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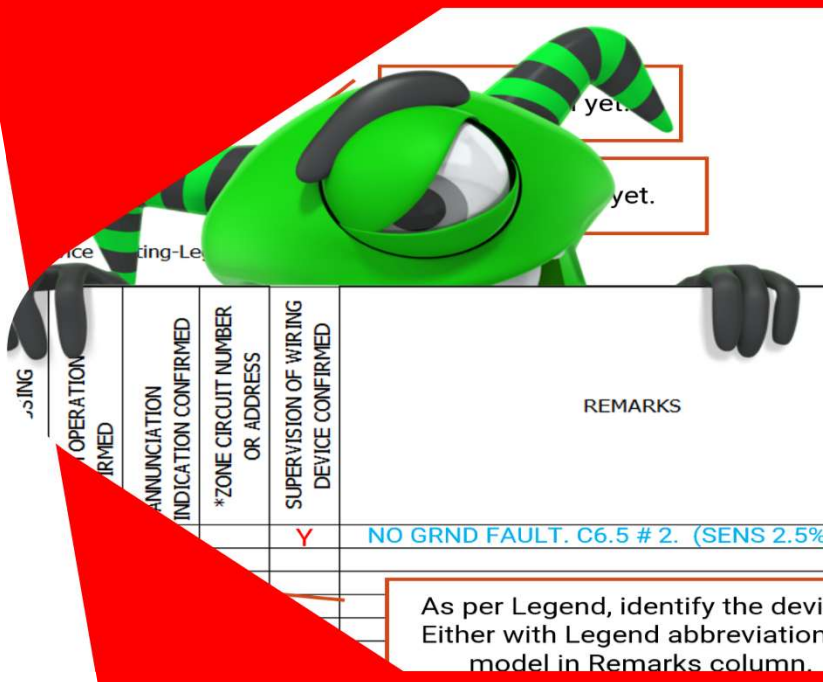
Critical Fire Alarm Update 2025

Changes under Building and Fire Codes



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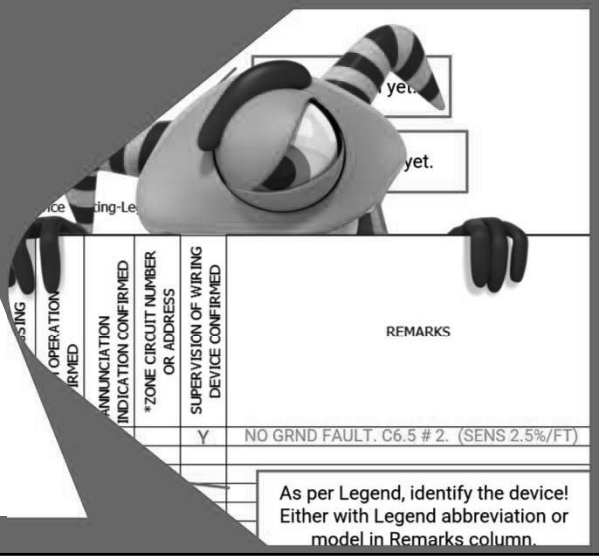
Critical Fire Alarm Update 2025

Changes under Building and Fire Codes



1

Table 3.1.2.1.
Major Occupancy Classification
Forming Part of Sentences 3.1.2.1.(1), 3.1.2.2.(1) and 3.11.2.1.(3)

Group	Division	Description of *Major Occupancies*
A	1	*Assembly occupancies* intended for the production and viewing of the performing arts
A	2	*Assembly occupancies* not elsewhere classified in Group A
A	3	*Assembly occupancies* of the arena type
A	4	*Assembly occupancies* in which occupants are gathered in the open air
B	1	*Detention occupancies*
B	2	*Care and treatment occupancies*
B	3	*Care occupancies*
C	---	*Residential occupancies*
D	---	*Business and personal services occupancies*
E	---	*Mercantile occupancies*
F	1	*High-hazard industrial occupancies*
F	2	*Medium-hazard industrial occupancies*
F	3	*Low-hazard industrial occupancies*

2

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3

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Learning Objectives

- **After completing this training the technician should be able to:**
  - **Understand the change Ontario amendments to the NBC 2020 (Compendium)**
  - **Understand change procedures required under that code.**
  - **Understand procedures required under NFC 2020**
  - **Understand installation, verification, inspection and integrate systems testing changes due to change updated standards references in Building and Fire Code updates**

4

4

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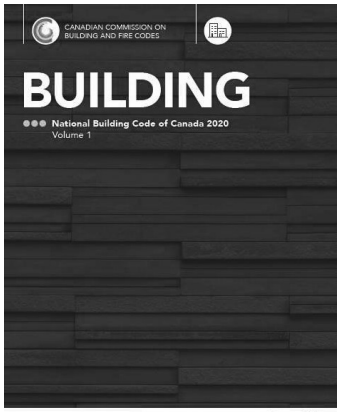
- **Most of the Building Code is unchanged**
- **Many provisions unique to Ontario**

What's the Same in Ontario?



