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## **VERIFICATION OF FIRE ALARM SYSTEMS**

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The intent of this bulletin is

- to clarify requirements of verification of the fire alarm systems in accordance with Article 3.2.4.5. of Division B the Vancouver Building By-law (VBBL);
- to establish City of Vancouver's acceptance criteria for persons deemed to be qualified to perform verification of fire alarm systems, for purpose of the CAN/ULC-S537.

Note: This Bulletin supersedes Bulletin 2003-009-BU/EL.

Article 3.2.4.5. of the VBBL requires that fire alarm systems including the voice communication capability where provided, shall be:

- a) installed in conformance with CAN/ULC-S524, "Installation of Fire Alarm Systems.", and
- b) verified in conformance with CAN/ULC-S537, "Verification of Fire Alarm Systems," to ensure they are operating satisfactorily.

Upon completion of the verification procedure, a verification report (see Appendix C form) and record of verification details must be submitted to the City's Building or Electrical Inspections Branch by an acceptable qualified person employed by the fire alarm verification organization listed by the City of Vancouver (see Note A below). The fire alarm verification report and record must be completed and signed by a qualified person employed by the acceptable fire alarm verification organization. The referenced Appendix C form is a part of the CAN/ULC-S537, and it has been amended for use in the City of Vancouver (see attachment).

When a fire alarm system (FAS) is connected to a ULC listed fire signal receiving facility, a ULC Certificate (Fire Protective Signalling Service) must be completed as a part of fire alarm verification report, see Bulletin 2000-019-BU/EL for sample of the ULC certificates.

When an existing FAS in the building is subjected to an addition or alteration (deletion or replacement of components, addition, modification or software change), then the extent of the FAS verification must be provided as follows:

1. When a control unit, transponder or an annunciator has been replaced with a new control unit, transponder or an annunciator, the entire FAS must be verified in accordance with the CAN/ULC-S537.
2. When a control unit or transponder has been modified, the control unit or transponder must be made "approved" in conformance with Rule 2-024 of the CE Code, and must be verified in accordance with the Standard.
3. When a unit assembly of electrical parts or module in an existing control unit or transponder has been replaced, the control unit or transponder must be made "approved" in conformance with Rule 2-024 of the CE Code, and must be verified in accordance with the Standard.
4. When an existing single-zone FAS has been subjected to an addition or alteration, the entire FAS must be re-verified.

5. When field devices, water flow devices, audible signal devices or components of voice communication have been added, replaced or relocated in a FAS circuit, the entire fire alarm zone/circuit must be re-verified (see Note for Conventional Field Device).
6. When an existing FAS component has been replaced with a different manufacturer's component, all components in the FAS must be compatible in conformance with CAN/ULC-S524. The ULC Test Report for such compatibility must be accompanied with the completed Appendix C form submitted in accordance with this Bulletin.

#### **NOTES - FAS MODIFICATIONS**

The CAN/ULC-S537 provides specific verification requirements for FAS modifications. Subsection 7.2 of the CAN/ULC-S537 requires where a conventional field device is added; or modifications or deletions are made to an existing input circuit or output circuit and the new or altered wiring is extended from an existing field device, the new devices, the devices connected on either side of the addition or alteration as well as at the end-of-line device for that circuit shall be verified in accordance with the Standard. For the foregoing item 5, Subsection 7.2 of the CAN/ULC-S537 is deemed to be acceptable to the City's Building and Electrical Inspections when only a minor modification is made to an existing fire alarm circuit (i.e. replacement, relocation or addition of not more than 10% of conventional field devices in the circuit). Conventional Field Device is defined by both of the CAN/ULC-S537 and CAN/ULC-S524 standards.

#### **FAS VERIFICATION – BY QUALIFIED PERSONNEL IN THE EMPLOY OF AN ORGANIZATION**

The PREFACE of the CAN/ULC-S537 states that the requirements of this Standard contemplates that the verification procedure described herein 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 authority having jurisdiction.

For Qualified Personnel; Appendix A of the CAN/ULC-S537 describes that any person who performs the verification of a FAS should be familiar with this Standard and have received suitable formal training or sufficient experience acceptable to the authority having jurisdiction.

