

CAN/ULC-S1001 Standard for Integrated Systems Testing



Question

What is CAN/ULC-S1001?

Answer

It is the Canadian standard that provides the methodology for verifying and documenting that **interconnections** between fire protection and life safety systems are functioning as required. In summary, the testing shall show that these systems are “talking” to each other properly.

Question

When is the CAN/ULC-S1001 testing required?

Answer

As required by the National Building Code (NBC) and CAN/ULC-S1001, integrated systems testing is required when integrated fire protection and/or life safety systems are constructed or impacted by work. A satisfactory Integrated Testing Report must be submitted prior to occupancy being granted or prior to the building permit being closed.

Integrated systems testing is also an ongoing operational requirement under the National Fire Code (NFC). CAN/ULC-S1001 provides the timelines for this ongoing testing. The building owner is responsible to ensure that satisfactory Integrated Testing Reports are kept on file, provided on the building site, and provided to the Fire Department as requested.

Additional details regarding the City of Regina’s requirements for integrated testing are provided in the body of this advisory.

Question

Who can perform the Integrated Systems Testing?

Answer

As per CAN/ULC-S1001, an Integrated Testing Coordinator is responsible to develop and implement the Integrated Testing Plan. This person must have knowledge of:

1. Codes and Standards for the various systems
2. How the systems operate (normal & emergency operation)
3. Testing the functionality of the systems

The Integrated Testing Coordinator must have all licenses and certifications required by contractual obligations, federal, provincial, and other regulations (e.g. Municipal regulations).

At this time, the City of Regina Building Standards & Inspections Branch and Fire & Protective Services do not have additional requirements for the licensing or certification of Integrated Testing Coordinators. The Integrated Testing Coordinator is required to have the competencies required by CAN/ULC-S1001, along with other licenses or certifications as mentioned above. Fire & Protective Services does provide licenses to technicians for certain systems (eg. Sprinkler & standpipe systems, fire alarm systems, commercial cooking equipment, etc.). The licensing requirements for those systems remain.

Note: ULC does offer a voluntary program to certify Integrated Testing Coordinators. It is recommended that Integrated Testing Coordinators contact ULC regarding this certification program. ULC will also be working with AHJs who are interested in requiring this certification in regards to the timing and implementation of this requirement. In the future, the City of Regina may require Integrated Testing Coordinators to be ULC certified, but the City of Regina currently does not require this certification.

Question

Does the City of Regina require the Integrated Testing Plan to be submitted to the City authority for review prior to performing the testing?

Answer

No.

Question

Does the City of Regina require an inspector to be on site for the Integrated Systems Test?

Answer

No, the City of Regina will not be on site for the tests.

Question

Will the City of Regina be involved with determining what previous testing of systems can be accepted for the Integrated Systems Test (to minimize duplication of testing)?

Answer

No. The Integrated Testing Coordinator will be responsible for making this determination.

Question

What information is required in the Integrated Testing Report?

Answer

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The Integrated Testing Report shall include all documentation described in Subsection 7.3 of CAN/ULC-S1001. This includes:

1. The Integrated Testing Plan*
2. Integrated Testing Forms
3. Integrated Testing Forms for Re-tests
4. Documentation required by Section 5.3

***Note:** a sample Integrated Testing Plan is provided in Appendix C of “CAN/ULC-S1001-11-REV1”, which is available for free viewing on www.shopulstandards.com (user account required).

A sample checklist has been provided as an Appendix to this advisory to assist in identifying documentation required in the Integrated Testing Report.

Question

Who shall receive the Integrated Testing Report?

Answer

The Integrated Testing Report shall be provided to the following:

1. Building owner
2. City of Regina (as requested by Building Standards or Fire & Protective Services. See “City of Regina Submission Requirements” for each type of testing below)
3. Maintained on the building site

Additional Information

The remainder of this advisory provides additional information about the CAN/ULC-S1001 standard, and the City of Regina requirements concerning the Standard.

Code References

Where there are fire protection systems and life safety systems that are to be integrated with each other, both NBC and NFC call for testing in accordance with CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems”. This is to ensure all systems are tested “as a whole” and are functioning together properly. The references in NBC and NFC are given below:

- **NBC, Division B, Sentences 3.2.9.1.(1) & 9.10.1.2.(1):**
Where fire protection and life safety systems and systems with fire protection and life safety functions are integrated with each other, they shall be tested as a whole in accordance with CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems,” to verify that they have been properly integrated.
- **NFC, Division B, Sentence 6.8.1.1.(1):**
Interconnections between fire protection and life safety systems shall be tested and maintained in conformance with CAN/ULC-S1001, “Integrated Systems Testing of Fire Protections and Life Safety Systems.”