+

Ontario Amendments to the National Building Code of Canada 2020

April 5, 2024

Issued by the Ministry of Municipal Affairs and Housing

=

(801 pages, of which 11 affect sect. 3.2.4)

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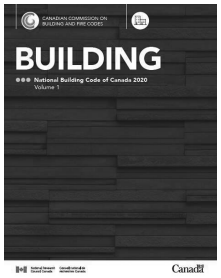
- **CAN/ULC S537-19-REV1**
- **CAN/ULC S524-19**
- **CAN/ULC S1001-11**

Highlights NBC 2020 and Compendium 2024



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Phase-In (Ontario)

- **Until Dec 31 2024, permit applications under OBC 2012**
- **From Jan 1 2025 to March 31 2025, can use old rules if drawings were substantially completed by Dec 31 2024**
- **After April 1 2025, new rules ("Ontario Compendium 2024")**
- **Building permit determines rules for the building**

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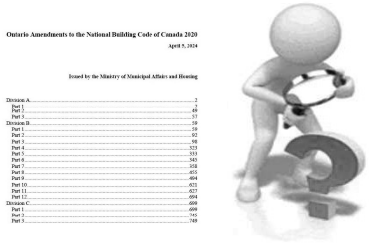
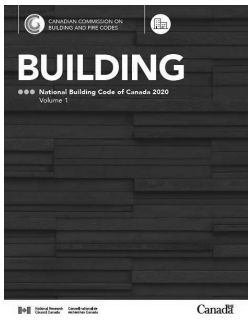
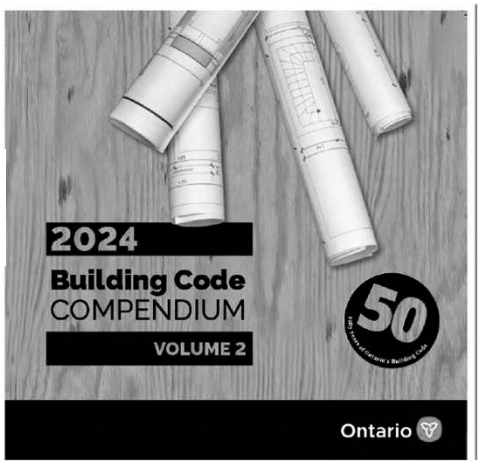
What's New in Ontario


Ontario Amendments to the National Building Code of Canada 2020
April 9, 2024
Issued by the Ministry of Municipal Affairs and Housing



- **Exceptions in Ontario (for fire alarms):**
  - **Special provisions for Care Occupancies retained**
  - **Many small wording differences without change of meaning**
  - **Many Section numbers change**
  - **In general few changes to law**

Two Volumes



- Div A: Compliance, Objectives, Functional Statements
- Div B Acceptable Solutions **incl Part 3 Fire Protection, Occupant Safety and Accessibility**
- Div C Administrative Provisions

- Appendix A: **Explanatory Information incl Notes**
- Appendix B: Imperial Conversion
- Supplementary Standards

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Not new, but an important part of the picture

Performance Based Code

1.2.1.1. Compliance with this Code

(1)Compliance with this Code shall be achieved by

(a)complying with the applicable *acceptable solutions* in Division B (See NoteA-1.2.1.1.(1)(a)), or

(b)using alternative solutions that will achieve at least the minimum level of performance required by the applicable *acceptable solutions* in respect of the *objectives* and *functional statements* attributed to the applicable acceptable solutions in MMAH Supplementary Standard SA-1, "Objectives and Functional Statements Attributed to the Acceptable Solutions". (See Note A-1.2.1.1.(1)(b))

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Alternative Solutions

1.2.1.1. Compliance with this Code

...

