

# Job-Task Analysis (JTA) for ACI Self-Consolidated Concrete Testing Technician Certification

## HOW TO USE THIS JTA:

For each of the following assessment methods, the Candidate must:

### On the written examination:

- **Understand** the following general concepts, which may not have specified values, procedures, or measurements; *and*
- **Know** the following specific procedures or values; performance of these items may also be assessed on the performance examination.

### On the performance examination:

- **Perform**—or describe verbally, where allowed—the following tasks or steps, which are part of the specified procedure; knowledge of these items may also be assessed on the written examination.

## RESOURCES:

ASTM C1610/C1610M—Standard Test Method for Static Segregation of Self-Consolidating Concrete Using Column Technique

ASTM C1611/C1611M—Standard Test Method for Slump Flow of Self-Consolidating Concrete

ASTM C1621/C1621M—Standard Test Method for Passing Ability of Self-Consolidating Concrete by J-Ring

ASTM C1712—Standard Test Method for Rapid Assessment of Static Segregation Resistance of Self-Consolidating Concrete Using Penetration Test

ASTM C1758/C1758M—Standard Practice for Fabricating Test Specimens with Self-Consolidating Concrete

### **ASTM C1610/C1610M—Standard Test Method for Static Segregation of Self-Consolidating Concrete Using Column Technique**

- Understand this test method measures segregation
- Know to what type of concrete the test applies
- Understand this test method provides a procedure to determine the potential static segregation of SCC
- Understand this method is used to develop concrete mixtures to meet specification requirements
- Understand what SCC is
- Know what type of balance is required
- Know the requirements/dimensions for the column mold
- Know the requirements/dimensions for the collector plate
- Know the requirements for the strike-off bar
- Know the type of and requirements for the sieve
- Know the requirements for the sample receptacle
- Know the requirements for the pouring vessel
- Know other tools may be needed to remix sample or aid in filling pouring vessel
- Understand how to obtain the test sample
- Perform test on a flat, level, vibration free surface
- Perform remixing the sample to ensure it is homogenized
- Perform dampening the interior of the mold, making sure to remove any standing water
- Perform filling pouring vessel with SCC from the sample receptacle immediately
- Perform the filling procedure properly
- Perform filling until slightly above rim and within 2 minutes

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- Perform required strike-off of the mold
- Perform allowing concrete to stand undisturbed for  $15 \pm 1$  minute
- Perform proper holding of mold and removing fastening system
- Perform proper timing requirements
- Perform placing collector plate in appropriate position to collect top portion
- Perform collecting sample onto collector plate and depositing into sample container
- Perform repeating steps to collect sample from middle
- Perform placing sample from top portion on the 4.75 mm (No. 4) sieve and wash
- Perform depositing washed coarse aggregate into clean plastic pail
- Perform repeating steps for concrete in bottom of mold
- Perform bringing each sample to an surface dry condition and obtaining mass of each sample
- Perform weighing test samples to the nearest 0.05 kg [0.1 lb]
- Perform calculation of the percent static segregation
- Perform reporting the static segregation to the nearest 0.1%

### **ASTM C1611/C1611M—Standard Test Method for Slump Flow of Self-Consolidating Concrete & AASHTO T351 Visual Stability Index (VSI) of Self-Consolidating Concrete (SCC)**

*\*Perform items are for Procedure B only*

- Understand these methods determine slump flow and VSI of SCC
- Know terms specific to these standards
- Understand the use of these test methods
- Understand limitation of these test methods
- Know the VSI values and criteria and how to identify them
- Know the requirements for the mold for this test
- Know the requirements for the base plate used in this test
- Know the requirements for the strike-off bar
- Know the requirements for the measuring device
- Know the requirements for the sample receptacle
- Know the requirements for the pouring vessel for SCC
- Know other tools may be needed to remix the sample/aid in filling pouring vessel
- Understand how to obtain the test sample
- Know how to prepare the work surface (dampen)
- Know not to change the base plate during a project or study
- Know to remix sample to ensure it is homogenized
- Perform on a flat, non-absorbent, level, vibration free surface
- Perform preparing the interior of the mold and placing it in correct orientation on the test surface
- Perform correctly filling the pouring vessel
- Perform correctly filling the mold to execute the test
- Perform strike-off of the surface
- Perform cleaning the base and lifting the mold
- Perform entire test within 2-1/2 minutes
- Perform diameter measurements to the nearest 1/4 in. [5 mm]
- Know parameters of invalid tests
- Know and perform calculation of the slump flow
- Know and perform recording the average of two diameters to 10 mm [1/2-in.]

