



BULLETIN RB06-064

(Updated 2015 Dec 18)

ALTERATIONS TO FIRE ALARM SYSTEMS

Reference: Division A, Sentences 1.1.1.2.(1), (2), (4), and (5), Division B, Sentences 3.2.4.5.(1) and (2), Division C, Sentences 2.2.3.3.(1) and (2), Sentence 2.4.2.4.(1), STANDATA 06-BCI-001-R1, and STANDATA FCI-08-06

Division A, Sentence 1.1.1.2.(1) “This Article applies to a *building* that has been legally built, occupied and used before 02 September 2007.”

Division A, Sentence 1.1.1.2.(2) “If a *building* is altered, rehabilitated, refurbished, renovated or repaired, the level of life safety and *building* performance shall not be decreased.”

Division A, Sentence 1.1.1.2.(4) “A change in *occupancy* or *alteration* of any *building* constructed before 02 September 2007 shall be permitted if the level of safety and *building* performance proposed are acceptable to the *authority having jurisdiction*..”

Division A, Sentence 1.1.1.2.(4) “For a *building* constructed before 02 September 2007, the *authority having jurisdiction* may accept an alternative or a proposal that achieves the appropriate level of safety for the specific activity for which the *building* is to be used.”

Division B, Sentence 3.2.4.5.(1) “Except as permitted by **Articles 3.2.4.10.** and **3.2.4.19.**, fire alarm systems, including the voice communication capability where provided, shall be installed in conformance with **CAN/ULC-S524**, “Installation of Fire Alarm Systems.””

Division B, Sentence 3.2.4.5.(2) “Fire alarm systems shall be verified in conformance with **CAN/ULC-S537**, “Verification of Fire Alarm Systems,” to ensure they are operating satisfactorily.”

Division C, Sentence 2.2.3.3.(1) “Before a fire alarm system is installed or altered, plans showing full details of the *building* in which it is to be installed shall be drawn to scale and submitted with the application to build.”

Division C, Sentence 2.2.3.3.(2) “Unless deemed by the *authority having jurisdiction* to be a minor *alteration* to an existing system, all plans and specifications produced for a fire alarm system referred to in **Sentence 2.4.2.4.(1)** shall be imprinted with the stamp or seal of a *professional engineer*.”

Division C, Sentence 2.4.2.4.(1) “If a fire alarm system is to be installed in a *building* described in **Sentence 2.4.2.1.(3)** or **(4)**, the *owner* shall submit evidence to the *authority having jurisdiction*, before construction begins, that they have retained a *professional engineer* to

- a) design the system,
- b) perform *field reviews* of the system during installation, and
- c) perform verification of the system after installation.”

Question:

Under what circumstances are drawings for the alterations to a fire alarm system required to have an engineer's stamp? Under what circumstances are alterations to a fire alarm system required to be verified by a professional engineer?

Commentary / Relevant Facts:

A basic requirement of ABC 2006 is that fire alarm systems are required to be installed in conformance with **CAN/ULC-S524**, and verified in conformance with **CAN/ULC-S537**. However, the ABC 2006 also states that a building constructed under previous editions of the ABC may be altered if the level of safety and building performance are acceptable to the Authority Having Jurisdiction, and provided that the level of safety and building performance are not decreased.

Current City of Calgary Building Regulations policy is that all alterations to fire alarm systems require a building permit. The ABC 2006 requires that plans of a fire alarm system are required to be submitted with a building permit application. When buildings are required to have professional involvement, the ABC 2006 requires that fire alarm systems be designed, field reviewed, and verified by a professional engineer. It also requires the plans and specifications of the fire alarm system to bear the stamp of a professional engineer, unless it is a minor alteration to an existing system.

The word 'alteration' is defined by the ABC 2006, but **STANDATA FCI-08-06** "Existing Fire Alarm Systems" provides guidance as to what the word means in the context of fire alarm systems. According to that **STANDATA**, alterations could include maintenance, repair, upgrading, and replacement. The **STANDATA** also provides guidance concerning when maintenance, repair, upgrading, and replacement of an existing fire alarm system requires the involvement of a professional engineer, whether it be for design or verification. The **STANDATA** only applies to fire alarm systems installed in buildings constructed prior to ABC 1997.