(2)For the purposes of Clause (1)(b), the **level of performance** in respect of a *functional statement* refers to the performance of the *functional statement* as it relates to the *objective* with which it is associated in MMAH Supplementary Standard SA-1,"Objectives and Functional Statements Attributed to the Acceptable Solutions"

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Highlights NBC 2020/Compendium

- **CAN/ULC S537-19 Verification of Fire Alarm Systems**
- **CAN/ULC S524-19 Installation of Fire Alarm Systems**
- **CAN/ULC S531-19 Standard for Smoke Alarms**

- **UL 2034-2008 Single and Multiple Carbon Monoxide Alarms**

- **NFPA 13-19 Installation of Sprinkler Systems**
- **NFPA 13R Low Rise Residential Sprinkler Systems**
- **NFPA 72 National Fire Alarm & Signaling Code**

- **ANSI/UL 300 Commercial Kitchen Suppression Systems**

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Farms are special! Refer to code!

FARM BUILDINGS New in Building Code

- Agricultural
- Horticulture
- Storage and packing facilities
- Livestock and poultry housing
- Milking centers
- Manure storage
- Grain bins
- Silos
- Feed preparation centers,
- Farming workshops
- Greenhouses
- Farming retail, and
- Horse riding

13

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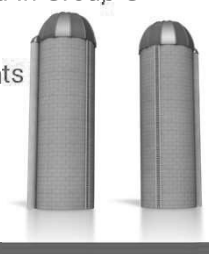
ıral Occupancies

ultural Occupancies
ancies not elsewhere classified in Group G
ltural Occupancies
ancies with no human occupants



14

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- **High-hazard agricultural occupancy (Group G, Division 1)** means an agricultural occupancy containing sufficient quantities of highly combustible and flammable or explosive materials which, because of their inherent characteristics, constitute a special fire hazard.
  - Farm buildings housing livestock with a below-floor storage area for liquid manure
  - Feed mills
  - Grain elevators
  - Rooms for the bulk storage of flammable liquids or reactive materials

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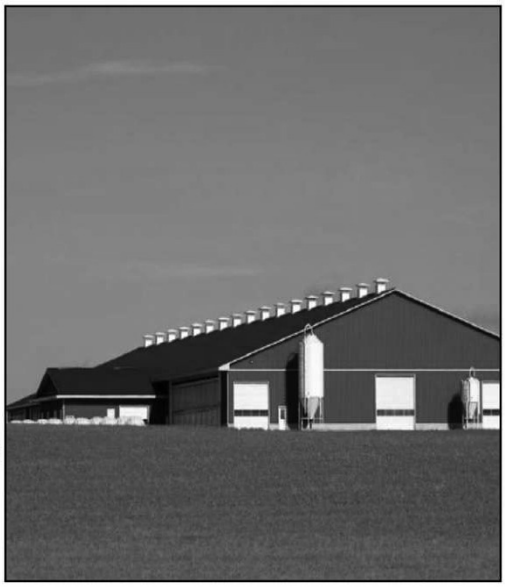
- **Group G, Division 2** - not elsewhere classified in Group G
  - Animal exercise facilities
  - Animal training facilities
  - Facilities for the packaging and processing of agricultural products
  - Barns
  - Feed preparation centres
  - Feed storage facilities
  - Grain, forage and feed structures
  - Milking facilities
  - Viniculture facilities



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- **Greenhouse agricultural occupancy (Group G, Division 3)** means an agricultural building or part thereof that is primarily constructed of roofs and walls designed to transmit natural light.
  - Greenhouses

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- **Agricultural occupancy with no human occupants (Group G, Division 4)** means an agricultural occupancy that is not intended to be occupied by persons under normal use and is generally used for the storage of agricultural materials and by-products.
  - Biomass facilities
  - By-product facilities
  - Digesters
  - Grain bins
  - Vertical or Horizontal silos
  - Storage bins

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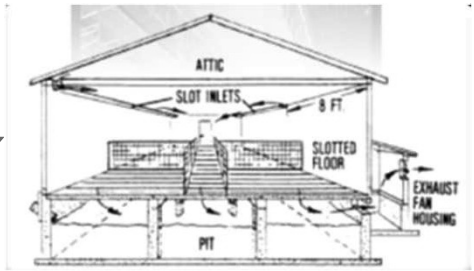
FARM BUILDINGS 2024 Compendium



2.2.3.3 Design of Fire Alarm Systems

…

(1) Where a fire alarm system is required by Sentence 2.2.3.1 (1) [re Farm Buildings]

(a) the air handling system, where provided, shall be designed to prevent circulation of smoke upon a signal from a duct-type *smoke detector* if the air-handling system serves more than one *storey*, and

(b) a manual station shall be installed in every *floor area* near every *exit*.

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FARM BUILDINGS

2.2.3.4 Fire Alarm Signals (summarized)

(1) audible signal devices required except as provided in Sentence (3), including one on exterior of building, and…

visible signals where

(i) ambient noise over 87 dBA

(ii) occupants use ear protection, or

(iii) occupants located in sound-insulating enclosures

(2) The visible signals … shall be installed so that the signal from at least one device is visible throughout the floor area or portion thereof in which they are installed.

