



American Concrete Institute®

**Certification Policies  
for  
Aggregate Testing Technician – Level 1  
Aggregate Testing Technician – Level 2**

*Approved by the Certification Programs Committee  
July 6, 2007*

*Last revised by the Certification Programs Committee  
November 10, 2009*

The statements contained herein are a consolidation of approved policies and procedures. This policy statement supersedes all previous action of the ACI Board of Direction with respect to Concrete Strength Testing Technician certification.

The certification program policies are broken down into eight sections as follows:

- Section 1.0 Certification Criteria
- Section 2.0 Examination Criteria
- Section 3.0 Reexamination Criteria
- Section 4.0 Appeals Criteria
- Section 5.0 Sponsoring Group Criteria
- Section 6.0 Examiner/Supplemental Examiner Criteria
- Section 7.0 ACI Responsibilities
- Section 8.0 Recertification Criteria

**SECTION 1.0 CERTIFICATION CRITERIA**

- 1.1 The American Concrete Institute (ACI) certification programs for Aggregate Testing Technician – Level 1 (ATT1) and Aggregate Testing Technician – Level 2 (ATT2) shall require successful completion of both a written examination and a performance examination.
- 1.2 No specific education or work experience are required for ATT certifications. Certification as an ACI ATT2 requires current ACI ATT1 certification.
- 1.3 ACI certification for ATT1 and/or ATT2 shall be valid for a period of five [5] years from the date of completion of all certification requirements.
- 1.4 A technician shall be permitted to renew certification by satisfying the recertification requirements.

**SECTION 2.0 EXAMINATION CRITERIA****GENERAL REQUIREMENTS**

- 2.1 The content of the written examination for certification as an ACI ATT1 shall be derived directly from the following eight (8) Standards:

## ASTM/AASHTO

D75/T2	Sampling of Aggregates
C702/T248	Reducing Samples of Aggregates to Testing Size
C117/T11	Materials Finer Than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing
C136/T27	Sieve Analysis of Fine and Coarse Aggregates
C127/T85	Specific Gravity and Absorption of Coarse Aggregate
C128/T84	Specific Gravity and Absorption of Fine Aggregate
C566/T255	Total Evaporable Moisture Content of Aggregate by Drying
C40/T21	Organic Impurities in Fine Aggregates for Concrete

The content of the performance examination for certification as an ATT1 shall be derived from the afore-referenced resource standards.

Information contained in the notes of the afore-referenced resource Standards shall be subject for examination. Information contained in the appendices of the afore-

referenced resource standards shall not be subject for examination except for Appendix X1 of ASTM/AASHTO D75/T2.

The written and performance examinations for ATT1 certification must be successfully completed within a one (1) year period.

- 2.2 The content of the written examination for certification as an ACI ATT2 shall be derived directly from the following ten (10) Standards:

ASTM/AASHTO

C29/T19	Bulk Density (“Unit Weight”) and Voids in Aggregate
C88/T104	Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
C123/T113	Lightweight Pieces in Aggregate
C131/T96	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C535	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C142/T112	Clay Lumps and Friable Particles in Aggregate
D2419/T176	Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
C1252/T304	Uncompacted Void Content of Fine Aggregate
D5821	Determining the Percentage of Fractured Particles in Coarse Aggregate
D4791	Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

The content of the performance examination for certification as an ATT2 shall be derived from the afore-referenced resource Standards except C88/T104, C131/T96, and C535.

Information contained in the notes of the afore-referenced resource standards shall be subject for examination. Information contained in the appendices of the afore-referenced resource standards shall not be subject for examination.

The written and performance examinations for ATT2 certification must be successfully completed within a one (1) year period.

- 2.3 The examinations shall be conducted by the examiner, proctors, and/or supplemental examiners as applicable. [See Section 6.]
- 2.4 The examiners, proctors, supplemental examiners, and/or sponsoring groups have no jurisdiction over the content of any examination, or over the grading of the written examination.
- 2.5 The written examinations are open book; reference materials other than those approved by ACI shall not be permitted in the examination area. The performance examination is closed book; notes or other technical material shall not be permitted in the examination area. Simple function (non-programmable) pocket calculators shall be permitted for all examinations.

