



جمعية الخرسانة والإنشاء
Concrete and Construction Association

برنامج جمعية الخرسانة والإنشاء للشهادات المهنية معهد الخرسانة الأمريكي (ACI)



تماشياً من رؤية المملكة لتطوير الموارد البشرية وتمكين الشباب ودعم جهود التنمية البشرية والاقتصادية أسست جمعية الخرسانة والإنشاء برنامج الشهادات المهنية معهد الخرسانة الأمريكي (ACI) لتدريب ومنح شهادات اعتماد مهنية معتمدة عالمياً في مجالات فحص الخرسانة وعمليات البناء بالتعاون مع ACI .SAC

يعنى معهد الخرسانة الأمريكي بتطوير ونشر المعرفة في مجال الخرسانة والإنشاء ويعتبر من أهم المرجعيات العالمية في هذا المجال، حيث تم اعتماد مواصفات ومقاييس المعهد في كود البناء السعودي. كذلك يعنى المعهد بتطوير اختبارات ومنح شهادات مهنية معتمدة عالمياً في مجالات الخرسانة والإنشاء. تم منح ما يفوق 500,000 شهادة مهنية حول العالم للفنيين والعاملين والمفتشين والمهندسين العاملين في هذا المجال.

لتكون الجمعية جهة رائدة في تدريب ومنح الشهادات المهنية العالمية في مجال الخرسانة الإنشاء

الرؤية



تمكين الشباب للعمل في مجال الخرسانة والإنشاء
الارتقاء بمستوى الجودة في مشاريع الإنشاء مما يدعم التنمية الاقتصادية.

الرسالة



الفئات المستهدفة:

للفنيين والعاملين والمفتشين والمهندسين العاملين في هذا المجال

الشركاء:

تسعى الجمعية للتعاون مع الجهات المعنية لاعتماد هذه الشهادات المهنية للعاملين في هذا المجال ويشمل ذلك:

- معهد الخرسانة الأمريكي (ACI)
- الجامعات والمعاهد الفنية
- الوزارات والهيئات الحكومية المعنية بمجال الموارد البشرية والمشاريح الانشائية.
- الهيئات والجمعيات المهنية.

البرامج المتاحة للتدريب والاختبار:

- ACI Level I Concrete Field Testing Technician (CFTT)
- ACI Concrete Strength Testing Technician
- ACI Aggregate Testing Technician Level I
- ACI Aggregate Testing Technician Level II
- Concrete Flatwork Finisher
- Concrete Construction Special Inspector
- Adhesive Anchor Installer (AAI)

مرفق شرح الاختبارات كما هو مقدم من قبل ACI. لمزيد من التفاصيل يرجى زيارة الموقع الإلكتروني التابع للمعهد: <https://www.concrete.org/certification/certificationprograms.aspx>

Concrete Field Testing Technician - Grade I

Definition: A **Concrete Field-Testing Technician—Grade I** is an individual who has demonstrated the knowledge and ability to properly perform and record the results of seven basic field tests on freshly mixed concrete.

Scope and Knowledge:

This program requires demonstration of the knowledge and hands-on skills covered on the Job Task Analysis (JTA):

[JTA for ACI Certification of Concrete Field Testing Technician—Grade I](#)

(<http://www.concrete.org/Portals/0/Files/PDF/JTA-FTT.pdf>)

The JTA is a detailed list of specific points of knowledge and skills that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

The program requires a working knowledge of the following ASTM test methods and practices:

- C1064/C1064M – 17—Temperature of Freshly Mixed Hydraulic-Cement Concrete
- C172/C172M – 17—Sampling Freshly Mixed Concrete
- C143/C143M – 15a—Slump of Hydraulic-Cement Concrete
- C138/C138M – 17a—Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
- C231/C231M – 17a—Air Content of Freshly Mixed Concrete by the Pressure Method
- C173/C173M – 16—Air Content of Freshly Mixed Concrete by the Volumetric Method
- C31/C31M – 19—Making and Curing Concrete Test Specimens in the Field

Certification

Requirements:

ACI will grant certification only to those applicants who meet both of the following requirements:

1. A passing grade on the ACI written examination; AND
2. Successful completion of the ACI performance examination.

The one-hour **written examination** is closed-book and consists of 55 multiple-choice questions. There are between five and ten questions on each of the ASTM test methods and practices. To pass the written examination, BOTH of the following conditions must be met:

1. At least 60% correct for each of the required test methods and practices; AND
2. A minimum score of 70% overall.

The **performance examination** is also "closed book" and requires actual demonstration of six of the required test methods and practices plus a verbal description of Practice C172/C172M (sampling). The examinee is judged on his/her ability to correctly perform (or describe, where allowed) all of the required steps for each procedure.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires successful completion of both the written and performance examinations.