Types of Integrated Systems Testing & City of Regina Submission Requirements

The types of testing are summarized below, and include the City of Regina requirements for submission. Refer to CAN/ULC-S1001 for more details.

- **Initial Integrated Systems Testing (CAN/ULC-S1001, Section 5):**
 - Scope: Initial testing for new installations of systems
 - City of Regina Submission Requirements: Work for new system installations will be performed under a Building Permit. Therefore, this testing falls under the jurisdiction of the Building Standards & Inspections Branch. A satisfactory Integrated Testing Report must be submitted to the Building Inspector and must be accepted prior to an occupancy permit being issued or permit completion letter being issued.
- **Periodic Integrated Systems Testing (CAN/ULC-S1001, Section 8):**
 - Scope: On-going operational testing of integrated systems that had their initial testing performed under Section 5
 - Standard timeline: One (1) year after the initial test (Section 5 test), conduct another integrated systems test. Perform subsequent integrated tests at intervals of not more than five (5) years.
 - City of Regina Submission Requirements: this testing is operational in nature and therefore falls under the jurisdiction of Fire & Protective Services. The building owner is responsible to ensure that satisfactory Integrated Testing Reports are maintained on site and provided to the Fire Department upon request. Building owners can contact the Fire Department for more information regarding the ongoing integrated systems testing requirements for their building.
- **Retro-Integrated Systems Testing (CAN/ULC-S1001, Section 9):**
 - Scope: testing for existing systems that did not have an initial Section 5 test
 - Standard timeline: after the initial Retro-Integrated Systems Test, conduct subsequent integrated systems tests at intervals of not more than five (5) years.
 - City of Regina Submission Requirements: this testing is operational in nature and therefore falls under the jurisdiction of Fire & Protective Services. The building owner is responsible to ensure that satisfactory Integrated Testing Reports are maintained on site and provided to the Fire Department upon request. Building owners can contact the Fire Department for more information regarding the ongoing integrated systems testing requirements for their building.
- **Integrated Systems Testing for Modifications (CAN/ULC-S1001, Section 10):**
 - Scope: testing for when integrated systems are modified, or when integrated systems are affected by modification to the building
 - City of Regina Submission Requirements: Work to the systems or the building will be performed under a Building Permit. Therefore, this testing falls under the jurisdiction of the Building Standards & Inspections Branch. A satisfactory Integrated Testing Report must be submitted to the Building Inspector and must be accepted prior to an occupancy permit being issued or permit completion letter being issued.

- **Note:** only integrations affected by the scope of work covered under the permit require integrated testing. The City of Regina will require the Integrated Testing Report prior to an occupancy permit being issued or permit completion letter being issued for the project. The City of Regina recommends that owners consider further Integrated Testing of their systems to ensure unaffected integrations perform as intended (see Retro-Integrated Systems Testing, discussed above).

Examples from CAN/ULC-S1001 of Systems that Require Integrated Testing

1. Transmissions with fire signal receiving center (e.g. receipt of signals)
2. Mass notification systems
3. Elevators (e.g. proper recall)
4. Emergency generators (e.g. startup test, loss of power simulations)
5. A/V and lighting control systems
6. Notification systems
7. Sprinkler systems
8. Standpipe systems
9. Fire pumps
10. Water supplies (test responses to pressure sensors, level sensors, etc.)
11. Water supply control valves
12. Freeze Protection Systems
13. Fixed fire suppression systems (release of suppression agent not required)
14. Cooking equipment fire suppression systems (release of agent not required)
15. Hold open devices (each door tested to ensure returns to closed and latched position)
16. Electromagnetic locks (each must de-energize)
17. Smoke control systems
18. Emergency pressurization systems
19. Smoke exhaust systems
20. Hazardous Protection monitoring
21. Smoke alarms

Role of Integrated Testing Coordinator

- Must have all licenses and certifications required by contractual obligations, as well as those required by federal, provincial, and other regulations (**Note:** the City of Regina has no additional requirements for licensing or certification).
- Must have the competencies listed in the Standard
- Must prepare an Integrated Testing Plan
- Must provide the Integrated Testing Plan to the professional designers for review/acceptance prior to the test (**Note:** the City of Regina does not require the Integrated Testing Plan to be submitted to the City authority for review prior to the test)