Maintenance, commissioning, evaluation and verification of electrical equipment are deemed to be electrical work in accordance with the BC Electrical Safety Regulation. The Scope of CAN/ULC-S537 describes that this Standard prescribes verification procedures for the purpose of verifying that the FAS is installed in conformance with the design and CAN/ULC-S524, and performs all of its intended functions as designed. These requirements mean that qualified persons involved in a verification procedure must have sufficient technical knowledge of FAS components, their function and performance, and must have necessary electrical qualification for evaluating conformance of these components and devices with installation provisions mandated by the CAN/ULC-S524, and Section 32 of the Canadian Electrical Code, Part 1.

**The following acceptance criteria have been established by the City of Vancouver for persons deemed to be qualified, provided that such qualified person is employed by the fire alarm verification organization listed by the City of Vancouver:**

- 1) A qualified person(s) employed by a ULC listed manufacturer of a FAS (i.e. qualified persons employed by Simplex, Edwards, Honeywell, Mircom, Notifier, etc.). Presently (in accordance with Section 4(1)(e) of the BC Electrical Safety Regulation) employees of an electrical equipment manufacturer are deemed to be "qualified" for the purpose of doing electrical work of "commissioning" of the equipment supplied by that manufacturer.

Notes:

- a) Acceptance of technicians employed by these manufacturers is based on the fact that these technicians have respective factory training and relevant electrical qualifications.
  - b) Manufacturers must provide the City Electrician with detailed substantiation in this regard.
- 2) A Registered Professional - Electrical or Fire Protection Engineer. (See below definition 2)
  - 3) A Certified Technologist (ASc.T) registered with the ASTT BC in the Electrical Technology area who in addition has successfully completed relevant FAS courses.
  - 4) A qualified person employed by a fire alarm service company, provided this person possesses sufficient documentation indicating a successful completion of relevant factory training on fire alarm equipment and possesses a provincial certificate of qualification to do electrical work on fire alarm systems.

Note: The following criteria are provided by the TSBC - The current Electrical Safety Regulation permits the following qualified persons, that are the holder of a valid Certificate of Qualification (C of Q), perform electrical work on fire alarm systems;

- C of Q in the trade of Electrician,
- C of Q Restricted Class 'C', and
- C of Q Alarm & Communication Systems - Restricted class AC FSR or RB 203.

**Definitions:**

1. A qualified person is deemed to be a person in the employ of the verification organization (proof of qualification-training courses and relevant fire alarm and electrical certificates, etc., is required).
2. A Professional Engineer is deemed to be Electrical or Fire Protection Engineer registered with the ENGINEERS AND GEOSCIENTISTS BC, who is not involved in the design or installation of the FAS subjected to this engineer's verification.

**Notes:**

- A. Effective immediately, City of Vancouver is using a List of Acceptable Organizations / Qualified Persons for purpose of the CAN/ULC-S537 as the attachment to this Bulletin. All fire alarm verification reports are permitted to be signed only by qualified persons employed by verification organizations accepted by the City of Vancouver; as per the List of Acceptable Organizations / Qualified Persons.

The List of Acceptable Organizations / Qualified Persons is primarily for staff use, this list will be updated approximately twice a year, and it will not be posted on the City's website. The City's Building Inspections and Electrical Inspections Branches accept fire alarm verification reports only from the List of Acceptable Organizations / Qualified Persons for purpose of the CAN/ULC-S537.

- B. To be listed in the City of Vancouver as an acceptable verification organization and qualified persons for purpose of the CAN/ULC-S537, the organizations and qualified persons must meet the foregoing criteria. Manager of Trades Inspection or Deputy City Electricians must be contacted directly for evaluation of listing criteria.

**INSTALLATION OF FIRE ALARM SYSTEMS' CONTROL UNITS OR ANNUNCIATORS OUTDOORS**

The CAN/ULC-S527-11 "Standard For Control Units For Fire Alarm Systems" contains the following information:

- Scope of the Standard, Clause 1.7 states that these requirements apply to control units and control unit accessories for ordinary (non-hazardous) indoor and outdoor locations.
- Clause 9.2.1 item N of the Standard states that a product shall be marked for its intended installation environment (indoor or outdoor) and location (dry, damp, or wet).
- Section 10.10 of the Standard requires Variable Ambient Temperature And Humidity Test.  
Clause 10.10.1.1 of the Standard states that a product shall operate in the intended manner for all conditions of intended use at the test ambient conditions specified in Subsections 10.10.2, Low Temperature Test; 10.10.3, High Temperature Test; and 10.10.4, Humidity Test.  
Clause 10.10.5.1.1 of the Standard states that a product intended for either indoor / wet or outdoor / wet or damp installations shall be subjected to the tests indicated in Clauses 10.10.5.2.1.1 through 10.10.5.4.7, unless indicated otherwise.

