



Canadian Council of Independent Laboratories
Conseil canadien des laboratoires indépendants

CCIL Concrete Testing Technician Certification Program Description

1. Introduction to CCIL Technician Certification

A CCIL-certified laboratory shall employ:

- i) Laboratory Technicians certified to perform the laboratory test methods for which the laboratory is certified, and
- ii) Field Technicians certified to perform the field tests for which the laboratory is certified.

CSA Standard A283 requires that field and laboratory testing shall only be done by personnel who are certified to meet the requirements of CSA A23.2 and CSA A283.

CCIL only certifies concrete testing field and laboratory technicians who work for a CCIL-certified concrete testing laboratory. CCIL does not provide training or training materials. In accordance with Clauses 5.2.1.1 b) and 5.2.2.2 c) of CSA Standard A283-24 it is the responsibility of the laboratories to train and maintain competent testing personnel and ensure that all concrete tests are done by certified technicians.

2. Training

In accordance with CSA standard A283-24 clause 5.2.1.1 b) and clause 5.2.2.2 c), CCIL requires the Supervising Engineer to ensure and confirm the following prior to the date of certification;

- a. the technicians listed for certification examination are adequately trained and capable of following the current versions of the specified test procedures; and
- b. the Supervising Engineer has, within the previous 12 months, reviewed the test procedures with the technicians to be certified.

There are three ways most commonly used to prepare technicians for the written and practical examinations:

- i) Taking construction technician or technologist courses at a post-secondary institution;
- ii) On-the-job training in combination with self-study of the test methods for which the laboratory is certified. Testing carried out by uncertified individuals who are training can not be reported for acceptance purposes;
- iii) Taking a course offered by the American Concrete Institute (ACI). ACI offers a “CSA-Based Field Testing Technician” course. Details can be found at www.concrete.org/certification.

The ACI Concrete Field Testing Technician Grade 1 certificate is recognized in Clause 6.1.2 of CSA Standard A283-24 as a valid qualification for field technicians who perform basic field tests. CCIL must be notified by the laboratory within 30 days of the employment of an ACI-certified technician in the form of a letter on company letterhead that is signed by the Supervising Engineer. The letter shall be accompanied by a copy of the ACI CSA Concrete Field Testing certificate. The technician is limited to performing test methods A23.2-1C, 3C (casting cylindrical specimens only), 4C, 5C, and 17C.

3. Requirements and Examinations

Mobile phones must be switched off and placed out of sight during examinations.

Technicians can only be examined for test methods listed on the Laboratory Certificate.

Laboratories must employ one or more field technicians and laboratory technicians certified for all the test methods listed on the Laboratory Certificate, though this does not have to be the same person.

A technician who, as a result of a change in location or employer, is certified for more tests than included on the Laboratory Certificate of the current employer, is limited to performing the tests on the Laboratory Certificate. The technician's certification for the restricted tests remains valid for five years from the date of certification should the technician become employed by a laboratory certified for the applicable test methods.

3.1. Field Technicians

Field technicians must complete a written (closed book) examination and a practical (demonstration) examination.

3.1.1. Field Technician Examination Test Methods

The test methods included in the field technician examinations are as follows:

- Technicians applying for Type QF certification must answer questions on all of the following test methods and standard practices: CSA A23.2-1C, 3C (field compressive), 4C, 5C and 17C;
- In a Type R laboratory, technicians may be certified at the discretion of the Supervising Engineer for test methods CSA A23.2-1A and/or 10A;
- In a Type S laboratory, technicians may be certified for test method CSA A23.2- 6C.

A field technician may be certified for any of the following additional tests which are listed on the Laboratory Certificate:

Type Q laboratory: CSA A23.2-1B (field), 6B (Proc A), 3C (flexural), 6C, 7C, 14C (field), 15C, 16C, 19C, or 20C (requires 19C). CSA A23.2-1B(field), 3C (flexural), 6C, 7C, 15C, 16C, 19C and 20C require Type QF.

Type R laboratory: None

Type S laboratory: CSA A23.2- 12C (field) (requires 18C), or 18C

** Please note that test methods CSA A23.2-1B, 3C, 12C, and 14C include both field and laboratory activities. The relevant sections of the Laboratory Technician and Field Technician Examinations must be completed, though not necessarily by the same person.*

3.1.2. Field Technician Written Examination

The written examination comprises eight (8) questions for each test method. A mark of 75% on each test method is required to pass.

- Basic Concrete Field Type QF certification has 40 multiple choice questions to be completed in 40 minutes.
- Concrete Aggregate Field Type RF certification has 8 multiple choice questions on each of the test methods CSA A23.2-12C and 18C to be completed in 10 minutes for each test method.
- Advanced Concrete Field Type SF certification has 8 multiple choice questions for test method CSA A23.3-6C. This test is to be completed in 10 minutes.

The written examination for additional tests includes eight questions on each test method to be completed in 10 minutes. A field technician must be certified for test method CSA A23.2-19C to add 20C and must be certified for CSA A23.2-18C to add 12C.

3.1.3. Field Technician Practical Examination

The practical examination for Basic Concrete Field Type QF certification includes the demonstration of test methods CSA A23.2-3C (casting cylindrical specimens only), 4C, 5C and 17C, and an oral description of Standard Practice CSA A23.2-1C. A mark of 95% on each test method is required to pass. The practical examination for additional tests and the test methods in Type RF Type SF examinations may include any or all of the test methods on the written examination paper and shall comprise oral questions and practical demonstrations chosen by the CCIL Inspector to satisfy the Inspector the technician is competent to perform the test methods.

3.2. Laboratory Technicians

Laboratory technicians must complete a written examination and a practical (demonstration) examination.

