \_\_\_\_\_ condition.
- 6 Concrete cylinder, caps, bearing surfaces of extrusion rollers, and bearing blocks of the test machine must be free of \_\_\_\_\_?
- 7 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.
- 8 Turn on the testing machine and allow it to warm up. When the machine has warmed up, the display will clear, then press "test", then press "zero" then press "hold peak"
- 9 Apply load at Full Advance until one-half of the anticipated maximum load is attained, then slow the metered advance and continue until?
- 10 Apply the compressive load until \_\_\_\_\_?
- 11 Record the maximum load and compressive strength to the specified accuracy.
- 12 Note the type of failure and the appearance of the concrete.