

Building Standards Guide

Promoting construction of safe, healthy, habitable buildings

Fire Alarm Systems

Building and Fire Safety Guide

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- City of Regina Building Standards Department
- City of Regina Fire and Protective Services
- City of Saskatoon Building Standards Department
- City of Saskatoon Fire Department
- Saskatchewan Building Officials Association
- Saskatchewan Association of Fire Chiefs
- Saskatchewan Association of Fire Chiefs – Inspectors’ Division
- The Electrical Contractors Association of Saskatchewan
- The Canadian Fire Alarm Association – Saskatchewan Chapter
- Association of Consulting Engineering Companies
- Saskatchewan Public Safety Agency
- SaskPower Electrical Inspections Division

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This guide is published by the Saskatchewan Ministry of Government Relations for purposes of providing information to users on the topic contained herein. In case of conflict between <i>The Uniform Building and Accessibility Standard Act</i> (the UBAS Act), <i>The Fire Safety Act</i> (the FS Act), the National Building Code of Canada 2015 (NBC 2015), the National Fire Code of Canada 2015 (NFC 2015), applicable referenced standards and this advisory, provisions of the UBAS Act, the FS Act, the NBC 2015, the NFC 2015 and standards shall apply.	

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Introduction

The purpose of this guide is to provide *building owners, authorities having jurisdiction* (municipality or *local authority*), municipal *building officials*, fire inspectors, *designers*, installers and industry partners with a common understanding of the building and fire code requirements for fire alarm systems. The guide is also intended to clarify the responsibilities of the various parties involved in the development of a *fire alarm system*.

In Saskatchewan, *fire alarms systems* are required, as applicable, by the National Building Code of Canada. Where *fire alarm systems* are included in a *building*, the system must be maintained as required by the National Fire Code of Canada. These Codes are adopted in Saskatchewan with few amendments as the minimum standards for building construction and the fire safe operation of *buildings*.

The primary function of an automatic *fire alarm system* is to provide early detection and early warning of smoke and/or fire, and *notification* for the occupants to take action. The system may also notify the *fire department* to take action.

For that purpose, this guide is intended to provide information to building owners and managers, fire inspectors, fire alarm service technicians and industry, to establish a better understanding of the code requirements and compliance needs applicable to *fire alarm systems*.

The design, installation, monitoring, service and ultimately the response to alarms is system based, with each component of the system, and the parties responsible for each component, contributing to the effectiveness of the complete system and the safety of building users.

Abbreviations and Acronyms

Abbreviations and acronyms are used throughout this document. The first reference of a specific document or term will be used in full and will identify the abbreviation or acronym in brackets immediately following. All references subsequent to the first use will be by abbreviation or acronym only with the exception of headings and definitions which will use the full reference. A list of the documents and terms and the associated abbreviations or acronyms is included in Appendix A.

Definitions

The Uniform Building and Accessibility Standards Act (the UBAS Act), *The Uniform Building and Accessibility Standards Regulations* (the UBAS Regulations) and *The Building and Accessibility Standards Administration Regulations* (the BASA Regulations) contain certain definitions establishing specific meanings. *The Fire Safety Act* (the FS Act) and *The Fire Safety Regulations* (the FS Regulations) also contain certain definitions establishing specific meanings. In addition, both the National Building Code of Canada (NBC) and the National Fire Code of Canada (NFC) contain a number of definitions which are specific to their respective *Codes*. The definitions in the UBAS Act, the UBAS Regulations, the BASA Regulations, the FS Act or the FS Regulations shall apply in the event of a conflict between these definitions and those in either the NBC or NFC. Italicised words, other than titles of acts and regulations, are defined in the above noted legislation, regulations, NBC, NFC and standards.

In addition, the section titled, Other Terms and Definitions has been included to clarify the meaning of certain words for the purposes of this document. These words are also italicized to ensure understanding of their use in this specific document. In all other situations, if there is no definition in the documents noted above, the meaning commonly assigned to them in the context in which they are used, will apply. The context in which they are used must take into account the specialized use of terms within the various trades and professions.

The defined words applicable to this document are included in Appendix A. Users are strongly encouraged to ensure they are using the correct definition when using this guide or referencing either the NBC or NFC.

Legislative and Regulatory Framework

Saskatchewan establishes minimum *building standards* through the UBAS Act. The UBAS Act and associated Regulations provide the framework for development, adoption and implementation of *building standards* in Saskatchewan and establish responsibilities for *building owners, authorities having jurisdiction (AHJ), the Government of Saskatchewan, building officials, architects, engineers* and constructors (installers).

The UBAS Regulations provide for the adoption of the most recent NBC which includes the installation requirements for *fire alarm systems*. The edition of the NBC applicable to a *building* is the edition of the NBC which is in effect on the day the permit for construction is issued. The UBAS Regulations also contain any amendments to the NBC or NECB which are specific to *buildings* in Saskatchewan.

The FS Act and associated Regulations provide for the adoption of the most recent edition of the NFC which includes maintenance requirements for *fire alarm systems*. The FS Act provides the framework for fire safety, fire prevention and emergency response services in Saskatchewan and establishes responsibilities for *building owners, authorities having jurisdiction, the Government of Saskatchewan, local assistants, fire inspectors* and constructors.

The FS Regulations provide for the adoption of the NFC. The NFC applies to a *building* when it is in use. The edition of the NFC that applies to a *building* is the edition of the NFC which is in effect at the time an *inspection* is undertaken. The FS Regulations also contain any amendments to the NFC which are specific to *buildings* in Saskatchewan.

The Electrical Inspection Act, 1993 provides for adoption of CAN/CSA C22.1 “The Canadian Electrical Code, Part 1”. The Canadian Electrical Code includes the installation of *fire alarm systems*. It also provides the framework for electrical safety, responsibilities for *building owners, electrical contractors* and electrical inspectors.

Roles and Responsibilities

Fire alarm systems are complex and require the involvement of many different parties with different expertise and responsibilities. The responsibilities for the parties described in the following section are summarized in Figure 1. (See page 12)

Owner

An *owner* and/or anyone working for an owner is responsible for compliance with the minimum *building standards* adopted under the UBAS Act.

With regard to *fire alarm systems*, it is unlikely that an *owner* will be undertaking the actual work of installation, *acceptance testing*, verification or annual maintenance and testing. Much of this work will be undertaken by persons knowledgeable with the systems, but it is still the responsibility of the *owner* to arrange for this work to be done by a *competent person(s)*.

Owners initiate a new project. *Owners* are responsible for contacting the *appropriate local authority* to determine what building permit or other requirements exist at the local level when undertaking a project and ensuring those permits are obtained.

Owners are responsible for arranging the contracts needed for any *fire alarm system* that requires signals to the *fire department*. Many *authorities having jurisdiction* will require *owners* to provide evidence of these contracts and/or verification reports for CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems” before *occupancy* of a *building* is permitted. *Owners* are also responsible for arranging any required *building* and/or *fire inspections* for their *building* with the *appropriate local authority*. It is the *owner’s* responsibility to retain all documentation/records related to the *design*, *acceptance testing*, verification, inspection, *testing* maintenance and *repairs* to the *fire alarm system* (related to CAN/ULC-S524, “Installation of Fire Alarm Systems”; CAN/ULC-S536, “Inspection and Testing of Fire Alarm Systems”; CAN/ULC-S537, “Verification of Fire Alarm Systems” and CAN/ULC-S540, “Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance”) and the integrated systems *testing* required by CAN/ULC S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems”. *Owners* may be asked to make this information available for review by a *fire inspector*.

Authority Having Jurisdiction

AHJs (municipality or *local authority*) are responsible for enforcing the UBAS Act, associated Regulations, and all provisions of the NBC and NECB which may be applicable to a *building* within their jurisdiction. Similarly, *authorities having jurisdiction* are responsible for enforcing the FS Act, associated Regulations, and all provisions of the NFC which may be applicable to a *building* within their jurisdiction. An AHJ may, by bylaw, make additional building and fire safety standards that exceed the minimums established by the province. It is important that owners, or *designers* and contractors working on behalf of owners, contact the AHJ to obtain information related to procedures and requirements applicable to a *fire alarm system* project in that AHJ.

The AHJ ensures the *Code* compliance of a new construction or renovated building project through a building permit and *inspection* process, including those with a fire alarm system. The AHJ also has jurisdiction for the fire *inspection* of new or *existing buildings*, including those with *fire alarm systems*. In some cases, a building permit review or a fire *inspection* may result in an order to upgrade an existing fire alarm system or to install a new system where none exists.

Government of Saskatchewan

The Ministry of Government Relations is assigned responsibility for administering the UBAS Act and associated Regulations. The Saskatchewan Public Safety Agency is assigned the responsibility for administering the FS Act and associated Regulations under the Minister responsible for Government Relations. The ministry provides support to *owners*, industry, municipalities, *building officials*, fire inspectors and other *Code users* on the application of the NBC, and the NFC.

Building Official

Building officials are appointed by and work for municipalities to provide plan review, *inspection* and enforcement services of the minimum standards required by the UBAS Act including the requirements for *fire alarm systems*.

The work of the *building official* for a project including a *fire alarm system* may include plan review, field *inspection* of the *fire alarm system*, and obtaining reports for *acceptance testing* and verification of the system to the requirements of CAN/ULC-S524, CAN/ULC-S537, CAN/ULC S1001 and where required CAN/ULC-S561.

Buildings with fire alarms systems require a Class 2 or Class 3 licenced *building official* working on behalf of the AHJ. (See page 36)

Local Assistant/Fire Inspector

The *local assistant/fire inspector* works for the AHJ. The work of the *fire inspector* includes conducting fire *inspections* for many building occupancies, dealing with complaints and investigating fires. In some AHJs, or for certain occupancies, these fire *inspections* are required before the *building* is occupied in addition to the requirements during the operation of the *building*. The intent of these *inspections* is to ensure a property is safe while it is in operation.

Fire *inspections* focus on the life safety aspects of a *building*. A fire *inspection* may result in an order to upgrade an existing *fire alarm system* or to install a system where none exists. The work of a *local assistant* on a project including a *fire alarm system* may include plan review and *inspections* on the *fire alarm system*. It may include reviewing logs of all maintenance, *repair* and *testing* on a *fire alarm system* and obtaining reports for *acceptance testing* and verification of the system to the requirements of CAN/ULC-S524, CAN/ULC-S537, CAN/ULC S1001 and where required CAN/ULC-S561. It will also include reports for *inspection* maintenance and *testing* to the requirements of CAN/ULC-S536.

Design Professional (Architects and Engineers)

Design professionals (a registered *architect* or licensed professional *engineer*) work with the owner to develop the *design criteria* for the fire alarms system project which includes the requirements of the Codes and the referenced standards. The *designer* involved in this work will be one who has an applicable scope of practice that includes education and experience in the *design of fire alarm systems*. This *designer* will be an electrical *engineer* or an other professional competent/experienced in the *design of fire alarm systems*.