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### **ASTM C1621/C1621M—Standard Test Method for Passing Ability of Self-Consolidating Concrete by J-Ring**

*\*Perform items are for Procedure B only*

- Understand this method determines passing ability of SCC using the J-Ring
- Know terms specific to this standard test method
- Understand the use of this test method
- Understand limitations of this test method
- Know the requirements for the J-Ring
- Know the requirements for the mold for this test
- Know the requirements for the base plate used in this test
- Know the requirements for the strike-off bar
- Know the requirements for the measuring device
- Know the requirements for the sample receptacle
- Know the requirements for the pouring vessel for SCC
- Know other tools may be needed to remix the sample/aid in filling the pouring vessel
- Understand how to obtain the test sample
- Know how to prepare the work surface
- Know not to change the base plate during a project or study
- Know where to place the J-Ring on the base plate
- Know to remix the sample to ensure it is homogenized
- Perform on a flat, non-absorbent, level surface
- Perform preparing the interior of the mold and place it in correct orientation on the test surface
- Perform correctly filling the pouring vessel
- Perform correctly filling the mold to execute the test
- Perform required strike-off of the mold
- Perform cleaning the area surrounding the base of the mold
- Perform removing the mold from the concrete, raising it vertically in  $3 \pm 1$  sec
- Perform using a steady upward lift with no lateral movement
- Perform the complete test from start of filling mold to removal of mold in 2 minutes, 30 seconds
- Perform waiting for concrete to stop flowing, then obtaining largest diameter
- Perform and know what to do if a halo is observed
- Perform and know how and where to take the second diameter measurement
- Perform and know measuring diameters to nearest 5 mm [1/4 in.]
- Perform and know parameters of invalid tests
- Perform and know Slump Flow Test with and without the J-Ring
- Perform and know completing these tests within 6 minutes
- Perform collecting the data and recording the two diameters, including the J-Ring measurement
- Know how to calculate slump flow
- Know how to calculate the passing ability of the concrete
- Know how to identify the blocking assessment
- Know and perform the reporting requirements

### **ASTM C1712—Standard Test Method for Rapid Assessment of Static Segregation Resistance of Self-Consolidating Concrete Using Penetration Test**

- Understand this method provides a rapid assessment of static segregation of SCC
- Know terms specific to this standard test method

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- Understand the use of this test method
- Understand limitations of this test method
- Understand degree of static segregation resistance is non-mandatory, but is a tool that can be used
- Know the degrees of static segregation resistance
- Know the requirements for the mold for this test
- Know the requirements for the penetration apparatus
- Know the requirements for the optional base plate used in this test
- Know the requirements for the strike-off bar
- Know the requirements for the sample receptacle
- Know the requirements for the pouring vessel for SCC
- Know other tools may be needed to remix the sample/aid in filling the pouring vessel
- Understand how to obtain the test sample
- Know and perform the test on flat, non-absorbent, level, vibration free surface
- Know and perform preparing the work surface
- Know and perform preparing the penetration apparatus for use
- Know and perform remixing the sample to ensure it is homogenized
- Know and perform preparing the interior of the mold and placing it in correct orientation on the test surface
- Perform correctly filling the pouring vessel
- Perform correctly filling the mold to execute the test
- Perform required strike-off of the mold
- Know and perform allowing concrete to stabilize for the required amount of time
- Perform correctly positioning the apparatus on top of the mold
- Perform obtaining initial reading
- Perform obtaining final reading
- Know and perform calculation for the penetration depth
- Know and perform reporting

### **ASTM C1758/C1758M—Standard Practice for Fabricating Test Specimens with Self-Consolidating Concrete**

- Understand the scope of this standard practice
- Understand the limitations of this practice
- Understand definitions of this test practice
- Know the requirements for the specimen container
- Know the requirements for the sample receptacle
- Know the requirements for the pouring vessel for SCC
- Know other tools may be needed to remix the sample/aid in filling the pouring vessel
- Understand how to obtain the test sample
- Know and perform preparing the specimen container for test
- Perform correctly filling the pouring vessel
- Perform correctly filling the mold to execute the test