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- Collect the required pre-test documentation (eg. Confirmation from designers/installers/verifiers that systems are ready for testing, confirmation that building occupants have been notified and that safety measures are in place, etc.)
- Determine what previous testing of the systems can be accepted to avoid duplication of testing (**Note:** the City of Regina will not be involved in this determination)
- Determine which parties are required to participate in the Integrated Systems Test (**Note:** the City of Regina will not be on site for the testing)
- Implement the Integrated Testing Plan (perform the tests) and record the results to show proper integration (ensure re-testing is performed as needed)
- Compile all the documentation into an Integrated Testing Report and provide it to the building owner, authority having jurisdiction (as required), and keep a copy on the building site.

Role of Design Professionals, Installing Contractors, and Verifying Parties

- Design professionals for each system must provide details to the Integrated Testing Coordinator about the interconnection between systems (these are used to develop the Integrated Testing Plan).
- Design professionals to provide feedback and acceptance of the Integrated Testing Plan prepared by the Integrated Testing Coordinator
- All parties to provide written confirmation to the Integrated Testing Coordinator that the systems are ready for testing, along with supporting documentation required.
- All parties to participate in the testing on site, as detailed in the Integrated Testing Plan (determined by the Integrated Testing Coordinator).
- Design professionals shall ensure concerns with their system(s) are resolved
 - **Note:** The Integrated Testing Coordinator is not intended to validate the design of individual systems (the Integrated Testing Coordinator is focused on the interconnection of the systems). When there are concerns with individual systems, they shall be forwarded to the design professional responsible for that system. The design professional must resolve those concerns.

Role of the City of Regina

- Enforce the NBC and NFC requirements for Integrated System Testing to be performed
- Building Standards & Inspections Branch: review the Integrated Testing Report and accept prior to occupancy being granted or prior to the building permit being closed.
- Fire & Protective Services: request documentation from building owners to show that Periodic Integrating Systems Testing (Section 8) and Retro-Integrated Systems Testing (Section 9) are occurring, as required. Review reports as needed for compliance.

For more information on Building Permits, Building Safety or Zoning Information, please visit Regina.ca or contact [Service Regina](#).

Appendix – Sample Checklist for Integrated Testing Report Requirements

General

- Date of test and building being tested clearly identified
- Type of Integrated Systems Test Clearly Identified
 - Initial
 - Periodic
 - Retro
 - Modifications
- Integrated Testing Coordinator Identified (with credentials noted)
- Participants required to be present identified & confirmed present for testing
- Report has all required sections
 - Integrated Testing Plan* (see ‘Specifics’ below for the items required)
 - Integrated Testing Forms
 - Integrated Testing Form for Re-tests
 - Documents required by Subsection 5.3 (confirmations, system verifications, etc.)
- Report clearly indicates
 - Testing Passed
 - Report provided to owner, AHJ, and maintained on building site
 - Timeline for next test identified

Specifics

- Integrated Testing Plan* includes the following:
 - Functional objectives of system integration
 - Sequence of operations of systems (normal & fire conditions)
 - Test procedures and results
 - Procedure for notifying building occupants of the test
 - Alternate measures to ensure occupant safety during the test
- Documentation required prior to testing provided with report? Include items such as:
 - Written confirmation from design professionals that system(s) are ready to test
 - Written confirmation from installing contractors that system(s) are ready to test
 - Verifications for each system (e.g. Fire alarm verification, Sprinkler Material and Testing Certificate, Standpipe Material and Testing Certificate, NFPA 96 commissioning, Fire Pump Report, Emergency Generator Report, etc.)
 - Confirmation that electrical inspection completed (if available)
 - Confirmation that elevator/escalator inspections done (if available)
 - Confirmation that building occupants have been notified
 - Confirmation that alternate safety measures have been implemented
- Testing forms
 - Clearly show conformance to Section 6 for all applicable systems
 - Clearly indicate where previous system verification is being relied upon
 - Signatures provided from responsible parties for each system confirming passed
 - Failures noted, with re-testing showing passing result

***Note:** a sample Integrated Testing Plan is provided in Appendix C of “CAN/ULC-S1001-11-REV1”, which is available for free viewing on www.shopulstandards.com (user account required).