Regulations under the UBAS Act require an *owner* to have a registered *architect* or licensed professional *engineer* complete the *design* or *design review* of the *building* and all *building* systems if the *building* is within the scope of NBC, Division B (includes Parts 3, 4, 5, 6 and 7) of the NBC. Where *fire alarm*, fire detection and smoke detection devices and systems are installed, these devices and systems shall conform to NBC, Division B, Article 9.10.18.3. Alarm and Detection Systems and NBC, Division B, Subsection 3.2.4. Fire Alarm and Detection Systems.

The provisions for fire protection features installed in *buildings* are intended to provide a minimum acceptable level of public safety. It is intended that all fire protection features of a *building*, whether required or not, will be *designed* in conformance with good fire protection engineering practice and will meet the appropriate installation requirements in relevant standards.

A note on best practices:

To ensure installation requirements are met and *design* intent understood by other responsible parties, *designers* shall take due care in detailing the *fire alarm system* components, their quantity, and their interconnection to the system such that these determinations are not left to interpretation by other responsible parties. For example, a one-line schematic of system *control units*, *annunciators* and devices detailing quantity and specific installation instructions and wiring methods may satisfy this requirement.

The *fire alarm system designer* must meet the minimum requirement of CAN/ULC-S524, the requirements of the NBC and NFC and all other applicable standards related to *fire alarm systems*. Sufficient information shall be provided in the *design* to show that the proposed work will conform to the Code. Plans shall be drawn to scale and shall include the nature and extent of the work or *occupancy* in sufficient detail to establish that the work will conform to the Code for the proposed *occupancy*.

When the work is changed during construction, information on the changes shall comply with the requirements of the Code. Information for fire protection components shall be submitted to show the essential details of the *building*, *occupancy*, and major components of fire protection including fire detection, suppression and alarm systems.

The *designer* will review the installation for compliance with the *design*, *acceptance testing* from the *installing contractor* required by CAN/ULC-S524, and system verification reports required by CAN/ULC-S537. This information enables the *designer* to confirm that the installation is in compliance with the *design*, the NBC and the applicable referenced standards.

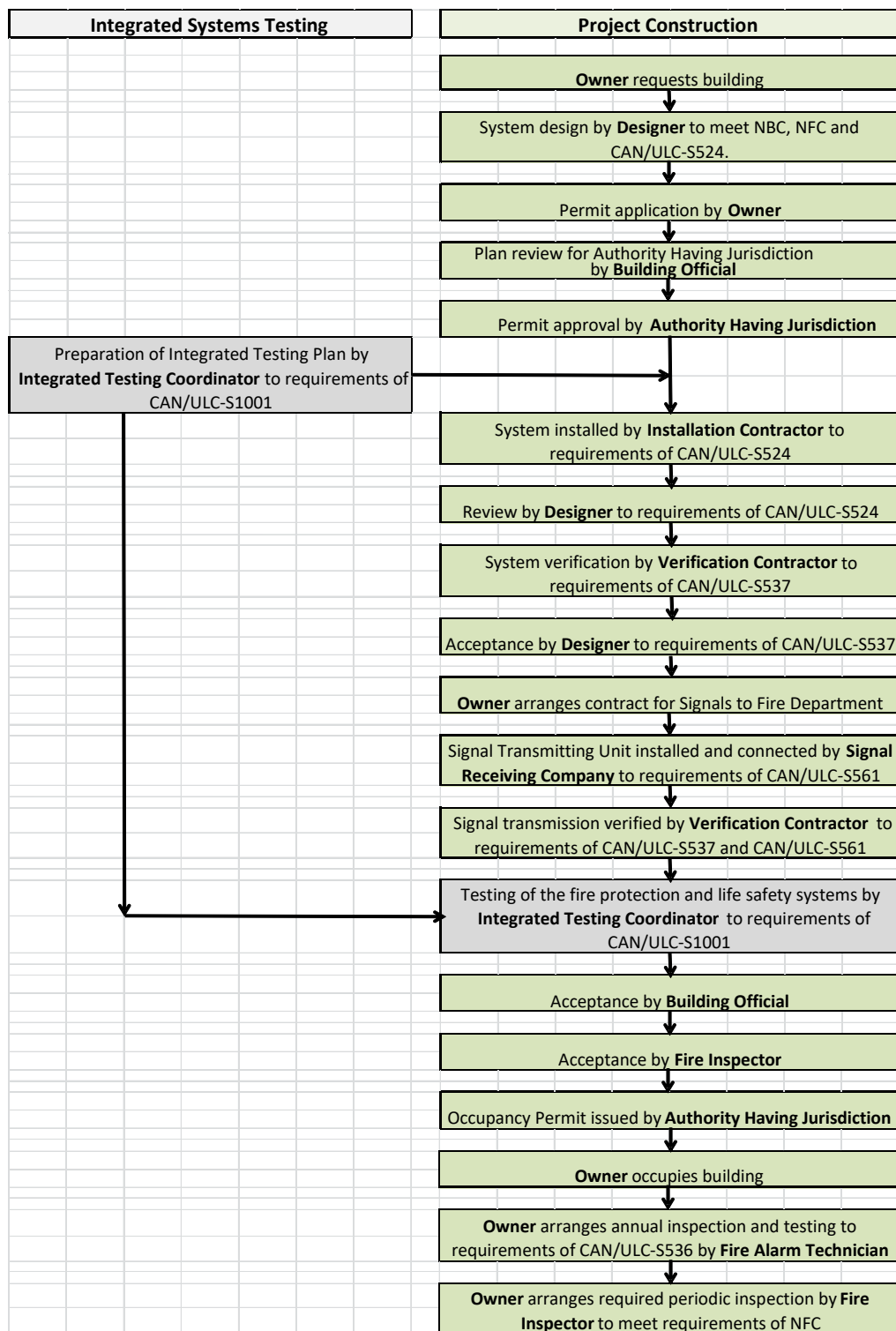
Constructor (Contractor and/or Sub-trade)

Building constructors, including contractors and sub-trades, are employed by *building owners* to complete construction and/or *renovations* of *buildings*.

The responsibilities of the various parties involved in a project are illustrated in Figure 1 following (see page 12).

Demarcation of Responsibilities

Figure 1: Demarcation of Responsibilities



Note: Figure 1 represents how an AHJ may administer a project that involves a *fire alarm system*. The process for a specific AHJ may vary. Owners must contact the *appropriate local authority* for procedures that apply to their project.

Installing Contractor

For a *fire alarm system*, CAN/ULC-S524 requires all power supply equipment and wiring to be installed in conformance with the standard and the requirements of CSA C22.1, Part I, Safety Standard for Electrical Installations, Section 32. In Saskatchewan, this work shall be completed by an electrical contractor licensed by the Province of Saskatchewan. The work will include installation of all devices in the system designed for the *building* and its *occupancy* and may include the *control unit* and any required signal transmitting demarcation terminal box. In some situations, the AHJ may have additional *building* or fire safety standards that require the *control unit* and any required signal transmitting demarcation terminal box to be connected by a fire alarm technician. This work is completed under electrical and building permits.

Fire Alarm Technician/Fire Alarm Service Company

Annual *inspections*, maintenance and *testing* will be undertaken by individuals who are knowledgeable about this standard and have suitable formal training or sufficient experience acceptable to the AHJ. Typically, this person undertakes the work required by CAN/ULC-S536.

The AHJ may have additional requirements for a fire alarm technician to be responsible for connecting the components of the *fire alarm system* to the *fire alarm control unit* at the signal transmitting demarcation terminal box. The connection must comply with the requirements of CAN/ULC-S524. The work to make the connections at the demarcation terminal box falls under the same contract as the work to install and connect the *signal transmitting unit* in the terminal box. This is the same contract for the work to connect to the system at a *Signal Receiving Centre*. These connections from the terminal box to the *signal receiving centre* must comply with the requirements of CAN/ULC-S561.

Verification Contractor

Any person who performs the verification of a *fire alarm system* should be familiar with CAN/ULC-S537 and have received suitable formal training or sufficient experience acceptable to the AHJ. This person may have similar qualifications to persons doing the work to install a system to CAN/ULC-S524 requirements or *test* a system to CAN/ULC-S536 requirements. However, persons or organizations verifying a *fire alarm system* cannot be the same as those installing or doing *acceptance testing* for the *fire alarm system* in a particular *building* apart from terminations listed above under Installing Contractor.

Signal Receiving Centre/Signal Receiving Service

The NBC provisions that apply to a specific *building* and its *occupancy* will determine if the *fire alarm system* is required to notify the *fire department*. When the Code or an *owner* requires *notification* or transmission of signals to the *fire department* as part of the *fire alarm system* for a specific *building* a signal receiving service is usually involved. The *signal receiving centre service* operates a *signal receiving centre*. It is the responsibility of the *owner* to initiate and maintain the service contract with a company that complies with the requirements of CAN/ULC-S561.

The installation of transmitting devices, receiving devices and other system components to meet the requirements of CAN/ULC-S561 are the responsibility of the signal receiving service. It is the responsibility of the Signal Receiving Service to arrange for periodic *inspection* and *tests* related to the *signal receiving centre* itself to ensure it meets the requirements of CAN/ULC-S536. The overall performance of the system confirmed through integrated systems *testing* to meet the requirements of CAN/ULC-S1001 will include the functioning of the signal receiving service and its centre.

Integrated Testing Coordinator

The *integrated testing coordinator* is defined in the Definitions on page 31 of this guide. The *integrated testing coordinator* shall be knowledgeable and experienced in the *design*, installation and operation of *fire protection and life safety systems* and the fire protection and life safety functions of building systems. The *integrated testing coordinator* will develop a written project specification document called the *integrated testing plan* outlining the required *tests* and functional results required to conduct the *tests* required by CAN/ULC-S1001. The *integrated testing coordinator* may accept documented evidence of any *tests* that have been performed on a system as part of its *acceptance testing* for the purpose of demonstrating compliance with the integrated *testing* requirements of that standard, so as to avoid duplication of work. All documentation including the *integrated testing plan* and the results will be provided to the *building owner* upon successful completion and confirmation that systems are functioning as required and as designed.

The *integrated testing coordinator* selected must have qualifications satisfactory to the AHJ. Some AHJs will require the *integrated testing coordinator* to be a registered *architect* or licensed professional *engineer* in the Province of Saskatchewan. It is important to discuss this requirement with the *appropriate local authority* early in the permit planning and application process since the *integrated testing coordinator* will need to develop the *testing plan* early in the development of a project.

Code Requirements

Both the NBC and the NFC establish the minimum requirements for *fire alarm systems*. The requirements of the NBC are the minimum requirements for the *design* and construction of systems in new *buildings*; systems in *existing buildings* that are altered or where there is a change of use or *occupancy*; or new systems in *existing buildings*. The NFC contains provisions establishing the minimum requirements for operating and occupying *buildings*. The NFC applies to any *building* after it is constructed whether it is occupied or vacant.

The subsections and articles identified below are not intended to provide details of all the *Code* requirements that apply to a *fire alarm system* for a specific *building*. Requirements for a system designed for a particular *building* will depend on the *occupancy* and building details. Compliance with the Codes on a new construction or *renovation* project is the responsibility of the building owner who will rely on the work of the registered *architect* and/or licensed professional *engineer(s)* designing the *building* and its systems. The owner and design team will need to work in collaboration with the AHJ who has responsibility for the administration and enforcement of the Codes.