### **WRITTEN EXAMINATION**

- 2.6 The written examinations shall consist of approximately one hundred [100] multiple choice questions, with eight to twelve [8-12] questions on each Standard.
- 2.7 A maximum of two [2] hours shall be permitted for completion of each written examination.
- 2.8 Oral administration of the written examinations is permitted, contingent upon approval by the ACI Certification Department.
- 2.9 Successful completion of the written examination shall be considered as meeting both of the following requirements:
  - A) Score sixty percent [60%] or higher on each individual Standard (e.g. six [6] correct out of ten [10] questions); AND
  - B) Score a minimum of seventy percent [70%] for the overall examination (e.g., seventy [70] correct out of a possible one hundred [100])

### **PERFORMANCE EXAMINATION**

- 2.10 The performance examination for certification as an ACI ATT1 and/or ATT2 shall require the examinee to perform, pursuant to the contents of the ACI performance

examination checklists, procedures described in each of the Standards noted in Sections 2.01 and 2.02, respectively.

Note: Some procedures and test methods may be described verbally as indicated on the performance exam checklists. Specific instructions keyed to these areas and describing administration procedures will be included with the exam materials for each session.

- 2.11 The examinee shall conduct the performance examination in the direct presence of the examiner or supplemental examiner(s).
- 2.12 The examinee's performance shall be evaluated based on the criteria of the performance examination checklist.
- 2.13 Grading for the individual performance examinations shall be on a pass/fail basis only, with the examiner/supplemental examiner indicating pass or fail for each step of the checklist.
- 2.14 Incorrect performance, or omission of one or more of the steps of the performance checklist, shall constitute failure of that trial.
- 2.15 All sections of the performance exam required for certification must be taken within a single examination session not exceeding eight calendar days.

Note: This provision was adopted to address the number of tests on the performance exam, their complexity, and the amount of time in setup and administration necessary to conduct one initial full exam (all sections) once through in its entirety. It is not intended that examinees be allowed more than two attempts to pass any one test method within any single eight-day exam session.

- 2.16 An examinee shall be allowed a second trial, on the same day of the examination, if the first trial was not successfully completed for each of the applicable Standards.
- 2.17 The second trial of a particular test shall not be conducted immediately following the first trial.
- 2.18 An examinee shall be permitted to suspend one trial and begin the procedure over again. A voluntary suspension of a trial shall not be counted as a failure of that trial.

- 2.19 The examiner/supplemental examiner shall not stop a trial at any point which an error is made.
- 2.20 A second trial, or voluntary repeat of a trial, shall require performance of the entire test method from the beginning, not from the point the error was made.
- 2.21 Immediately following completion of each trial, the examiner/supplemental examiner shall inform the examinee of the results, either pass or fail.
- 2.22 When a failure of a trial occurs, the examiner/supplemental examiner shall inform the examinee of the particular step(s) performed incorrectly.
- 2.23 The examinee shall be permitted to leave the examination area between trials to consult notes or books.
- 2.24 It shall be the Sponsoring Group's responsibility to provide equipment which conforms to the applicable Standards and that it is in good working order. The examinee shall not be penalized as a result of faulty or incorrect equipment.

Note: In cases where the Supplemental Examiners have been approved to conduct the performance examination without the direct supervision of an approved Examiner (6.06), the Supplemental Examiner shall be responsible for determining that the equipment requirements listed in Section 2.24 are met.

- 2.25 Failure on any of the required Standards after two [2] trials will constitute failure of that section of the performance examination.

### **SECTION 3.0 RE-EXAMINATION CRITERIA**

- 3.1 Failure of the written examination by either of the criteria cited under Section 2.09 shall require reexamination on the entire written examination.
- 3.2 Failure or invalidation (for example non-conformance with Section 6.05) of any of the required Standards covered by the performance examination in any one session shall require reexamination on the entire performance examination.