Concrete Strength Testing Technician

Definition: A **Concrete Strength Testing Technician** is an individual who has demonstrated the knowledge and ability to properly perform, record, and report the results of four basic laboratory procedures related to the determination of concrete compressive and flexural strength.

Scope and Knowledge:

This program requires demonstration of the knowledge and hands-on skills covered on the Job Task Analysis (JTA):

[JTA for ACI Certification of Concrete Strength Testing Technician](http://www.concrete.org/Portals/0/Files/PDF/JTA-CSTT.pdf)

(<http://www.concrete.org/Portals/0/Files/PDF/JTA-CSTT.pdf>)

The JTA is a detailed list of specific points of knowledge and skills that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

The program requires a working knowledge of the following ASTM practices and test methods:

- C617/C617M – 15—Capping Cylindrical Concrete Specimens
- C1231/C1231M – 15—Unbonded Caps for Concrete Cylinders
- C39/C39M – 18—Compressive Strength of Cylindrical Concrete Specimens
- C78/C78M – 18—Flexural Strength of Concrete

Certification

Requirements:

ACI will grant certification only to those applicants who meet both of the following requirements:

1. A passing grade on the ACI written examination, and
2. Successful completion of the ACI performance examination.

The one-hour **written examination** is closed-book and consists of approximately 40 multiple-choice questions. There are at least eight questions on each of the practices and test methods. To pass the written examination, both of the following conditions must be met:

1. At least 60% correct for each of the required practices and test methods, and
2. A minimum score of 70% overall.

The **performance examination** is also closed-book and requires actual demonstration of the required practices and test methods. The examinee is judged on his/her ability to correctly perform all of the required steps for each procedure.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires successful completion of both the written and performance examinations.

Aggregate Testing Technician - Level 1

Definition: An **Aggregate Testing Technician—Level 1** is an individual who has demonstrated the knowledge and ability to properly perform, record, and report the results of basic field and laboratory procedures for aggregates.

Scope and Knowledge:

This program requires demonstration of the knowledge and hands-on skills covered on the Job Task Analysis (JTA):

[JTA for ACI Aggregate Testing Technician—Level 1](#)

(<http://www.concrete.org/Portals/0/Files/PDF/JTA-ATT1.pdf>)

The JTA is a detailed list of specific points of knowledge and skills that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

The program requires a working knowledge of the following AASHTO/ASTM standards:

- AASHTO R 90/ASTM D75—Sampling Aggregates
- AASHTO R 76/ASTM C702/C702M—Reducing Samples of Aggregate to Testing Size
- AASHTO T 11/ASTM C117—Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
- AASHTO T 27/ASTM C136—Sieve Analysis of Fine and Coarse Aggregates
- AASHTO T 85/ASTM C127—Specific Gravity and Absorption of Coarse Aggregate
- AASHTO T 84/ASTM C128—Specific Gravity and Absorption of Fine Aggregate
- AASHTO T 255/ASTM C566—Total Moisture Content of Aggregate by Drying
- AASHTO T 21/ASTM C40/C40M—Organic Impurities in Fine Aggregate for Concrete

Certification Requirements:

ACI will grant certification only to those applicants who meet both of the following requirements:

1. A passing grade on the ACI written examination, and
2. Successful completion of the ACI performance examination.

The two-hour written examination is open-book and consists of approximately 100 multiple-choice questions. There are 8 to 12 questions on each standard.

To pass the written examination, both of the following conditions must be met:

1. At least 60% correct for each of the required standards, and
2. A minimum score of 70% overall.

The performance examination is closed-book and requires actual demonstration of the required standards. The examinee is judged on his/her ability to correctly perform or describe all of the required procedures for each standard.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires successful completion of both the written and performance examinations.