National Building Code of Canada 2015

[Division B, Subsection 3.2.4. Fire Alarm and Detection Systems](#)

This subsection includes provisions for *fire alarm systems* where required. The objectives of this subsection are to limit the probability a person is exposed to undue risk of injury due to fire spreading beyond its point of origin or by being delayed in moving to a safe place by notifying, in a timely manner, persons and emergency responders of the need to take action. These provisions include:

- continuity
- types of systems
- descriptions of systems
- installation and verification
- silencing
- signals to the *fire department*
- *annunciator* and zone indication
- *electrical supervision*
- *fire detectors* and *smoke detectors*
- prevention of smoke circulation
- vacuum cleaning system shutdown
- elevator emergency return
- system *monitoring*
- manual stations
- alert and *alarm signals*
- audibility
- visual signals
- *smoke alarms*
- voice communication
- residential fire warning system complying to CAN/ULC-S540 except where a *fire alarm system* is installed

The determination of whether a *building* requires a *fire alarm system*, and if so what the requirements are, depends primarily on the *occupancy classification* of the *building* and whether the *building* is *sprinklered*. Figure 2 on the next page summarizes the determination for *sprinklered buildings*. Figure 3 on the next page summarizes the determination for non-*sprinklered buildings*.

Figure 2: When Does a Sprinklered Building Require a Fire Alarm System?

What Occupancy?	Sprinkler System Type?	Number of Sprinkler Heads?	Fire Alarm Required?
Residential (Group C)	NFPA 13D	any	No
Any	any	< 9	No
Any	NFPA 13R	≥ 9	Yes
Any	NFPA 13	≥ 9	Yes

Note: Figure 2 derived from the requirements of NBC, Division B, Article 3.2.4.1.

Figure 3: When Does a Non-Sprinklered Building Require a Fire Alarm System?

What Occupancy?	What Additional Building Requirements?	Fire Alarm Required?
<i>Storage garage (separate building)</i>	No other <i>occupancy</i> as per Article 3.2.2.90.	No
Hotel/motel (Group C)	≤ 3 <i>storeys</i> and each <i>suite</i> has direct access to exterior <i>exit</i> to ground	No
<i>Dwelling unit</i> in apartment building (Group C)	≤ 4 units share common means of egress and each <i>suite</i> has direct access to exterior <i>exit</i> to ground	No
<i>Dwelling unit</i> in apartment building (Group C)	≤ 3 <i>storeys</i> and each <i>suite</i> has direct access to exterior <i>exit</i> to ground	No
School, college (A2); Child care, day care (A2 or B3)	building <i>occupant load</i> > 40	Yes
Licensed beverage or restaurant establishment	building <i>occupant load</i> > 150	Yes
<i>Low-hazard industrial</i> (F3)	building <i>occupant load</i> > 75 above or below the <i>first storey</i>	Yes
<i>Medium-hazard industrial</i> (F2)	building <i>occupant load</i> > 75 above or below the <i>first storey</i>	Yes
<i>High-hazard industrial</i> (F1)	building <i>occupant load</i> > 25	Yes
Residential (Group C)	sleeping accommodation > 10	Yes
Any	contained use area	Yes
Any	impeded egress zone	Yes
Any	<i>building</i> > 3 <i>storeys</i> , including <i>storeys</i> below the <i>first storey</i>	Yes
Any	building <i>occupant load</i> > 300, other than in open air seating areas	Yes
Any	building <i>occupant load</i> > 150 above or below the <i>first storey</i> , other than in open air seating areas	Yes
Any <i>building</i> not listed above	N/A	No

Note: Figure 3 derived from the requirements of NBC, Division B, Article 3.2.4.1.

Figure 4: Where a Fire Alarm System is Required, What Type is Needed?

What Occupancy?	What Additional Building Requirements	Single-Stage	Two-Stage
High-hazard industrial (Group F1)	Any	✓	X
Group B	Except for Group B3 ≤ 3 stories in building height	X	✓
Care (Group B3)	Group B3 ≤ 3 stories in building height	✓	✓
All other occupancies	Any	✓	✓

Note: Figure 4 is derived from NBC, Division B, Article 3.2.4.3.

[Division B, Article 3.2.4.21. Residential Fire Warning Systems](#)

This article permits the installation of a residential fire warning system in conformance with CAN/ULC-S540 in lieu of interconnected *smoke alarms*. This system cannot be used to replace Code required *fire alarm systems*. The residential fire warning system is then able to use *smoke detector* in lieu of *smoke alarms* and may connect with *heat detectors*, carbon monoxide alarms and other devices to enhance the *life safety system* in a *building*. The residential fire warning system must be capable of audible signals, have an appropriate power supply and a silencing device all in compliance with the Code. The objective of this article is to provide flexibility to use this system while ensuring the occupants of the *building* are notified of a fire in a timely manner to limit the risk of injury.

[Division B, Subsection 3.2.9. Integrated Fire Protection and Life Safety Systems](#)

This subsection requires *fire protection and life safety systems* to be *tested* in compliance with CAN/ULC-S1001. This standard provides the methodology for verifying and documenting that the interconnections between building systems satisfy the intent of their *design* and that the systems function as intended by the NBC. *Building owners* should verify that the *fire protection and life safety systems* and their components (*fire alarm systems*, sprinklers, standpipes, smoke control, ventilation, pressurization, door hold-open devices, elevator recalls, smoke and fire shutters and dampers, emergency power, emergency lighting, fire pumps, generators, etc.), including their interconnections with other building systems, are functioning according to the intent of their *design*. The objectives of this subsection are to ensure that all systems work individually and together as designed to limit the effect of fire on the occupants and the *building* itself.

Integrated systems testing is a Code driven process to verify that planned integrated systems are in place and working at the end of construction. Integrated systems testing of systems is now required on most *buildings* by Code since most *buildings* require fire alarms systems and may require other components related to fire protection or life safety that must connect to the *fire alarm system*. Integrated systems testing is not a replacement of the design professional review and acceptance of systems. Nor is it a review of the system design and installation for the various systems. Also, it is not a duplication of existing inspection, *testing* and verification required for individual systems. It is method of documenting the design requirements of the various systems and how they are planned to interact and a systematic *testing* of the integrated system to demonstrate that each integration functions as designed and as required by the Code.

Division B, Subsection 9.10.18. Alarm and Detection Systems

This subsection includes minimum provisions for *fire alarm systems*, where required, for small *buildings*. The objectives of this subsection mirror those for Division B, Part 3 of the NBC. The determination of whether a *building* requires a *fire alarm system* is summarized in Figure 4 below. These provisions include:

- access through *firewall*
- *design* and installation
- *heat detectors* and *smoke detectors*
- recirculating air handling systems
- central vacuum systems
- portions of *building* as separate *buildings*
- open air *storage garages*

Figure 5: When is a Fire Alarm System Required for a Part 9 Building?

What Occupancy?	What Additional Building Requirements?	Fire Alarm Required?
Residential (Group C)	≤ 4 units share common <i>exit</i> or public corridor and each <i>suite</i> has direct access to exterior <i>exit</i> to ground	No
Residential (Group C)	<i>occupant load</i> ≤ 10 (sleeping accommodation)	No
Residential (Group C)	<i>occupant load</i> >10 (sleeping accommodation)	Yes
Business and personal services, mercantile (Group D or E)	<i>occupant load</i> ≤ 150 above or below the <i>first storey</i>	No
Low- or medium-hazard industrial (F3 or F2)	<i>occupant load</i> ≤ 75 above or below the <i>first storey</i>	No
Any	<i>sprinklered building</i> with < 9 sprinkler heads	No
Any	<i>sprinklered building</i> with NFPA 13D system	No
Any	<i>building</i> > 3 <i>storeys</i> , including <i>storeys</i> below the <i>first storey</i> (2 <i>storeys</i> and a <i>basement</i>)	Yes
Any	<i>building occupant load</i> > 300	Yes
Any Part 9 <i>building</i> not listed above	N/A	Yes

Note: Figure 5 derived from the requirements of NBC, Division B, Article 9.10.18.2.

Division B, Article 9.10.19.8. Residential Fire Warning Systems

This article permits the installation of a residential fire warning system in conformance with CAN/ULC-S540 in lieu of interconnected *smoke alarms*. This system cannot be used to replace Code required *fire alarm systems*. The residential fire warning system is then able to use *smoke detectors* in lieu of *smoke alarms* and may connect with *heat detectors*, carbon monoxide alarms and other devices to enhance the *life safety system* in a *building*. The residential fire warning system must be capable of audible signals, have an appropriate power supply and a silencing device all in compliance with the Code. The objective of this article is to provide flexibility to use this system while ensuring the occupants of the *building* are notified of a fire in a timely manner to limit the risk of injury.

Figure 6: When Can a Residential Fire Warning System Be Used?

What Occupancy?	What Additional Building Requirements?	Residential Fire Warning System Permitted?
Care (Group B3)	<i>Sprinklered</i> with < 9 sprinkler heads, no fire alarm system	Yes
Residential (Group C)	<i>Sprinklered</i> with < 9 sprinkler heads, no fire alarm system	Yes
Care (Group B3)	Not <i>sprinklered</i> with ≤10 occupants-in-care and with ≤10 total occupants and without an impeded egress zone, no fire alarm system	Yes
Residential (Group C)	Apartment <i>building</i> not <i>sprinklered</i> , not more than 3 storeys high and where each suite has direct exterior access to ground level and not more than 4 suites share a stair, no fire alarm system	Yes
Residential (Group C)	Hotel or motel not <i>sprinklered</i> , not more than 3 storeys high and where each suite has direct exterior access to ground level, no fire alarm system	Yes
Residential (Group C)	<i>Dwelling units</i> (including detached houses with or without a secondary suite, semi-detached houses where each may contain a secondary suite, row houses where any may contain a secondary suite if 9.10.11.2.(1) is met, triplexes with individual exits and no stacked <i>dwelling units</i> , four-plexes with individual exits and no stacked <i>dwelling units</i>)	Yes
Residential/Care (Group B3)	AFCH <i>sprinklered</i> to NFPA 13D with 6-10 occupants-in-care and ≤10 total occupants in 1 suite of care, no fire alarm system	Yes
Residential/Care (Group B3)	AFCH not <i>sprinklered</i> with 6-10 occupants-in-care and ≤10 total occupants in 1 suite of care, no fire alarm system	Yes
Residential/Care (Group C)	AFCH <i>sprinklered</i> to NFPA 13D with 1-5 occupants-in-care and ≤10 total occupants in 1 suite of care, no fire alarm system	Yes
Residential/Care (Group C)	AFCH not <i>sprinklered</i> with 1-5 occupants-in-care and ≤10 total occupants in 1 suite of care, no fire alarm system	Yes
Residential/Care (Group C)	AFCH <i>sprinklered</i> to NFPA 13D with 1-5 occupants-in-care in each of 2 suites of care and ≤ 10 total occupants, no fire alarm system	Yes
Residential/Care (Group B3)	Any listed above that include a <i>fire alarm system</i> where not required	No
Care (Group B3)	Facilities ≥10 occupants-in-care or total occupants	No
Residential (Group C)	Multi-unit residential with stacked <i>dwelling units</i>	No
Residential (Group C)	Apartment or hotel/motel ≤ 3 storeys high without direct access from each suite to ground level or more than 4 suites sharing a stair	No
Residential/Care (Group B3)	Any required to have a fire alarm system	No
Any Care (Group B3) or Residential (Group C) not listed above	N/A	No
Any <i>occupancy</i> other than Care (Group B3) or Residential (Group C)	N/A	No

Note: Figure 6 is derived from NBC, Division B, Article 9.10.19.8.