- 3.3 Reexamination on the written or performance examination must be taken within one [1] year of the initial examination. Otherwise, both the written and the performance examinations must be retaken in their entirety.

#### **SECTION 4.0 APPEALS CRITERIA**

- 4.1 All appeals shall be directed initially to the examiner.
- 4.2 In the event that the examinee is not satisfied with the decision of the examiner regarding an appeal. The examinee may pursue an appeal with ACI according to the following order:
1. Local Sponsoring Group
  2. ACI Director of Certification
  3. The Certification Appeals Committee [consisting of the Director of Certification; the Chairman of the Certification Programs Committee, and the Chairman of Committee C620]
  4. Committee C620, Laboratory Testing Technician Certification
  5. Certification Programs Committee
- 4.3 Appeals submitted to ACI for consideration must be received, in writing, within sixty [60] days of the receipt of the examination at ACI Headquarters.

#### **SECTION 5.0 SPONSORING GROUP CRITERIA**

Groups Desiring to conduct ACI Certification program(s) shall adhere to the current Policy on Sponsoring Groups for Certification.

NOTE: The Sponsoring Group Policy was approved by the ACI Board of Direction on March 21, 1991.

#### **SECTION 6.0 EXAMINER / SUPPLEMENTAL EXAMINER CRITERIA**

- 6.1 The examiner shall be authorized by ACI to conduct the ACI certification examinations for ATT1 and ATT2.
- 6.2 The examiner shall be approved by ACI. Qualifications shall be submitted on Form D1/D3 and shall be evaluated in accordance with the criteria on Form D-13.

- 6.3 The examiner shall meet the following requirements:
- A) Be a registered professional engineer;
  - B) Have had at least two [2] years of recent experience in construction, including aggregate testing; and
  - C) Be thoroughly familiar with the current applicable Standards.
- 6.4 Examiners, supplemental examiners, examiners acting as supplemental examiners and proctors shall not conduct any portion of the examination for anyone with whom he/she is personally related.
- 6.5 Examiners/supplemental examiners shall not examine anyone on the performance examination who is employed in the same organization. Governmental or other organizations may petition ACI, in writing, and request a waiver of this requirement. Waivers shall be granted, on a case by case basis, only if it can be shown that the intent of the policy will be maintained.
- 6.6 Supplemental examiners shall be permitted to assist in conducting the performance examination, and may be authorized to conduct the performance examination without direct supervision of an Examiner with prior approval of ACI Committee C620.
- 6.7 Supplemental examiners shall satisfy the following requirements:
- A) Have had recent experience in aggregate testing;
  - B) Be selected and adjudged qualified by the examiner or ACI Committee C620;
  - C) Be considered trustworthy and conscientious.
- 6.8 Proctors shall be permitted to assist the examiner in conducting the written examination.
- 6.9 Proctors shall satisfy the following requirements:
- A) Be considered trustworthy and conscientious by the Examiner.
- 6.10 The examiner shall be directly responsible for:



- A) Selection of the supplemental examiners and proctors, except in cases where the supplemental examiners are approved by ACI Committee C620;
  - B) Verification that the qualifications of the supplemental examiners and proctors conform to the criteria outlined in Section 6.04 through 6.09 of this policy;
  - C) Assuring the secure handling of examination materials;
  - D) Verification of the identity of each examinee, and assuring that the examinees are aware of the certification criteria;
  - E) Verification that the examinees have signed the release statement on the written and performance examinations prior to testing;
  - F) Verification that the performance examinations are conducted by approved supplemental examiners, and co-signing the performance checklists where appropriate;
  - G) Entering the appropriate grade for the completed performance examination on the checklist report;
  - H) Assuring that all examinees have an opportunity to take a second trial on any failed procedure of the performance examination; and
  - I) Assuring that terms are not defined and examination questions are not interpreted during the course of the written examination.
- 6.11 Examiners or supplemental examiners shall not observe more than one examinee conducting tests at any one time during the performance examination.
- 6.12 The examination sessions must be supervised constantly by the examiner, supplemental examiner(s) and/or proctor(s).