Aggregate Testing Technician - Level 2

Definition: An **Aggregate Testing Technician—Level 2** is an individual who has demonstrated the knowledge and ability to properly perform, record, and report the results of advanced laboratory procedures for aggregates.

Scope and Knowledge:

This program requires demonstration of the knowledge and hands-on skills covered on the Job Task Analysis (JTA):

[JTA for ACI Aggregate Testing Technician—Level 2](#)

<http://www.concrete.org/Portals/0/Files/PDF/JTA-ATT2.pdf>

The JTA is a detailed list of specific points of knowledge and skills that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

The program requires a working knowledge of the following AASHTO and/or ASTM standards:

- AASHTO T 96-02(2010)/ASTM C131/C131M – 01*—Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- ASTM C535 – 12—Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- AASHTO T 112-00(2012)/ASTM C142 – 97—Clay Lumps and Friable Particles in Aggregate
- ASTM D4791 – 10—Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
- AASHTO T 19M/T 19-09/ASTM C29/C29M – 07—Bulk Density (Unit Weight) and Voids in Aggregate
- AASHTO T 104-99(2011)/ASTM C88 – 13*—Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
- AASHTO T 113-06(2010)/ASTM C123 – 04—Lightweight Pieces in Aggregate
- AASHTO T 176-08/ASTM D2419 – 14—Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
- AASHTO T 304-11/ASTM C1252 – 06—Uncompacted Void Content of Fine Aggregate
- ASTM D5821 – 01(2006)—Determining the Percentage of Fractured Particles in Coarse Aggregate

*Written exam only

Certification

Requirements:

ACI will grant certification only to those applicants who meet the following requirements:

1. Hold current certification as an [ACI Aggregate Testing Technician—Level 1](#), and
2. Obtain a passing grade on the ACI written examination, and
3. Successfully complete the ACI performance examination.

The two-hour written examination is open-book and consists of approximately 100 multiple-choice questions. There are 8 to 12 questions on each of the standards.

To pass the written examination, both of the following conditions must be met:

1. At least 60% correct for each of the required standards, and
2. A minimum score of 70% overall.

المنطقة الشرقية – الظهران – جامعة الملك فهد للبترول والمعادن – ص.ب 123 - 31261 - رقم وطني موحد: 7029582818
مسجلة لدى المركز الوطني لتنمية القطاع غير الربحي بسجل رقم 2275

The performance examination is closed-book and requires actual demonstration of the required standards. The examinee is judged on his/her ability to correctly perform or describe all of the required procedures for each standard.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires successful completion of both the written and performance examinations.

Concrete Flatwork Associate, Finisher, and Advanced Finisher

Definition: A Concrete Flatwork Associate (*formerly Concrete Flatwork Technician*) is a person who has demonstrated knowledge (via a written examination) on proper procedures to place, consolidate, finish, edge, joint, cure and protect concrete flatwork.

A **Concrete Flatwork Finisher** (*formerly Concrete Flatwork Tradesman*) is a craftsman who has demonstrated the skills (via a hands-on performance exam) necessary to place, consolidate, finish, edge, joint, cure and protect concrete flatwork.

An **Advanced Concrete Flatwork Finisher** (*formerly Concrete Flatwork Finisher and Technician*) is a craftsman who has demonstrated the knowledge AND skills and/or experience necessary to place, consolidate, finish, edge, joint, cure and protect concrete flatwork.

Scope and Knowledge:

The JTA is a detailed list of specific points of knowledge and/or skills that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

[JTA for ACI Certification of Concrete Flatwork Associate, Finisher, and Advanced Finisher](http://www.concrete.org/Portals/0/Files/PDF/Flatwork-JTA.pdf)

<http://www.concrete.org/Portals/0/Files/PDF/Flatwork-JTA.pdf>

The primary technical resource for these programs is ACI “Concrete Craftsman Series” CCS-1, Slabs on Ground. These programs require the demonstration of knowledge and/or hands-on skills in the following areas of concrete construction and as listed on the Job Task Analysis (JTA):