[Division B, Article 9.10.1.2. Testing of Integrated Fire Protection and Life Safety Systems](#)

This subsection requires *fire protection and life safety systems* to be *tested* in compliance with CAN/ULC-S1001. This standard provides the methodology for verifying and documenting that the interconnections between *building systems* satisfy the intent of their *design* and that the systems function as intended by the NBC. *Building owners* should verify that the *fire protection and life safety systems* and their components (*fire alarm systems*, sprinklers, standpipes, smoke control, ventilation, pressurization, door hold-open devices, elevator recalls, smoke and fire shutters and dampers, emergency power, emergency lighting, fire pumps, generators, etc.), including their interconnections with other *building systems*, are functioning according to the intent of their *design*. The objectives of this subsection are to ensure that all systems work individually and together as designed to limit the effect of fire on the occupants and the *building* itself.

Integrated systems testing is a Code driven process to verify that planned integrated systems are in place and working at the end of construction. Integrated systems testing of systems is now required on most *buildings* by Code since most *buildings* require fire alarms systems and may require other components related to fire protection or life safety that must connect to the *fire alarm system*. Integrated systems testing is not a replacement of the design professional review and acceptance of systems, nor is it a review of the system *design* and installation for the various systems. Also, it is not a duplication of existing inspection, *testing* and verification required for individual systems. It is a method of documenting the design requirements of the various systems and how they are planned to interact and a systematic *testing* of the integrated system to demonstrate that each integration functions as designed and as required by the Code.

National Fire Code of Canada 2015

[Division B, Article 2.1.3.1. Fire Alarm, Standpipe and Sprinkler Systems](#)

This article confirms the requirement for *fire alarm systems* to be designed in conformance with the NBC unless other provisions are specified in the NFC. It is not intended that either the NBC or the NFC be used to enforce the retrospective application of new requirements in the NBC to *existing buildings* as a broad approach. It is usually difficult to change structural features of *existing buildings* when undertaking *alterations* or additions, but the installation of “active” *fire protection systems* in *existing buildings* may be possible. This article is intended to address the installation of *fire alarm systems* and other *fire protection systems* in *existing buildings* not so equipped, and in *buildings* that do not provide an adequate level of life safety to meet the objectives of the Codes. It is not intended that existing *fire protection systems* that provide an adequate level of safety be upgraded with each new edition of the NBC. The AHJ is expected to use discretion in enforcing this requirement when appropriate levels of safety are not provided by the *fire protection systems* in the *building* for the *occupancy* and use of the *building* or *floor areas* within the *building*.

[Division B, Article 2.1.3.7. Integrated Fire Protection and Life Safety Systems](#)

This article confirms that where *fire protection and life safety systems* are installed they shall be *tested* in conformance with the NBC, Division B, Article 3.2.9.1. Testing.

[Division B, Article 2.8.1.1. Application](#)

This article states that Fire Emergency procedures conforming to NBC, Division B, Section 2.8. Emergency Planning shall be provided for all *buildings* required by the NBC to have a *fire alarm system*.

[Division B, Article 6.8.1.1. Testing and Maintenance](#)

This article applies to integrated *fire protection and life safety systems*. Interconnections between *fire protection and life safety systems* shall be *tested* and maintained in conformance with CAN/ULC-S1001. This article aligns the intent of the NFC with the corresponding reference to CAN/ULC-S1001 in NBC, Division B, Subsection 3.2.9.

Applicable Standards

The NBC and the NFC identify the main *building* performance and operational requirements for *fire alarm system*. The details of system design, installation, verification, *testing* and maintenance are provided in standards referenced by the NBC and/or NFC. The standards pertaining to *fire alarm systems* referenced in the NBC and NFC are as follows.

The NBC and NFC contain references to many standards. These are published by accredited standards development organizations in Canada or other countries. Referencing a document in a Code has the effect of making the provisions of that document part of the Codes. Documents referenced in a Code apply only to the extent that they relate to *buildings* and the part of the Codes where they are referenced. If there is conflict between a Code provision and a referenced document, the provisions of the Codes govern. Referenced documents shall be the edition designated by the Codes currently in use in Saskatchewan.

CAN/ULC-S524, “Installation of Fire Alarm Systems”

Scope - This standard prescribes the requirements for the *design* and installation of a *fire alarm system* with or without voice communication capability. This standard is intended to apply to both required and voluntary *fire alarm system* installations. The requirements of this standard address the installation for various types of *fire alarm system* equipment and devices. These requirements are intended to apply when the equipment and devices are required by the *fire alarm system* design. This standard recognizes that a *fire alarm system* may have additional features or functions differing from those detailed in these requirements if the features enhance:

- a) the life safety of the occupants of the *building*, and/or
- b) the protection of the *building* or property.

This standard applies to system equipment including the *control unit* (display and *control unit* and *annunciator* panel) including the alert and/or *alarm signals* but not to the unit transmitting to the *Signal Receiving Centre*. The standard applies to the connections from all devices to the *control unit* and to the demarcation terminal box between the *control unit* and the transmitting unit. This standard does not apply to the connections from the demarcation terminal box to the *signal transmitting unit* or connections to the *signal receiving centre* which are governed by CAN/ULC-S561.

CAN/ULC-S536, “Inspection and Testing of Fire Alarm Systems”

Scope - This standard prescribes the requirements for the *inspection* and *testing of fire alarm systems* and specifies the devices and functions to be *inspected*, tested, and documented for the periodic *inspection* and testing. The standard contains daily and monthly *inspection* and test requirements that can be undertaken by *building owners*. The remainder of the *inspection* and *testing* requirements must be completed by properly qualified individuals. The requirements of this standard do not apply to the installation, verification of the *fire alarm system* as required in CAN/ULC-S524 or to installation and services as required in CAN/ULC-S561. CAN/ULC-S537 verification will only be required in certain circumstances outlined in the verification standard.

CAN/ULC-S537, “Verification of Fire Alarm Systems”

Scope - This standard prescribes *inspection* and *test* procedures for the purpose of verifying that the *fire alarm system* is installed in conformance with the *design* and CAN/ULC-S524, Standard for the Installation of Fire Alarm Systems, and performs all of its intended functions as designed. If partial *occupancy* of a *building* occurs, each portion of the *building* shall meet the requirements of this standard as an area is occupied. Upon completion, those parts of the *fire alarm system* tested to this standard shall be retested in accordance with CAN/ULC-S536 prior to the release of the Fire Alarm System Verification Report. This standard does not apply to the installation and services required by CAN/ULC-S561.

CAN/ULC-S540, “Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance”

Scope - This standard prescribes the minimum requirements for the *design*, installation, inspection, testing, and maintenance of residential fire warning systems within *dwelling units* and *care occupancies* not requiring *fire alarm systems* conforming to CAN/ULC-S524. This standard is intended to apply to both required and voluntary residential fire warning systems installations. This standard specifies how such residential fire warning systems shall be installed to perform their intended function. This standard is not intended to specify the type and extent of residential fire warning systems.

A residential fire warning system is a combination of devices designed to warn the occupants of an emergency condition within a *dwelling unit*. The system allows the connection of *smoke detectors* instead of alarms and other devices including *heat detectors*, carbon monoxide alarms and other life safety devices and remote *monitoring* capabilities. The system allows for the *electrical supervision* of the interconnected devices.

CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems”

Scope - This standard prescribes the requirements for:

- a) construction, operation, installation, *inspection* and *tests* applicable to fire *signal receiving centres* for fire protective signalling services utilizing fire *signal receiving centre* facilities and satellite centres and bridging centres;
- b) construction and operation of a proprietary fire *signal receiving centre*; and
- c) installation, inspection, and *tests* applicable to a fire *signal transmitting unit* and its *field device* inputs at the protected premises.

The requirements of this standard do not apply to the test, inspection, maintenance, installation, and service of the *building fire alarm system* at the protected premises, as required in CAN/ULC-S524, CAN/ULC-S536 and CAN/ULC-S537. Systems installed to this standard from the signal transmitting device to the *signal receiving centre* require periodic *inspection* and *tests* to meet the requirements of CAN/ULC-S536.

CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems”

Scope - This standard prescribes the methodology for verifying and documenting that all interconnections between systems provided for fire protection and life safety functions are installed and operating in conformance with their *design criteria*. This standard is intended to satisfy the requirement for integrated systems testing in the NBC and the NFC. It is not the intent of this standard that integrated systems testing ensure individual *fire protection and life safety systems* are functioning and installed in accordance with their *design criteria* or referenced standards.

This standard prescribes the following:

- a) Integrated Systems Testing Qualifications
- b) Integrated Systems Testing Process
- c) Integrated Systems Testing Requirements
- d) Integrated Systems Testing Documentation
- e) Periodic Integrated Systems Testing
- f) Retro-Integrated Systems Testing
- g) Integrated Systems Testing for Modifications

Each individual fire protection or *life safety system* shall be verified and *tested* individually to ensure conformance with the Code and the referenced standard. The design professional shall complete their review and acceptance of the system for compliance with the *design*. The standard allows the integrated systems testing coordinator to accept documented evidence of any *tests* that have been performed on an individual system as part of its *acceptance testing* for the purpose of demonstrating that each individual system is functioning and in compliance with the appropriate standard prior to the integrated testing to avoid duplication of work.

The integrated systems testing coordinator shall be knowledgeable and experienced in the *design*, installation and operation of *fire protection and life safety systems* and the fire protection and life safety functions of building systems. The *integrated testing coordinator* selected for a project must be satisfactory to the AHJ. The coordinator will develop a *testing plan* based on an understanding of the requirements of the Code, the referenced standards, the *design* of the specific systems and the requirements of the Code and/or the *design* for how the systems need to interact. The coordinator then develops the methodology for conducting the *tests* to demonstrate that these integrated systems function together as required/planned.

The integrated systems testing is not the same as commissioning. Commissioning is essentially documenting, verifying, training so that the finished facility operates in accordance with the owner's project requirements and construction documents. Integrated systems testing witnesses that each component of the systems that are interconnected actually responds as required to the various alarm triggers (e.g. upon alarm door hold open devices release and the doors close).

New Buildings with Fire Alarm Systems or New Fire Alarm Systems

System Design Requirements

Provisions of the NBC establish the minimum requirements to be used in the *design of fire alarm systems* and require the use of referenced standards CAN/ULC-S524, CAN/ULC-S537 and CAN/ULC-S561 for the detailed requirements related to *design*, installation, *acceptance testing*, verification and *notification* to the *fire department*.

System Installation Requirements

Provisions of the NBC and CAN/ULC-S524 prescribe the minimum requirements for the installation and *acceptance testing* of the *fire alarm system* for a *building* and its *occupancy*.