## **SECTION 7.0 ACI: DUTIES AND RESPONSIBILITIES**

- 7.1 ACI shall approve the local sponsoring group.
- 7.2 ACI shall authorize the local sponsoring group to conduct examination sessions for ATT1 and ATT2 certifications.
- 7.3 ACI shall approve the examiner.
- 7.4 ACI shall grade the written examinations, review the performance examinations, and notify examinees and the examiner of the final results in writing.

7.5 ACI shall certify the examinees that have satisfied the certification requirements.

7.6 ACI shall issue certificates and wallet cards to successful examinees.

#### **SECTION 8.0 RECERTIFICATION CRITERIA**

Recertification as an ATT1 or ATT2 requires successful completion of the certification requirements outlined in Sections 1.0, 2.0 and 3.0 of this policy.

**Job-task analysis (JTA) for ACI Certification of Aggregate Testing Technician—Level 1****ASSESSMENT METHODS:**

Written exam—general (understand concepts) or working (know specific facts) knowledge

Performance exam— perform specific tasks (or describe verbally, where allowed)

**RESOURCES:**

AASHTO T 2/ASTM D75 – Standard Method of Test for Sampling of Aggregates

AASHTO T 248/ASTM C702 – Standard Method of Test for Reducing Samples of Aggregate to Testing Size

AASHTO T 11/ASTM C117 – Standard Method of Test for Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing

AASHTO T 27/ASTM C136 – Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates

AASHTO T 85/ASTM C127 – Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate

AASHTO T 84/ASTM C128 – Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate

AASHTO T 255/ASTM C566 – Standard Method of Test for Total Evaporable Moisture Content of Aggregate by Drying

AASHTO T 21/ASTM C40 – Standard Method of Test for Organic Impurities in Fine Aggregates for Concrete

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**AASHTO T 2/ASTM D75 – Standard Method of Test for Sampling of Aggregates**

- Understand scope of practice
- Understand distinction between "maximum" and "nominal maximum" aggregate sizes
- Understand significance and use of this practice
- Know general sampling requirements
- Know general inspection requirements of sample
- Know sampling requirements for a flowing aggregate stream
- Know sampling requirements for a conveyor belt
- Know sampling requirements for stockpiles and transportation units
- Understand scope of sampling practice from stockpiles and transportation units
- Know procedure for sampling aggregate from stockpiles
- Know procedure for sampling aggregate from transportation units
- Understand number and masses of field samples
- Know how to determine mass of field samples

**AASHTO T 248/ASTM C702 – Standard Method of Test for Reducing Samples of Aggregate to Testing Size**

- Understand scope of practice
- Understand significance and use of practice
- Reduction in size may not be recommended in some circumstances

**Job-task analysis (JTA) for ACI Certification of Aggregate Testing Technician—Level 1  
(Continued)**

- Know requirements for reducing fine aggregates
- Know reducing requirements for coarse aggregate
- Know equipment requirements for mechanical splitters
- Know and perform the procedure for introducing sample to splitter
- Know and perform procedure for quartering sample
- Understand alternative procedure for quartering sample
- Know and perform procedure for miniature stockpile samples

**AASHTO T 11/ASTM C117 – Standard Method of Test for Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing**

- Understand scope of procedure
- Know washing requirements, if not specified
- Understand general summary of method
- Know significance and use of practice
- Know the procedure and parameters under which the efficiency of the washing operation should be checked
- Know proper apparatus and materials
- Understand sampling procedure and requirements for combined samples
- Know the sample size requirements for different aggregate sizes
- Know and perform procedure for washing
- Know and perform calculation for amount of material passing 75- $\mu$ m sieve by washing
- Know and demonstrate the reporting requirements for percentage of material passing 75- $\mu$ m sieve