**REQUIREMENTS**

Devices and equipment used in a fire alarm system must comply with the applicable Standards listed in Subsection 4.1.3. of the CAN/ULC-S524-14. (Also See Subsections 5.1.7. and 5.1.8. of the CAN/ULC-S524-14)

Where the fire alarm devices and equipment (including remote annunciators) intended to be installed outdoor (damp/wet/outdoor location), these devices and equipment must be approved for the condition of use with respect to the listed installation environment (i.e. ambient temperature and relative humidity) and location (i.e. indoor or outdoor) and legibly marked on the product in conformance with Rule 2-100(1)(m) of the CE Code.

(Original signed by)

(Original signed by)

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P. Ryan, M.Sc., P.Eng.  
Chief Building Official  
Director, Building Code and Policy

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W. White  
Deputy City Electrician  
Manager, Trades Inspection

**APPENDIX C VERIFICATION OF FIRE ALARM SYSTEMS (FAS)**

**CAN/ULC-S537-13 - APPENDIX C (INFORMATIVE) - FIRE ALARM SYSTEM VERIFICATION RECORDS**  
(Amended for use in the City of Vancouver) (Reference: Subsection 4.1, Clauses 4.1.7, 4.2.1, 4.2.2)

**C1. FIRE ALARM SYSTEM VERIFICATION REPORT**  
(Reference: Clause 4.1.6, 4.2.2)

<b>Electrical Permit #:</b>	<b>Building Permit #</b>	<b>Date:</b>	
<b>Address:</b>			
<b>New FAS:</b> <input type="checkbox"/>		<b>Existing FAS:</b> <input type="checkbox"/> (See Note 1)	
<b>System Manufacturer:</b>		<b>Model Number:</b>	
<b>A:</b>	System provides single-stage operation.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>B:</b>	System provides two-stage operation.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>C:</b>	The entire fire alarm system has been verified in accordance with CAN/ULC-S537, Standard for Verification of Fire Alarm Systems.	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>D:</b>	This is a partial verification for a partial occupancy. (see scope of electrical permit and Note 1)	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>E:</b>	Components of the existing fire alarm system have been modified or replaced with components from a different manufacturer and are compatible with the existing fire alarm system components. (see Note 2)	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>F:</b>	This is a partial verification for a FAS that has been replaced in stages. (see Note 1)	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>G:</b>	This is a verification of a portion of an existing fire alarm system verified in accordance with Section 7, System Modifications of the CAN/ULC-S537. (see Note 1)	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>H:</b>	Installed in accordance with the design and CAN/ULC-S524, Standard for the Installation of Fire Alarm Systems.	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>I:</b>	The FAS documentation is on site and includes a description of the system.	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>J:</b>	The fire alarm system is fully functional without deficiencies. (see Note 3)	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>K:</b>	The FAS is connected to a ULC-listed fire signal receiving centre via a supervised circuit of a ULC-listed signal transmitting unit approved for the purpose. If "Yes", specify the name and location of the ULC Listed Alarm Company: _____; and provide a copy of ULC "Fire Protective Signalling Service" Certificate No. _____ issued for the address above. (Note: A sample of the ULC Certificates is shown on Attachments 1 and 2 of Bulletin 2000-019-BU/EL.)	Yes <input type="checkbox"/>	No <input type="checkbox"/> NA <input type="checkbox"/>
<b>L:</b>	<b>Comments:</b> _____		
<b>M:</b>	A copy of this report will be given to the following, who is the owner or owner's representative for this building: _____	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**This is to certify the information contained in this fire alarm system Verification Report is correct and complete.**

Printed Name and Signature of Qualified Person(s) conducting the Verification. \_\_\_\_\_ Company \_\_\_\_\_ E-mail: \_\_\_\_\_ Telephone \_\_\_\_\_

**Notes:**

1. Please, elaborate on the extent of verification of the existing FAS: \_\_\_\_\_
2. If "Yes", ULC Test Report must be attached in conformance with Item 6 of Bulletin 2000-021-BU/EL (Revised).
3. Identified deficiencies relate to:
  - (a) The existing portion of the FAS is not covered by the scope of work under electrical permit EP-\_\_\_\_\_. Yes  No
  - (b) The newly installed FAS (or modified/added portion of the existing FAS). Yes  No