Signals to Fire Department (Notification)

The NBC does not use the term, "monitored" when referring to *fire alarm systems*. The phrases "notify the *fire department*" and "signals to the *fire department*" are used in the NBC. However, the referenced standards applicable to *fire alarms systems* make reference to *monitoring* of the system (signal transmitting, signal receiving and communication to the *fire department*). Regardless of the terminology used, the timely *notification* of the *fire department* is essential for both occupant and *building safety*.

The requirement for signals to the *fire department* has been found in the NBC since the NBC 1965 was published. *Fire alarm systems* in assembly occupancy classifications were required to be connected directly to the *fire department* via municipal alarm systems. Direct connection to the *fire department* is no longer practical. Today, connection is more likely through an independent *Signal Receiving Centre*.

The Code includes requirements for *electrical supervision of fire alarm system* components to ensure their operation. The Code also includes a reference to waterflow devices monitoring fire suppression systems which will also require *electrical supervision*.

Fire alarm system notification is an extension of the *fire alarm system*. *Notification* has similar installation, *acceptance testing* and system verification methods and carries the same importance for installation and maintenance as the *fire alarm system* itself. *Notification* is based on the *fire alarm system control unit* sending a *notification* to a *signal transmitting unit* when a fire situation occurs. The *signal transmitting unit* sends that *notification* on to the *signal receiving centre* in order to dispatch the correct responding authorities.

A *fire alarm control unit* receives signals about all activities related to the fire alarm system, as identified in the NBC, NFC and referenced standards, that occur within a *building* and determines the response to those signals. The devices that are located throughout a *building* such as sprinklers, *smoke detectors*, *heat detectors*, manual pull stations and bells, all send and/or receive signals to and from the fire alarm panel. When a *smoke detector* activates, a signal is sent to the *fire alarm control unit* which sends a signal to the *audible signal devices* and an alarm is sounded. The *alarm signal* is sounded alerting the occupants to evacuate the *building*. Unless the fire alarm system is monitored there is no automatic way of alerting the fire department.

The occupants of the *building* have been notified, but the *fire department* has no way of knowing that this *fire alarm system* has detected a fire unless someone places a phone call to 9-1-1. This is where the *signal transmitting unit* takes over. In a monitored system, when the fire alarm panel signals an alarm a signal is also sent from the panel to the *signal transmitting unit* which is connected to a *signal receiving centre*. In an alarm event the transmitting unit immediately sends a signal to a *signal receiving centre* and an operator will place a call or electronically re-transmit the signal to the appropriate *fire department* within a maximum of 30 seconds of receiving a signal.

Figure 7: When are Signals to the Fire Department Required?

What Occupancy or Use?	What Additional Building requirements?	Notification to Fire Department Required?
Assembly	1 Stage <i>fire alarm system</i> with <i>Occupant load</i> > 300	Yes
Assembly	<i>Occupant load</i> ≤ 300	No
All <i>Occupancies</i>	<i>Fire alarm system</i> includes waterflow detecting device	Yes
All <i>Occupancies</i>	2 Stage <i>fire alarm system</i>	Yes
All <i>Occupancies</i>	1 Stage <i>fire alarm system</i> in <i>building</i> not sprinklered	No (Posting to call fire department required)
Helicopter Landing Area	on <i>building</i> roof	No (Device to notify fire department required)

Note: Figure 7 is derived from NBC, Division B, Article 3.2.4.7.

Note: *Notification* to the *fire department* to be in conformance with CAN/ULC-S561.

Integrated Testing Requirements for the System

The integrated testing coordinator prepares a written plan for *testing* based on the specific system designed for the *building*. The plan will include all components of the *fire protection and life safety systems* in the *building*. Those parties verifying the work to meet the requirements of each applicable standard provide a compliance certificate for that work. The *integrated testing coordinator* will ensure that the individual *tests* are completed, and any additional *tests* required to ensure the entire system operates as a whole are completed, and that results are satisfactory. Satisfactory integrated testing and results will minimize the risk of injury to *building* occupants in a fire event as a result of system components not operating as designed. The AHJ, *building owners*, and fire alarm service companies all require knowledge that the *fire alarm system* complies with the requirements and functions effectively, and that the systems connected to the *fire alarm system* work together with the system as required.

Appendix A - Glossary

Abbreviations and Acronyms

Abbreviations and acronyms are used throughout this document. The first reference of a specific document or term will be the full name and will identify the abbreviation or acronym in brackets immediately following. All references subsequent to the first use will be by abbreviation or acronym only with the exception of headings and definitions which will use the full reference.

(Note: Where a year follows an abbreviation, that reference denotes the edition of the document that is in effect.)

BASA Regulations – *The Building and Accessibility Standards Administration Regulations*

FS Act – *The Fire Safety Act*

FS Regulations – *The Fire Safety Regulations*

NBC – National Building Code of Canada

NFC – National Fire Code of Canada

NECB – National Energy Code of Canada for Buildings

UBAS Act – *The Uniform Building and Accessibility Standards Act*

UBAS Regulations – *The Uniform Building and Accessibility Standards Regulations*

Definitions

The UBAS Act, the UBAS Regulations and the BASA Regulations contain certain definitions establishing specific meanings. The FS Act and the FS Regulations also contain certain definitions establishing specific meanings. In addition, both the NBC and NFC contain a number of definitions which are specific to their respective *Codes*. The definitions in the UBAS Act, the UBAS Regulations, the BASA Regulations, the FS Act or the FS Regulations shall apply in the event of a conflict between these definitions and those in either the NBC or NFC. Italicised words, other than titles of acts and regulations, are defined in the legislation, regulations, NBC, NFC and standards identified below.

In addition, the section entitled Other Terms and Definitions has been included to clarify the meaning of certain words for the purposes of this document. These words are also italicized to ensure understanding of their use in this specific document. In all other situations, if there is no definition in the documents noted above, the meaning commonly assigned to them in the context in which they are used. The context in which they are used must take into account the specialized use of terms within the various trades and professions, will apply.

Users are strongly encouraged to ensure they are using the correct definition when using this guide or referencing either the NBC or NFC.

[The Uniform Building and Accessibility Standards Act](#)

alteration means a change or extension to any matter, thing or *occupancy* that is regulated by this Act.

appropriate local authority means the local authority that has jurisdiction over the geographical area in which a *building* is or is to be situated.

architect means a registered *architect* within the meaning of *The Architects Act*.

building means a structure used or intended for supporting or sheltering any use or *occupancy*, and includes an addition built to an existing structure and, where applicable, the land adjoining a structure.

building official means a building official appointed pursuant to section 5 and includes the chief building official.

building standards means the standards *prescribed* pursuant to Part II of the UBAS Act.

change of occupancy means a change from one class of *occupancy* recognized by the edition of the National Building Code of Canada that is declared in force pursuant to subsection 8(2) to another such class of *occupancy*.

engineer means a professional engineer, as defined in *The Engineering and Geoscience Professions Act*, and includes the holder of a certificate of authorization granted pursuant to section 22 of that Act.

local authority means:

- (i) a municipality;
- (ii) a regional park authority within the meaning of *The Regional Parks Act, 2013*; or,
- (iii) with respect to park land within the meaning of *The Parks Act*, the minister responsible for the administration of that Act. (For clarity and for purposes of this guide only the term “*authority having jurisdiction*” as found in the NBC will be used.)

occupancy means the use or intended use of all or part of a *building* for the shelter or support of persons, animals or property.

owner means any person, firm or corporation that controls the property under consideration.

prescribed means *prescribed* in the Regulations.

renovation means a renewal of a *building* or a portion of a building.

repair means to restore to good condition by replacing or fixing parts of a building.

unsafe condition means a condition that could cause undue hazard to life, limb or health of any person who is authorized or expected to be on or about the premises.

The meaning of any word or expression used in this Act but not defined in this Act may be defined, enlarged, or restricted in the Regulations.

[The Uniform Building and Accessibility Standards Regulations](#)

existing building means a building:

- (i) on which construction was commenced or completed prior to June 6, 1988; or
- (ii) for which a valid building permit was issued pursuant to a bylaw of the *appropriate local authority* prior to June 6, 1988.

[The Fire Safety Act](#)

fire department means a *fire department* established or operated by or contracted with a local authority.

fire inspector means a provincial inspector, a *local assistant* or a *municipal inspector*.

fire suppression means the provision of services in response to an emergency whether related to extinguishing a fire or otherwise.

local assistant means:

- (a) with respect to a municipality that has a fire department, a fire chief or acting fire chief;
- (b) with respect to a municipality that does not have a fire department:
 - (i) the administrator or clerk of the municipality; or
 - (ii) any other person appointed by the municipality in consultation with the fire commissioner;
- (c) in any municipality, any person appointed by the municipality in consultation with the fire commissioner; or
- (d) with respect to a local authority that is not a municipality, a *prescribed* person.

municipal inspector means a person who is appointed in writing by a *local assistant* for a municipality to act as a *municipal inspector* for the municipality for the purposes of this Act.

[National Building Code of Canada and National Fire Code of Canada](#)

alarm signal means an audible signal transmitted throughout a zone or zones or throughout a *building* to advise occupants that a fire emergency exists.

alert signal means an audible signal to advise designated persons of a fire emergency.

authority having jurisdiction means the governmental body responsible for the enforcement of any part of this Code or the official or agency designated by that body to exercise such a function.

designer means the person responsible for the *design*.

dwelling unit means a *suite* operated as a housekeeping unit, used or intended to be used by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

fire detector means a device that detects a fire condition and automatically initiates an electrical signal to actuate an *alert signal* or *alarm signal* and includes *heat detectors* and *smoke detectors*.

first storey means the uppermost *storey* having its floor level not more than 2 m above *grade*.

heat detector means a *fire detector* designed to operate at a predetermined temperature or rate of temperature rise.

occupant load means the number of persons for which a *building* or part thereof is designed.

sprinklered (as applying to a *building* or part thereof) means that the *building* or part thereof is equipped with a system of automatic sprinklers.

smoke alarm means a combined *smoke detector* and audible alarm device designed to sound an alarm within the room or *suite* in which it is located upon the detection of smoke within that room or *suite*.

smoke detector means a *fire detector* designed to operate when the concentration of airborne combustion products exceeds a predetermined level.

storage garage means a *building* or part thereof intended for the storage or parking of motor vehicles and containing no provision for the *repair* or servicing of such vehicles.

storey means that portion of a *building* that is situated between the top of any floor and the top of the floor next above it, and if there is no floor above it, that portion between the top of such floor and the ceiling above it.