- Planning for slab-on-ground placement
- Concrete materials, mixture proportioning, and control tests
- Preparation before placing concrete
- Floor flatness and levelness
- Placing equipment
- Finishing tools and equipment
- Procedures for finishing slabs-on-ground
- Jointing
- Curing and protection of concrete
- Finishing problems and possible solutions

Certification Requirements:

Concrete Flatwork Associate: ACI will grant certification to those candidates who obtain a passing grade on the written examination. The two-hour written examination is closed-book and consists of approximately 50 multiple-choice questions. The passing grade for the written examination is 70%.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Individuals with Concrete Flatwork Associate certification can upgrade to Advanced Finisher status upon submittal and approval of sufficient work experience or combination of sufficient work experience and passing the ACI performance examination. Certification at the Advanced Finisher level is valid for the remainder of the original Associate certification period.

Recertification requires successful completion of a written examination OR 10 hours documented continuing education from an approved source.

Concrete Flatwork Finisher: ACI will grant certification to those candidates who:

- Possess 1,500 hours of *actual on-the-job finishing** experience (approximately one year of regular full-time work) AND
- Successfully pass the *performance examination***

Certification is valid for a period of five years from the date of successfully completing all requirements.

Individuals with Concrete Flatwork Finisher certification can upgrade to Advanced Finisher status upon successful completion of the written examination. Certification at the Advanced Finisher level is valid for the remainder of the original Finisher certification period.

Recertification requires successful completion of either a performance examination OR a combination of 10 hours documented continuing education from an approved source and 1500 additional hours of verified continuing work experience attained within the previous 5 years.

Advanced Concrete Flatwork Finisher: ACI will grant certification to those candidates who obtain a passing grade on the written examination PLUS either:

- Possess 1,500 hours of *actual on-the-job finishing** experience (approximately one year of regular full-time work) AND successfully complete the *performance examination***, OR
- Possess 4,500 hours of *actual on-the-job finishing** experience (approximately three years of regular full-time work)

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires successful completion of EITHER a written examination OR a combination of 10 hours documented continuing education from an approved source and 4500 hours of verified continuing work experience attained within the previous 5 years.

*Finishing experience includes concrete placement, consolidation, jointing, curing and protection, finishing, form setting, prep work, rubbing, patching, and saw cutting. Verification of the work experience by the candidate's employer(s) is required.

**During the performance examination, each examinee must place, consolidate, finish, edge, joint, begin curing, and provide initial protection for a concrete slab. The examiner will observe and evaluate the techniques used and record passing or failing grades on the various individual procedures.

Concrete Construction Special Inspector

Definition: A **Concrete Construction Special Inspector** is a person qualified to inspect and record the results of concrete construction inspection based on codes and job specifications. The program covers inspection during preplacement, placement, and post-placement operations.

An **Associate Concrete Construction Special Inspector** is a person who is knowledgeable about inspection procedures for concrete construction, including preplacement, placement, and post-placement operations; but does not have the experience required to qualify as an ACI Concrete Construction Special Inspector.

Scope and Knowledge:

This program requires demonstration of the knowledge covered on the Job Task Analysis (JTA):

[JTA for ACI Concrete Construction Special Inspector Certification](#)

(<http://www.concrete.org/Portals/0/Files/PDF/JTA-CCSI.pdf>)

The JTA is a detailed list of specific points of knowledge that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

Certification Requirements:

For Concrete Construction Special Inspector: ACI will grant certification only to those applicants who:

1. Obtain a passing grade on the written examination; and
2. Obtain a passing grade on the plans-reading examination; and
3. Fulfill the requirements in ACI Concrete Field Testing Technician—Grade I as follows:
 - Be currently certified as an ACI Concrete Field Testing Technician—Grade I
 - OR**
 - Have been certified as an ACI Concrete Field Testing Technician—Grade I at one time
 - AND**
 - Pass the current ACI Concrete Field Testing Technician—Grade I written exam within one year of passing the Inspector exam*.
4. Possess at least one of the following qualifications:
 - A B.S. degree in Civil Engineering, Civil Engineering Technology, Engineering Technology, Construction Engineering or Construction Engineering Technology from a program accredited by ABET (aka Accreditation Board for Engineering and Technology), including courses in concrete materials, design or construction), PLUS six months satisfactory work experience; or
 - A B.S. degree in an engineering program PLUS one year of satisfactory work experience; or
 - A minimum of two years of college or technical school, earning at least 60 credit hours, PLUS two years of satisfactory work experience; or
 - A high school diploma, or equivalent, PLUS a minimum of three years of satisfactory work experience; or
 - Five years of satisfactory work experience.