**AASHTO T 27/ASTM C136 – Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates**

- Understand scope of test method
- Understand general summary of test method
- Understand general use of test method specific to aggregates
- Accurate determination of 75  $\mu$ m cannot be achieved by this method alone
- Recognize appropriate apparatus and requirements
- Know sieving requirements for mechanical sieve shakers
- Know that size of field sample shall be at least four times required test sample
- Know requirements for reducing sample to suitable testing size
- Know how to determine size of test samples for fine and coarse aggregates
- Know material requirements for testing a combined sample
- Know the requirements for testing an oven dried sample
- Know the requirements for sieve selection and adequacy of sieving
- Know the requirements for limiting the amount of materials on a sieve
- Know the procedure for hand sieving and the requirements for sufficiency of hand sieving
- Understand procedures for hand sieving oversized aggregate
- Know the requirements for verifying the masses after the test
- Know the calculations, percent passing, etc., to nearest 0.1%
- Know the requirements for calculating fineness modulus

**Job-task analysis (JTA) for ACI Certification of Aggregate Testing Technician—Level 1  
(Continued)**

- Know and demonstrate the reporting requirements

**AASHTO T 85/ASTM C127 – Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate**

- Understand scope of practice
- Know definition of terms for specific gravity
- Understand general summary of test method
- Accuracy of balance required 0.05%
- Know requirements for sample container
- Know requirements for water tank
- Know requirements and procedure for sample preparation
- Know requirements for minimum sample size
- Understand requirements for individual size fractions
- Know the sequence of operations for the test procedure
- Know soaking requirements
- Know procedure for obtaining a SSD condition sample
- Know the procedure for determining submerged weight
- Know the procedure for obtaining the dry weight
- Calculate relative density, Density OD, Density SSD and apparent density and absorption
- Know and demonstrate reporting, with required precision, of specific gravity & type and absorption

**AASHTO T 84/ASTM C128 – Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate**

- Understand scope of test method
- Know definition of terms
- Understand significance and use of test method
- Know the difference between dry, moist, SSD and free water on aggregates
- Understand balance (scale) requirements
- Know types of pycnometer that can be used
- Mold and tamper shape and size
- Sample and size of test specimen
- Know requirements for sample preparation before test
- Understand alternative procedure for sample preparation
- Spread sample and let air dry
- Know requirements for performing the cone test for surface moisture
- Know & perform the gravimetric procedure
- Understand the alternate method for obtaining equivalent dry weight of sample used in gravimetric procedure
- Understand the volumetric procedure
- Know & perform aggregate drying to constant mass
- Understand the alternate method for obtaining equivalent dry weight of sample used in volumetric procedure
- Determine mass of pycnometer with water

**Job-task analysis (JTA) for ACI Certification of Aggregate Testing Technician—Level 1  
(Continued)**

- Calculate bulk specific gravity (relative density)
- Calculate bulk specific gravity (relative density), SSD
- Calculate apparent specific gravity (apparent density)
- Calculate absorption
- Know and demonstrate reporting, with required precision, of specific gravity (relative density) and absorption

**AASHTO T 255/ASTM C566 – Standard Method of Test for Total Evaporable Moisture Content of Aggregate by Drying**

- Understand scope of test method
- Understand significance and use of test method
- Know required accuracy of the balance
- Understand types of heat sources
- Know requirements for type and size of container
- Know sample size requirements
- Know & demonstrate requirements for securing sample to prevent moisture loss
- Determine initial mass to 0.1%
- Know requirements for drying sample
- Understand detrimental effects of rapidly heating the sample
- Know when sample is thoroughly dry
- Determine final mass to 0.1%
- Calculate total evaporable moisture content
- Know surface moisture content

**AASHTO T 21/ASTM C40 – Standard Method of Test for Organic Impurities in Fine Aggregates for Concrete**

- Understand scope of test method
- Understand significance and use of test method
- Understand results of the test method
- Know requirements of glass bottles
- Understand requirements for glass color standard
- Know requirements for Reagent Sodium Hydroxide Solution
- Understand requirements and procedure for Standard Color Solution
- Know requirements for sample size and preparation
- Know requirements for introducing sample in the glass bottle
- Know requirements for introducing NaOH solution
- Know requirements for agitating the sample, and waiting period
- Understand method used for standard color solution procedure
- Know procedure for glass color standard
- Know proper procedure for interpreting results