[Definitions from CAN/ULC Standards \(Referenced in this Guide\)](#)

acceptance testing means the evaluation of a fire protection and life safety system to ensure that the system is installed in accordance with its *design criteria* and the relevant Standards associated with its installation.

annunciator means a component to visually indicate the National Building Code of Canada required status information from a fire alarm system.

audible signal device means a device to indicate by means of sound output the activation of the fire alarm system.

control unit means a unit which provides the central control and logic processing for the fire alarm system.

deficiency means, for the purposes of this Standard, a device or function that does not operate as intended.

design means the selection, application and layout of the *fire alarm system* components.

design criteria means documents *prescribed* by a design professional for a fire protection and life safety system to meet the requirements of the owner and applicable Codes and Standards.

electrical supervision means a method whereby a fault condition which would interfere with the operation of a circuit in a *fire alarm system* is detected.

field device means a device located remotely from, but connected electrically to the *control unit* or *transponder* to provide status change information (e.g. fire alarm detection or signaling).

fire alarm control unit means a unit, which provides the power supply, control and logic processing for the fire alarm system.

fire alarm system means a combination of devices designed to warn the building occupants of an emergency condition.

fire protection system means a system designed to detect and/or react to a fire condition and:

- a) aid in the warning, protection, or evacuation of building occupants, or
- b) suppress or control the spread of fire and its by-products, or
- c) any combination thereof.

fire protection and life safety system means a system that meets the definition of a fire protection system, a life safety system or both.

inspect (inspection/inspected) means a visual examination to determine that the device or system will apparently perform in accordance with its intended function.

integrated testing coordinator means the person, firm, corporation, or organization responsible for the development and implementation of the *integrated testing plan*. Where a firm, corporation, or organization is responsible for integrated *fire protection and life safety systems* testing, a representative of that firm, corporation, or organization shall be designated as the *Integrated Testing Coordinator*.

integrated testing plan means a written project specific document, prepared by the *Integrated testing coordinator*, outlining the required *tests* and necessary functional results to conduct integrated *fire protection and life safety systems* testing.

installing contractor means a person, firm, corporation, or organization responsible for the installation of a fire protection and life safety system in accordance with the plans and specifications.

life safety system means a system designed to enhance or facilitate the safety of building occupants during an emergency condition.

signal receiving centre means a facility that receives *alarm signals* and at which *trained personnel* and service persons are on duty at all times.

signal receiving centre service means a service in which the operations of electrical protection circuits and devices are signalled automatically to, recorded in, maintained, and supervised, from a fire signal receiving centre.

signal transmitting unit means a communication device that transmits signals from the protected premises to the fire signal receiving centre. This is placed in the Signal Transmitting Demarcations Terminal Box.

test (tested/testing) means operation of the device or system to determine that it will perform in accordance with its intended operation or function.

trained personnel means a person who has received suitable formal training and/or sufficient experience.

transponder means a component in a distributed type system, which interfaces to and supports the operation of *field devices* and communicates the status of such devices to the fire alarm system.

[Other Terms and Definitions](#)

These definitions were created specifically for this guide and represent the meaning as intended for the content of this document.

Code means the National Building Code of Canada or the National Fire Code of Canada, as applicable in the context where the term is used.

Code users means *building owners*, industry (including *designers, constructors, contractors, etc.*), authorities having jurisdiction, *building officials*, fire inspectors and others who use either the National Building Code of Canada or the National Fire Code of Canada as is applicable in the context where the term is used.

competent person means a person, firm, or corporation, acceptable to the authority having jurisdiction, who is knowledgeable and experienced in the application of the National Building Code of Canada for the *design of buildings* and/or *building systems* as identified in the National Building Code of Canada or in the application of the National Fire Code of Canada for the verification, testing, *inspection* or maintenance of the buildings and or building systems as identified the National Fire Code of Canada.

monitoring means use of a waterflow detecting device in an automatic sprinkler system.

notification means signals from a *fire alarm system* are received at a *signal receiving centre* compliant with CAN/ULC S561 at which *trained personnel* and service persons are on duty at all times and when, if necessary, *notification* is provided to appropriate fire departments.

supervision means *electrical supervision* provided for the devices in automatic sprinkler system where a device will send status signals to the *annunciator*.

Appendix B – Legislative and Regulatory Framework

The Uniform Building and Accessibility Standards Act

The UBAS Act and associated Regulations provide the framework for development, adoption and implementation of building, accessibility and energy standards in Saskatchewan and establishes the following:

- *Building owners* are responsible for compliance.
- AHJs are responsible for administration and enforcement of the UBAS Act in their jurisdiction.
- The Government of Saskatchewan is responsible for the province’s legislative, regulatory and policy framework.
- *Building officials* work for the AHJs.
- Architects, engineers *and constructors* work for *building owners*.

No person who is required to comply with the UBAS Act and the Regulations shall fail to comply with the *Codes*.

The Uniform Building and Accessibility Standards Regulations

The UBAS Regulations provide for the adoption of both the NBC and the NECB. The edition of the NBC applicable to a *building* is the edition of the NBC or NECB which is in effect on the day the permit for construction is issued. The UBAS Regulations also contain any amendments to the NBC or NECB which are specific to *buildings* in Saskatchewan.

The Building and Accessibility Standards Administration Regulations

The BASA Regulations provide the framework for the licensing of *building officials*, including the licence classifications of *building officials* and the different types of *buildings* each classification is authorized to *inspect*.

The Fire Safety Act

The FS Act and associated Regulations provide the framework for development, adoption and implementation of standards for the fire safe operation of buildings and facilities and establishes and establishes the following:

- *Building owners* are responsible for compliance.
- AHJs are responsible for administration and enforcement of the FS Act in their jurisdiction.
- The Government of Saskatchewan is responsible for the province’s legislative, regulatory and policy framework.
- *Local Assistants* and *fire inspectors* work for the AHJs.
- Architects, engineers and *constructors* work for *building owners*.

The FS Act also provides for fire prevention and emergency response services in Saskatchewan.

The Fire Safety Regulations

The FS Regulations provide for the adoption of the NFC. The NFC applies to a *building* when it is in use. The edition of the NFC that applies to a *building* is the edition of the NFC which is in effect at the time an *inspection* is undertaken. The FS Regulations also contain any amendments to the NFC which are specific to *buildings* in Saskatchewan.

Appendix C – Roles and Responsibilities

The UBAS Act provides a framework for ensuring *buildings* in Saskatchewan are constructed in a safe, healthy, habitable and energy-efficient manner. An overview of the roles and responsibilities of each party to the construction process are described here.

Owner

An *owner* is defined in the UBAS Act as “any person, firm, or corporation which controls the property under consideration”. As the *owner* controls the property and is responsible for employing design professionals and *constructors*, the *owner* is responsible for compliance with the requirements adopted under the UBAS Act, including accessibility, energy efficiency and minimum *building standards*. Owners are responsible for applying for and obtaining a building permit and any fire alarm permits required by an AHJ. Owners are also responsible for arranging building and fire *inspections* required by the AHJ.

Authority Having Jurisdiction

AHJs (*local authorities*) are responsible for enforcing the UBAS Act, associated Regulations, and all provisions of the NBC which may be applicable to a *building* within their jurisdiction. AHJs often use bylaws to administer *building standards* but the lack of a *building* bylaw does not absolve a AHJ from its responsibility to enforce the UBAS Act. An AHJ may require, by bylaw, additional *building standards* that exceed the minimum established by the NBC. The AHJ ensures the *Code* compliance of new construction or *renovation* projects through the building permit and *inspection* process.

Similarly, *authorities having jurisdiction* are responsible for enforcing the FS Act, associated Regulations, and all provisions of the NFC which may be applicable to a *building* within their jurisdiction. AHJs often use bylaws to administer fire safety standards but the lack of a fire bylaw does not absolve a AHJ from its responsibility to enforce the UBAS Act. An AHJ may, by bylaw, make additional building and fire safety standards that exceed the minimums established by the province. Fire *inspection* is a means for AHJs to ensure continued compliance with the NFC once a building is constructed.

Government of Saskatchewan

The Government of Saskatchewan is responsible for establishing the legislative and regulatory framework, high-level policy, licensing of *building officials*, and providing support to stakeholders. The Ministry of Government Relations is assigned responsibility for administering the UBAS Act and associated Regulations. The Saskatchewan Public Safety Agency is assigned responsibility for administering the FS Act and associated Regulations under the Minister responsible for Government Relations. The ministry provides support to *owners*, industry, municipalities, *building officials*, fire inspectors and other *Code users* on the application of the NBC and the NFC.

The Government of Saskatchewan is also responsible for supporting the Saskatchewan Building and Accessibility Standards Appeal Board, which hears appeals of *building official* orders and requests for exemptions from accessibility standards. The Fire Commissioner appointed by the Government of Saskatchewan is responsible for any appeal of a fire order issued by a *local assistant*.

Building Official

Building officials are appointed by and work for municipalities to provide plan review, inspection, and enforcement of the minimum standards for building, accessibility and energy efficiency required by the UBAS Act. *Building officials* must be licensed by the Government of Saskatchewan prior to providing *building official services*.

Building officials have the following powers under the UBAS Act:

- entering a *building* at a reasonable hour;
- ordering the production of documents, tests, certificates, etc. related to a building;
- taking material samples;
- issuing notices to *owners* that order actions within a *prescribed* time;
- eliminating *unsafe conditions*;
- completing actions, upon an owner's non-compliance with an order, and adding the expenses incurred to the tax payable on the property; and,
- obtain restraining orders as identified in the UBAS Act.

A *building official* shall be licensed by the province. The certification of *building officials* includes the following licence classifications:

- Class 1 – one and two unit dwellings within the scope of NBC, Division B, Part 9
- Class 2 – any *buildings* within the scope of NBC, Division B, Part 9 including Class 1
- Class 3 – any *buildings* within the scope of the NBC, Division B including Class 1 and Class 2

Local Assistant/Fire Inspector

The *local assistant/fire inspector* works for the AHJ. The work of the *local assistant* includes aiding the AHJ in the enforcement of any act, regulation and municipal bylaw relating to fire safety and fire prevention, particularly the administration and enforcement of the FS Act and Regulations, the NFC and any additional fire protection and life safety standards established by the AHJ. This includes conducting fire *inspections* required for many building occupancies, dealing with complaints and investigation of fires. For some AHJs, or for some occupancies, these fire *inspections* are required before the *building* is occupied in addition to the requirements during the operation of the building.

The intent of these *inspections* is to produce a property that is safe while it is in operation. Fire *inspections* focus on the fire and life safety aspects of a *building*. A fire *inspection* may result in an order to upgrade an existing *fire alarm system* or to install a system where none exists.

Design Professional (Architects and Engineers)

Design professionals (a registered *architect* or licensed professional *engineer*) are required to provide the *design* or *design review* of large *buildings* or a specific *building* component and are knowledgeable and experienced in the NBC and/or the NECB as it pertains to their scope of *work*. Design professionals provide services either directly or indirectly to *building owners*. All buildings falling within the scope of Division B of the NBC (includes Parts 3, 4, 5, 6 and 7) or within the scope of the NECB must have the *design* or *design review* completed by a design professional.

Smaller *buildings* (i.e., three *storeys* or less in *building* height and not exceeding 600 m² in *building* area) may be designed by a *competent person* acceptable to the AHJ who is knowledgeable in the requirements found in Part 9 of the NBC and is experienced in *building design*.