***Note:** If the written exam and plans-reading exam are passed on separate dates, the one year period for passing the ACI Concrete Field Testing Technician—Grade I written exam begins on the date of the first exam passed.

The work experience must include:

- Decision-making authority and responsibility;
- Verification of compliance with plans, specifications, and codes;
- Evaluation of concrete construction in the field;
- Documentation and reporting of inspection results; and
- Proficiency in appropriate areas of concrete construction inspection.

Verification of the amount and range of work experience by the applicant's employer(s) is required. The three-hour written inspection examination is open-book and consists of approximately 80 multiple-choice questions. The one-hour plans reading examination consists of approximately 20 questions and is designed to test the examinee's ability to read and understand engineering drawings. The minimum passing grade for each examination is 70%.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires fulfillment of the Field Testing Technician requirements and successful completion of the inspection and plans reading examinations.

For Associate Concrete Construction Special Inspector:

ACI will grant certification to those applicants who meet the Field Testing Technician requirements and pass both written examinations. Individuals with Associate certification can upgrade to full Inspector status upon submittal and approval of sufficient education/work experience.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires fulfillment of the Field Testing Technician requirements and successful completion of the inspection and plans reading examinations.

Adhesive Anchor Installer

Definition: An **Adhesive Anchor Installer** is an individual who has demonstrated the ability to read, comprehend, and execute instructions to properly install adhesive anchors in concrete. The Adhesive Anchor Installer must also demonstrate possession of the knowledge to properly assess ambient conditions, concrete condition, materials, equipment, and tools for installing adhesive anchors and determine when it is appropriate to proceed with installation of an adhesive anchor or when additional guidance from a supervisor/foreman/project engineer is needed.

Scope and Knowledge:

This program requires demonstration of the knowledge and hands-on skills covered on the Job Task Analysis (JTA) for Adhesive Anchor Installer:

[Job Task Analysis \(JTA\) for ACI Adhesive Anchor Installer Certification](http://www.concrete.org/Portals/0/Files/PDF/JTA-AAI.pdf)

(<http://www.concrete.org/Portals/0/Files/PDF/JTA-AAI.pdf>)

The JTA is a detailed list of specific points of knowledge and skills that may be included in the examinations for this ACI Certification program. ACI urges candidates to use the JTA to prepare for the certification exams.

Certification Requirements:

ACI will grant certification only to those applicants who obtain a passing grade on both the written examination and performance examinations.

1. The 90-minute written examination is closed-book and consists of 75 multiple-choice questions. To pass the written exam the examinee must attain a minimum score of 74%.
2. The performance examination consists of two parts, **Part 1 (vertical down)** and **Part 2 (overhead)**:
 - In **Part 1**, each examinee will be tasked with selecting, assembling, and using the proper tools, equipment and materials to drill and clean a vertical down hole in concrete, inject adhesive, and set an anchor to the proper depth and perpendicularity. The Examiner(s) will observe and evaluate the examinees' performance for proper procedure.
 - In **Part 2**, each examinee is required to inject clear tubes with adhesive in an overhead orientation behind a blind to simulate a drilled hole in concrete using the piston plug method. The Examiner(s) will observe and evaluate the examinees' performance for proper procedure.

Following Part 1, the Examiner(s) will check the vertical down installation for proper depth and plumb; after the adhesive in the tubes injected in Part 2 has cured, the Examiner(s) will cross section them and evaluate the size and location of air voids to determine pass or fail. This program now certifies candidates in only the piston-plug overhead installation system.

A set of instructions appropriate for the exam along with applicable Material Safety Data Sheets (MSDS) will be available for consultation by the examinee during both parts of the performance exam. Both parts of the performance must be successfully completed within one year or the entire performance examination must be re-taken.

Certification is valid for a period of five years from the date of successfully completing all requirements.

Recertification requires successful completion of both the written and performance examinations.