3.2.1. Laboratory Technician Examination Test Methods

The test methods included in the laboratory technician open book examinations are as follows:

- Technicians applying for Type QL certification must answer questions on test methods CSA A23.2-3C (lab), and 9C.
- In a Type R laboratory, technicians may be certified at the discretion of the Supervising Engineer, for any or all test methods CSA A23.2-2A, 3A, 4A, 5A, 6A, 7A, 12A, and 13A.
- In a Type S laboratory, technicians may be certified at the discretion of the Supervising Engineer, for any or all test methods CSA A23.2- 8A, 2C, and 11C.

A technician may be certified for any of the following tests which are listed on the Laboratory Certificate:

Type Q laboratory: CSA A23.2- 8A, 1B (lab), 8C, 11C, or 14C (lab).

Type R laboratory: CSA A23.2- 9A, 11A, 16A, 17A, 23A, 24A, 25A, 26A, 29A, 2B, 3B, 4B, or 8B

Type S laboratory: any of the following CSA A23.2- 14A, 6B (Proc B), 10C (Proc A, B, C), 12C (lab), 13C, 21C, 22C, 23C, 26C, 27C and ASTM C457

** Please note that test method CSA A23.2-1B, 3C, 12C, and 14C include both field and laboratory activities. The relevant sections of the Lab and Field Technician Examinations must be completed, though not necessarily by the same person.*

3.2.2. Laboratory Technician Written Examination

The written laboratory technician examination comprises 12, 8 or 4 questions for each test method. A mark of 75% on each test method is required to pass.

- Basic Concrete Laboratory Type QL technician certification has 20 multiple choice questions to be completed in 20 minutes.
- Concrete Aggregate Laboratory Type RL technician certification has 4 multiple choice questions for each test method to be completed in 5 minutes for each test method.
- Advanced Concrete Laboratory Type SL technician certification has 8 multiple choice questions to be completed in 10 minutes for each test method.

There are no pre-requisites for the laboratory technician certifications. Basic Concrete Laboratory Type QL, Concrete Aggregate Laboratory Type RL, and Advanced Concrete Laboratory Type SL, and all laboratory additional test methods may each be obtained by a different technician.

The written examination for additional tests includes eight questions on each test method to be completed in 10 minutes.

3.2.3. Laboratory Technician Practical Examination

The practical examination for Basic Concrete Laboratory Type QL Technician certification includes the demonstration of test methods CSA A23.2-3C and 9C. A mark of 95% on each test method is required to pass. The Type QL examination includes questions from CSA-A23.2-3C relating to the receipt and curing of concrete cylinders in the laboratory. A technician passing the Type QL practical examinations is not certified to cast concrete cylinders or perform any of the field activities in test method CSA A23.2-3C.

The practical examination for the test methods in Type R, Type S, and all the additional tests, may include any or all of the test methods on the written examination paper and shall comprise of oral questions and practical demonstrations chosen by the CCIL Inspector to satisfy the Inspector the technician is competent to perform the test methods

4. Repeating Examinations

CCIL has the following rules with respect to technician examinations:

- a. The written and practical examinations for type Q, or for any other test method, must be completed successfully within a 12-month period, otherwise the technician must begin a new application.
- b. The passing percentage on all written exams is 75% per test procedure.
- c. If a technician fails the written examination but obtains an overall grade of at least 70% the technician may be allowed to repeat the written examination once during the inspector's visit (subject to the inspector's schedule). Visits may be virtual.

- d. If a technician fails the practical exam with 3 or less errors on each test method, the technician may be allowed to repeat the practical examination once during the inspector's visit (subject to the inspector's schedule).
- e. The minimum time to be re-examined after the second failure is 21 calendar days. If an examination is failed for the third time, the technician must begin a new application after another 21-day period and complete both the written and practical examinations.
- f. If a technician obtains an overall grade less than 60% on the written examination the practical examination will not be given.
- g. If a technician fails both the written and the practical examinations, a same day retest will not be allowed.

5. Field and Laboratory Technician Results and Cards

The laboratory is provided with a written record of each technician attempting the written and practical examinations. Concrete field and laboratory technicians passing the written and practical examinations are issued a "CCIL Certified Concrete Field, (or Laboratory) Testing Technician" card which identifies the test methods the technician is certified to perform and is valid for a period of five years.

Prior to the expiry year of the technician certification, if a technician upgrades by passing the written and practical examinations for a test method for which the technician is not currently certified, the new test methods are added to the Field or Laboratory Card with no change in the original expiry date. If the laboratory applies to upgrade a technician in the year the current card expires, the technician is expected to renew the card by passing the examinations for all the test methods on the application submitted by the Supervising Engineer.

6. Record Keeping

The Supervising Engineer of the laboratory is responsible for maintaining a record of staff certifications, including the test methods, the expiry date of the certification of both field and laboratory technicians, and ensuring that tests are performed by certified staff. The expiry date of the certification of technicians shall be shown on the laboratory's List of Certified Technicians which is linked to the organization chart as an attachment. Records of the completed certification must be retained by the laboratory to confirm the information listed on the List of certified technicians.

During the annual or biennial audit, the inspector will verify that:

- i. All technician certifications are up-to-date.
- ii. The laboratory has staff certified to perform all the test methods on the Laboratory Certificate.
- iii. All testing is performed only by certified personnel.
- iv. A request to transfer a technician's certification has been submitted in the CCIL portal for any technicians hired from another CCIL certified laboratory.
- v. CCIL has been informed within thirty days of the employment of technician holding a ACI Concrete Field Testing Technician Grade 1 certification.

The current versions of the test methods must be available in the laboratory to all staff.