The issue of verification requirements is addressed in **STANDATA 06-BCI-001-R1**.

Conclusions:

1. All alterations to a fire alarm system, whether they be major or minor, require a building permit, and the building permit application must include plans of the alterations to the fire alarm system.
2. All alterations to existing fire alarm systems, regardless of the age of the fire alarm system and regardless of the scope of the alterations, are required to be verified in accordance with **CAN/ULC-S537-04**.
3. Fire alarm systems in buildings constructed under ABC 1997 or ABC 2006:
 - a. If the building was required by ABC 1997 or ABC 2006 to have professional involvement, the plans for the fire alarm system modifications must always be stamped by a professional engineer, whether the modifications are major or minor. Verification of the system must be performed by a professional engineer.
 - b. If the building was not required by ABC 1997 or ABC 2006 to have professional involvement, the plans for the fire alarm system modifications are not required to be stamped by a professional engineer. Verification is not required to be performed by a professional engineer.

4. Stamps on plans for fire alarm systems in buildings constructed prior to ABC 1997:
- a. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘maintenance,’ plans for the alterations are not required to be stamped by a professional engineer. If the building was required by the ABC in force at the time to have professional involvement, the verification of the system must be performed by a professional engineer.
 - b. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘repair,’ and the building was required by the ABC in force at the time to have professional involvement, plans for the alterations are required to be stamped by a professional engineer. Verification of the system must be performed by a professional engineer.
 - c. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘repair,’ and the building was not required by the ABC in force at the time to have professional involvement, plans for the alterations are not required to be stamped by a professional engineer. Verification is not required to be performed by a professional engineer.
 - d. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘repair,’ and the building was constructed prior to ABC 1978, the professional involvement requirements in ABC 1981 shall be used to determine whether or not stamps and engineer involvement in the verification are required.
 - e. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘upgrading,’ and regardless of the age of the building, the building is required by the ABC 1990 to have professional involvement, plans for the alterations are required to be stamped by a professional engineer. Verification of the system must be performed by a professional engineer.
 - f. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘upgrading,’ and regardless of the age of the building, the building is not required by the ABC 1990 to have professional involvement, plans for the alterations are not required to be stamped by a professional engineer. Verification is not required to be performed by a professional engineer.
 - g. If the alterations to the fire alarm system are considered by **STANDATA FCI-08-06** to be ‘replacement,’ plans for the alterations are required to be stamped by a professional engineer. Verification of the system must be performed by a professional engineer.
 - h. See the table below for a graphic representation of these conclusions.

Applicable ABC	Professional involvement	Type of alteration ¹	Stamp required on fire alarm drawings?	Verification by Engineer required?
Buildings constructed under ABC 1997 and ABC 2006	Professional involvement required by code for base building at time of construction.	Maintenance	Yes	Yes
		Repair	Yes	Yes
		Upgrading	Yes	Yes
		Replacement	Yes	Yes
	Professional involvement not required by code for base building at time of construction.	Maintenance	No	No
		Repair	No	No
		Upgrading	No	No
		Replacement	No	No

Buildings constructed prior to ABC 1997	Professional involvement required by code for base building at time of construction.	Maintenance	No	Yes
		Repair ²	Yes	Yes
		Upgrading ³	Yes	Yes
		Replacement	Yes	Yes
	Professional involvement not required by code for base building at time of construction.	Maintenance	No	No
		Repair ²	No	No
		Upgrading ³	No	No
		Replacement	Yes	Yes

Notes to table:

1. The terms ‘maintenance,’ ‘repair,’ ‘upgrading,’ and ‘replacement’ in this table have the same meanings as in **STANDATA FCI-08-06**.
2. When fire alarm systems are repaired in buildings constructed prior to ABC 1997, the code in force at the time the building was constructed should be used to determine requirements for professional involvement, except if the building was constructed prior to ABC 1978, the professional involvement requirements of ABC 1981 shall be used (see **STANDATA FCI-08-06**).
3. When fire alarm systems are upgraded in buildings constructed prior to ABC 1997, the ABC 1990 should be used to determine the requirements for professional involvement (see **STANDATA FCI-08-06**).

Chief Building Inspector

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