The *designer* works for the owner. The *designer* works with the owner to develop the *design criteria* for the fire alarms system project which includes the requirements of the Codes and the referenced standards. The *designer* involved in this work will be one who has an applicable scope of practice that includes education and experience in the design of the building systems which they are designing. Regulations under the UBAS Act require an *owner* to have a registered *architect* or licensed professional *engineer* complete the design or design review of the *building* and all *building* systems if the *building* is within the scope of Division B, (includes Parts 3, 4, 5, 6 and 7) of the NBC.

Constructor

Building constructors, including contractors (installers) and sub-trades, are employed by *building owners* to complete construction and/or *renovations* of *buildings*. All *work* must be completed to comply with the design of the *building* and in compliance with the UBAS Act and Regulations, the NBC and, as applicable, NECB. A project may involve several different constructors.

It is expected that contractors have knowledge, training and experience related to the work they are contracted to undertake. An owner, or their agents, should ask a potential contractor for information about their experience with projects similar to the one to be undertaken, training of their workers, affiliations with industry associations, and company or individual certifications, references for other projects, etc. to evaluate potential contractors who may be selected to complete the project.

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1. What are the minimum types of devices included in a *fire alarm system*?

A *fire alarm system* shall consist of at least the following devices: a *control unit*, a manual station and an *audible signal device*.

2. What functions may a *fire alarm system* provide in addition to detection of smoke or fire and *notification* of building occupants?

The system can be *designed* to simultaneously alert the fire department by means of a direct or relayed signal where a rapid response by the fire department is essential. This early *notification* to the *fire department* is essential when *buildings* are used for certain activities, including hazardous chemicals or vulnerable occupants.

Fire alarm systems can be *designed* to signal building staff before a general alarm *notification* to building occupants, and to control the operation of the building service equipment to minimize the spread of fire and smoke. Signals from the system can automatically engage equipment to pressurize stairwells or shut down recirculating air systems to confine smoke and minimize injury, loss of life and property damage. *Fire alarm systems* may also be *designed* to activate *fire suppression* systems, release hold-open devices on fire doors, and indicate the location of the fire within the building.

3. What changes were made for fire alarms systems in the NBC 2015?

Within NBC, Division B, Subsection 3.2.4. Fire Alarm and Detection Systems, there have been some minor changes regarding fire alarm requirements for low and medium hazard occupancies. These include:

- A provision for residential fire warning systems has been added for situations where *fire alarm systems* are not installed.
- The provisions for voice communication systems has been revised.
- A new standard has been referenced, CAN/ULC-S1001, to require that *fire protection and life safety systems* are *tested* in an integrated fashion to ensure the different systems or components work together as planned in the event of an emergency.

4. What type of *fire alarm system* may be required?

There are two base types of *fire alarm systems* in accordance with the NBC:

- a single-stage system; and
- a 2-stage system

In a single-stage system when a device detects smoke the signal is sent to the alarm *control unit* which then signals the *audible signal device* to sound throughout the *building*.

In a 2-stage system the signal from the detection device goes to the *control unit* and the *control unit* only notifies certain designated locations so that specific individuals investigate the signal. If the investigation is completed and there is no fire event, then the *control unit* can be reset and no alarm will sound. Alternatively, if the detector signal is confirmed or if a response is not provided within the required time of five (5) minutes an *alarm signal* will sound notifying occupants to evacuate the *building*.

5. Does a *fire alarm system* in a *building* need to be monitored?

The requirements for signals to the *fire department* are based on the provisions of the NBC. The requirement for *monitoring* is dependent upon the type of *fire alarm system* required, the *occupancy* of the *building*, and the *occupant load* in the *building*. Figure 7 on page 25 of this guide provides additional information on system *monitoring* requirements.

6. Why does a *fire alarm system* in a *building* need to be monitored?

Fire alarm system monitoring, described within the NBC, Division B, Article 3.2.4.7 “Signals to Fire Department” ensures that a fire or emergency event is identified to the AHJs or others without relying on people in or near a *building* to take time in the middle of an emergency to call and report the event. This reliable and often earlier *notification* to the authorities will result in a quicker response time by the *fire department* which may save lives and reduce the damage to the subject building or neighbouring *buildings*.

7. What type of *fire alarm system* needs to be monitored?

Monitoring applies to these *fire alarm systems*:

- A single-stage *fire alarm system* installed in a *building* of assembly occupancy that has an *occupant load* more than 300 shall be designed to notify the *fire department*.
- A *fire alarm system* that includes waterflow detecting devices shall be designed to notify the *fire department*.
- A 2-stage *fire alarm system* shall be designed to notify the *fire department*.

8. What special requirements affect an assembly building with occupancy numbers less than 300 when the building is not *sprinklered* throughout?

An assembly occupancy that is not *sprinklered* with an *occupant load* less than 300 must meet the following requirements:

- Where a single stage *fire alarm system* is installed in an assembly *building* that is not *sprinklered* throughout, a legible notice that is not easily removed shall be affixed to the wall near each manual station:
 - stating that the *fire department* is to be notified in the event of a fire emergency, and
 - the emergency telephone number for the municipality or for the *fire department*.
- The fire code requires any alarm system that does not have devices to notify the *fire department* or a *signal receiving centre* have a sign posted at each manual station indicating a call must be made to 9-1-1.

9. Do all 2-stage *fire alarm systems* have to include devices to notify the fire department or a *signal receiving centre*?

Yes. All new *buildings* with a 2-stage *fire alarm system* must be designed to provide *notification* to the *fire department* or a *signal receiving centre* in conformance with CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems”. Some *existing buildings* may have systems that do not provide the required *notification*. These existing systems are required to have a sign posted at each manual station indicating a call must be made to 9-1-1.

10. What governs *monitoring of fire alarm systems*?

The determination of whether a *fire alarm system* is to be monitored is based on NBC 2015, Division B, Article 3.2.4.7. Signals to Fire Department. If a system must be monitored, the NBC references CAN/ULC-S561 as the standard to which the system must comply.

11. What if the authority having jurisdiction does not have a fire department?

Regardless of whether a *fire department* exists, connection to a *signal receiving centre service* is important. This signal to a centre can be used to notify other municipal and provincial authorities that assistance may be required. This connection can make assistance available as quickly as possible to minimize risk to life and property. Connection to a *signal receiving centre* will ensure that 9-1-1 is aware of the alarm not just the occupants of the *building*.

12. What if the fire department is not set up to receive signals sent from *fire alarm systems*?

In most jurisdictions, *fire departments* no longer accept or provide *signal receiving centre service* as it is costly to operate and maintain. *Signal receiving centres* can provide these services (including 9-1-1) to a number of municipalities simultaneously and may be located anywhere.

13. When does the current Code affect an existing *fire alarm system*?

Building owners, designers and the AHJ should determine the original *design* parameters and standards for an existing *fire alarm system*. Generally, if a *building* has not changed and the use of the *building* has not changed since the original installation, and the system is in good operating condition, no upgrade is required and current NBC requirements do not apply.

When dealing with changes to an *existing building*, the use of an *existing building*, or the system is not in good operating condition the AHJ may determine if other measures are needed to provide an acceptable degree of life safety or a system upgrade may be needed. The AHJ may identify the deficiencies in the system and the design professional for the *fire alarm system* will determine the extent of that upgrade. In cases where *fire alarm systems* are being expanded or replaced due to the modernization of a *building, change of occupancy* or failure of the system all provisions of the current adopted *Code* would apply.

14. Under what circumstances does an existing *fire alarm system* in a *building* need to be updated?

Fire alarm system updates are only required when:

- the original system has been changed since it was *designed* and installed,
- the original system has been expanded since it was *designed* and installed,
- the original system cannot be *repaired* without it being changed, or
- the original system does not provide an adequate level of life safety.

15. When does an existing fire alarm system that does not notify the fire department require upgrades to provide signals to the fire department?

Upgrading the system to notify the fire department is not required if:

- a *fire alarm system* has not been changed since it was originally installed; and
- it was not required to notify the *fire department* at that time; and
- the *building* has not been changed; and
- the use of the *building* has not changed.

16. What law governs *fire alarm systems* in Saskatchewan?

The UBAS Act and associated Regulations adopt the NBC as the minimum standard for the construction and *renovation of buildings*. The FS Act and associated Regulations adopts the NFC as the minimum standard for the fire safe operation of *buildings* and facilities.

Within the NBC there are numerous provisions that affect the installation, verification, and *notification to fire departments (monitoring)* for *fire alarm systems*. The NBC also sites certain referenced CAN/ULC Standards that further detail exact requirements for the *fire alarm systems*. The NFC contains provisions with regard to the maintenance and testing of *fire alarm systems*.

17. What are the key Codes and Standards that affect *fire alarm systems*?

The referenced standards related to *fire alarm systems* are as follows:

- NBC referenced
 - CAN/ULC-S524, “Installation of Fire Alarm Systems”
 - CAN/ULC-S537, “Verification of Fire Alarm Systems”
 - CAN/ULC-S540, “Standard for Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance”
 - CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems”
 - CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems”
- NFC referenced
 - CAN/ULC-S536, “Inspection and Testing of Fire Alarm Systems”
 - CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems”
 - CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems”

18. Who can install a *fire alarm system*?

In accordance with CAN/ULC-S524, all power supply equipment and wiring shall be installed in conformance with this Standard and the requirements of CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32. In Saskatchewan a licensed electrical contractor can undertake this work. In some AHJs, additional standards are established and for certain components of a system installation must be completed by individuals with additional qualifications. These individuals may be referred to as fire alarm technicians.

19. What is the difference between the installation (CAN/ULC-S524) and verification (CAN/ULC-S537) standards?

CAN/ULC-S524 describes the requirements for the *design* and installation of a *fire alarm system* with or without voice communication capability and includes some requirements for *acceptance testing*.

CAN/ULC-S537 prescribes *inspection* and *test* procedures for the purpose of verifying that the *fire alarm system* is installed in conformance with the *design* and CAN/ULC-S524 and performs all of its intended functions as *designed*.

20. How will CAN/ULC S1001-11, referenced in the NBC 2015, affect fire alarm requirements?

CAN/ULC-S1001 provides the methodology for verifying and documenting that interconnections between building systems satisfy the intent of their *design* and that the systems function as intended by the Code. This goes beyond the testing for compliance with each individual standard. CAN/ULC-S1001 testing is undertaken to ensure that the individual systems and components of all *fire protection and life safety systems* work effectively together. This ensures that the risk to life safety as a result of system failure or malfunction is minimized.

21. Can an installer do their own verification?

No. The requirements of CAN/ULC-S537 indicates that the verification procedure will be conducted by an organization other than the *installing contractor* and *designer*, and that the verification will be carried out by qualified personnel in the employ of an organization acceptable to the AHJ.

22. What is the difference between supervision of a *fire alarm system* and *monitoring* of a *fire alarm system*?

Neither supervision or *monitoring* are defined terms in the NBC or the NFC. Generally, supervision refers to the *electrical supervision* of components of the *fire alarm system* by the *control unit* for the system (fire alarm panel or *annunciator*). Generally, *monitoring* refers to the *notification* sent by the *control unit* to a *signal transmitting unit* and on to a *signal receiving centre* in an emergency event.

23. How is compliance with CAN/ULC-S561, where required, attained?

The NBC and NFC require that both the Receiving Centre and the connections from the demarcation terminal box and *signal transmitting unit* transmitter be in compliance with CAN/ULC-S561. A *signal receiving centre* should be able to provide an owner with a letter confirming that the centre complies with the standard. The owner may be asked to submit this documentation of compliance to the applicable standard to the AHJ.

Acceptable certificates may include:

1. A document that is acceptable to the AHJ; or
2. A ULC Protective Signaling System certificate – provided through a ULC listed alarm company.

(Best practice may be a ULC certified signal receiving centre. The ULC certificate is a document issued by the ULC in care of your *monitoring* service provider that is to be displayed at your fire alarm monitoring panel. It states that the installation, equipment, and method of communication adhere to applicable ULC standards. A ULC certificate is proof that the *building* is being monitored in accordance with applicable ULC Standards issued by the developer of the standards.)

24. How do I know if a company is qualified to provide *monitoring* that meets requirements of the NBC?

When asked, the company should be able to demonstrate to the person interested in using the service how they meet the requirements of CAN/ULC-S561. This may be demonstrated by membership in organizations established to promote fire alarm education, certification and training by these agencies or recognized standards organizations. An AHJ may have specific requirements for qualifications.

25. Does tying a *fire alarm system* into a security system mean that the system complies with the Code requirements for *monitoring*?

No. *Monitoring* must meet the requirements of NBC and CAN/ULC-S561. There is no guarantee that all service companies offering *monitoring* services are operating within the requirements of this standard. It is important that the *owner* requesting service satisfy themselves that the services offered will comply with the referenced standard. The *owner* will also need to satisfy the AHJ that this *monitoring* satisfies the requirements of the Code and the AHJ.

26. Who determines that upgrades are required for an existing *fire alarm system*?

The AHJ will determine what upgrades are required to an existing system. This will be based on the age of the *building*, the original system requirements, changes to the *building*, changes to the system, changes to the use of the *building* and the condition of the existing system. Independent of a review by the AHJ an *owner* may choose to upgrade their system.

27. Is the verifier of a system for compliance with one standard required to identify deficiencies in compliance with other standards?

Acceptance testing with regard to a particular standard does not consider the requirements of other standards. Verification testing prescribes *inspection* and *test* procedures for the purpose of verifying that the *fire alarm system* is installed in conformance with the *design* and CAN/ULC-S524, and performs all of its intended functions as *designed*. *Fire alarm system monitoring* based on CAN/ULC-S561 will also need verification testing. This verification testing may be done at the same time as that required for CAN/ULC-S524 but could be completed in a separate process. The results of all the individual acceptance and verification testing for each standard will be taken into account when the provisions for testing the group of *fire protection and life safety systems* that are integrated.

28. Does the verification report for each standard related to *fire alarm system* also require or imply verification of all other standards related to *fire alarm systems*?

Verification of the system as a whole presumes that any of the Standards applicable to *fire alarm systems* may apply. In some cases, these verification *tests* may be undertaken at separate times for the systems components meeting each standard. If the *tests* are done separately the report will only provide verification of the components in place at the time.

The new requirement for integrated systems testing in accordance with CAN/ULC-S1001 will ensure that all systems are in place and work effectively.

29. Is there a role for the fire alarm verification service provider in compliance?

No, the responsibility for compliance rests with the *owner* and the AHJ is responsible for the enforcement of compliance. The verification service provider will provide a report to the *owner* which may identify deficiencies the *owner* will need to address.

30. How does the scope of work on a system installation contract fit with the requirements of each standard?

Generally, the contract arrangements in the tender documents for the *building* or system will reflect the demarcation of responsibilities established by the referenced standards.

31. Who is held responsible for deficiencies in a *fire alarm system*?

If *acceptance testing* or verification identifies deficiencies in a new systems or upgrades to a *fire alarm system*, the *designer* and the *installing contractor* will be responsible for resolving these issues before the completion of the construction/installation contract and turning the system over to the *owner*.

If deficiencies are found in an existing system during annual testing, *inspection* and maintenance the deficiencies are the responsibility of the *owner*.

32. What is the gap in the current compliance process for the monitoring of fire alarm systems?

It appears that the primary gap in the existing process is the lack of understanding by *building owners* about their responsibility to arrange for and maintain a system monitoring contract with a signal receiving service where such is required. This is demonstrated by the number of systems identified by *fire inspectors* and fire alarm service technicians as requiring *monitoring* but not having it. Although the *owner* bears this responsibility several other parties involved with *fire alarm systems* can play a role in eliminating the *monitoring* gap when it is required by the NBC.

- *Designers* can identify the requirement to *owners* when establishing the *design criteria* for a project with the *building owner* and can identify the requirement on the plans for the project.
- AHJs can identify the requirement as a condition of a building permit for a new or altered *fire alarm system*.
- *Building officials* can identify the requirement on plan review and *inspection* reports.
- Fire alarm service and verification companies can identify the requirement as a comment on *acceptance testing* and verification reports. This can also be included as a comment on annual *inspection* reports once it has been confirmed that the existing system required *monitoring*.
- AHJs can require this service be in place before *occupancy* of a *building* occurs.
- Fire officials can identify the requirement as a *deficiency* on *inspection* reports for new or *existing buildings*.

Appendix E - Best Practices for Existing Buildings with Fire Alarm Systems

Prior to the adoption of the UBAS Act, AHJs were directly responsible for adoption of the NBC in order to administer and enforce construction standards within their respective geographical jurisdictions under provision of the applicable municipal legislation. As a result, no particular edition of the NBC was in effect province-wide and in many cases no NBC was adopted.

On June 6, 1988, provisions of the UBAS Act came into force setting a consistent minimum *building standards* for construction, assigning responsibilities to the parties to construction projects and authorizing AHJs to adopt building bylaws. The UBAS Regulations also established a definition for: “*existing building*”.

The UBAS Regulations have adopted the editions of the NBC as follows:

- 1985 NBC – effective June 6, 1988
- 1990 NBC – effective March 31, 1992
- 1995 NBC – effective July 1, 1998
- 2005 NBC – effective October 1, 2009
- 2010 NBC – effective May 1, 2013
- 2015 NBC – effective January 1, 2018

An existing *fire alarm system* must comply with the NBC that was in force at the time it was designed and constructed. Earlier Codes, such as the NBC 1995 required large occupancies with single stage *fire alarm systems*, waterflow detecting devices, and 2 stage *fire alarm systems* to notify the *fire department* at actuation of the alarm system by way of an independent central station, or a proprietary control centre. Where the above facilities were not available in a municipality, this article allowed for an independent system to transmit signals to the *fire department*.

If the *building* or the *fire alarm system* has been altered since that time it must comply with the NBC requirements in force at the time of *alteration*. If parts for an existing system are no longer available, the system will need to be upgraded to meet current Code requirements.

The following questions should be considered when an AHJ is analyzing whether an existing *fire alarm system* needs to be updated:

1. Is the alarm system in safe and operable working condition?
2. What year was the *building* constructed?
3. What regulations or Code applied to the *building* at time of construction or when the alarm system was installed?
4. What upgrading is being done to the *building* and to what standard?
5. Have changes to the *building* affected the design or safety of the original system?
6. What is the extent of the applicability of new code in providing an acceptable degree of safety?

A *building owner* is obligated to undertake periodic inspection, testing and maintenance to meet the requirements of CAN/ULC-S536. An AHJ must have access to the results of this work to ensure that existing systems are maintained in good operating condition as required by the NFC. The AHJ will also identify any changes that have occurred to the *building* or the *occupancy* of the *building* when determining the suitability of an existing *fire alarm system*.

Approval of Fire Alarm System Personnel

- No person shall *inspect, test* or maintain a *fire alarm system* without contacting the AHJ or *fire department*. Some AHJs may issue an authorization to undertake this work.
- A person who wishes to obtain an authorization to *inspect, test* or maintain *fire alarm systems* shall submit proof to the AHJ or *fire department* that the person holds at least one of the following qualifications:
 - (a) a certificate from a recognized alarm manufacturer that the person is a factory trained installer and service person;
 - (b) a certificate that the person has successfully completed the Canadian Fire Alarm Association “Fire Alarm Technology” program; or
 - (c) a certificate that the person has successfully completed the electrician trades upgrading course entitled “Fire Alarm and Protection Systems”. (Offered by Canadian Fire Alarm Association, ULC and others)
- Any person who has obtained an authorization to *test* fire alarms shall only perform those fire alarm testing services for which the individual has qualifications and experience.
- The company that employs the fire alarm *test* repair personnel must be a member of the Canadian Fire Alarm Association or other Canadian association representing the fire alarm or fire protection industry that satisfies the AHJ.
- A person shall have a factory certification from the manufacturer and/or after completing Canadian Fire Alarm Association course, work as a trainee for one year with an experienced fire alarm technician. An AHJ or *owner* may ask for evidence of training or certification.

Qualifications Required for Addressable Fire Alarms

- Only authorized factory *trained personnel* employed by the manufacturers’ local distributor can enter the program mode of addressable *fire alarm systems*.

Limitation of One Person Testing

- The utilization of a single authorized technician for testing is restricted to 120 V *fire alarm systems* only.
- All conventional and addressable *fire alarm systems* shall employ two authorized technicians for testing purposes.

No Building or Fire Alarm System Permit Required

The intent is to keep the system functioning to original design and installation standards, which includes replacement of devices found to be defective.

1. Replacement of *control unit* with a *control unit* of same manufacturer and model number.
2. Replacement of *field device(s)* with *field device(s)* listed and labelled for use with the specific *control unit*.

Installation must meet the requirements of the NBC, CAN/ULC-S524 and must be verified in conformance with CAN/ULC-S537. The verification report is required to be maintained on site throughout the life of the system.

Building Permits

The intent is to require a building permit for any new system or anytime there is a change of the design or upgrade of the original system. This may include a new *control unit*, *field devices*, or ancillary devices. A permit may be required regardless of the reason for the change or upgrade. The AHJ will determine if a permit is required.

1. Installation of any new *fire alarm system*.
2. Replacement of *control unit* with a *control unit* that is different than the one being replaced.
3. Installation of additional *field devices* or ancillary devices (such as, electromagnetic locking devices, hold-open devices, etc.), whether to an existing circuit or new circuit.
4. Installation of equipment that is *designed* to notify the *fire department* of an alert or an *alarm signal* in conformance with the NBC and CAN/ULC-S561.

Installation must meet the requirements of the NBC, CAN/ULC-S524 and must be verified in conformance with CAN/ULC-S537. The verification report is required to be maintained on site throughout the life of the system

The requirement to obtain a building permit does not necessarily mean that a fire protection *engineer* must be hired before the system can be upgraded. If changes made to an existing *fire alarm system* are limited to the addition of a few devices and existing circuits have the capacity for these devices further engineering may not be required. The AHJ determines when fire protection engineering is required.

Emergency Repairs

If a permit is required as identified above, the permit must be applied for within one (1) month from the time the deficiencies were noted. If any portion of the *fire alarm system* is not functional a fire watch of the affected area must be implemented immediately. The fire watch is required to continue until the *fire alarm system* is functional and has been verified. In addition, the local *fire department* must be notified immediately advising that the *fire alarm system* is not functional.