(3) Audible signals not required where animals are present, provided visual signal devices are installed in accordance with Sentence (2).

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FARM BUILDINGS

2.2.3.5 Silencing of Alarm Signals

(1) The fire alarm system required by Sentence 2.2.3.1 (1) shall

(a) be designed so that when an alarm signal is actuated, it cannot be silenced automatically before a period of time has elapsed that is not less than 20 min, and

(b) not incorporate manual silencing switches other than those installed inside the fire alarm control unit.

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FARM BUILDINGS

In farm buildings, sprinklers can replace fire detectors

2.2.3.7 Fire Detectors

(1) Where a fire alarm system is required in a *farm building* in accordance with Sentence 2.2.3.1 (1), *fire detectors* shall be

(a) except as provided in Sentence (2), installed throughout the *farm building*, and

(b) connected to the fire alarm system.

(2) The *fire detectors* referred to in Sentence (1) need not be provided within *floor areas* that are *sprinklered*.

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FARM BUILDINGS

Missing!

- Farm buildings are **not yet addressed** throughout section 3.2.4 of the Compendium Building Code. You need to see Part 2, Farm Buildings
- Group G is also **not yet listed** in Table 3.1.2.1, Major Occupancy Classification in the Code

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Requirement for FAS
(Compendium 2024 vs OBC)

- **"if a fire alarm system is required to be installed"** ***gone*** **in many places**
- **Used to say:** (for instance 3.2.4.8 (1)) "If a fire alarm system is required to be installed and a single stage system is provided, the system shall be designed…)
- **Now says (for instance:** 3.2.4.7(1)) "A single stage system shall be designed…"

How might this affect voluntary fire alarm systems?

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If Sprinklers then FAS
Compendium 2024)

NEW as of Jan 1!

- **3.2.4.1 If Sprinklers then FAS (with exceptions)**
  (1) Except as permitted in Sentences (2) and (3), **a fire alarm system shall be installed** in buildings in which an automatic sprinkler system is installed.
  (2) *Buildings* in which a sprinkler system is installed in accordance with NFPA 13D, "Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes", need not comply with Sentence (1)
  (3) Buildings that contain fewer than 9 sprinklers conforming to Sentence 3.2.5.12 (4) [sufficient domestic water supply] need not comply with Sentence (1).

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Interconnected Floor Space

… So interconnected floor space requires sprinklers throughout and therefore a FAS

- **"Interconnected floor space" gone from fire alarm rules**
- In 2015 OBC, appears in several places
- Still, there in about 90 places elsewhere in non-fire-alarm-related code, **Including…**

Compendium 3.2.8.3 says
- (1) A *building* containing an *interconnected floor space* shall be *sprinklered* throughout

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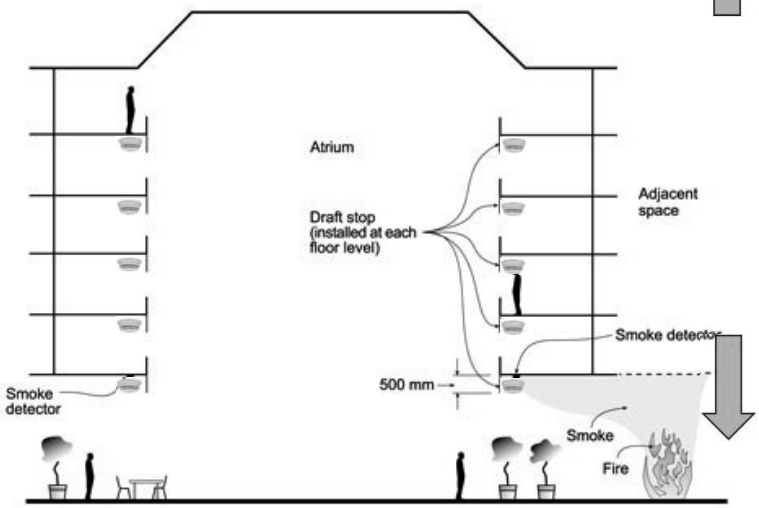
Interconnected Floor Space

3.2.8.6. Draft Stops
1) A draft stop shall be provided at each floor level within an *interconnected floor space*, immediately adjacent to and surrounding the opening, and shall be not less than 500 mm deep measured from ceiling level down to the underside of the draft stop.

Source: Compendium 2024

Definition: *Interconnected floor space* means superimposed *floor areas* or parts of *floor areas* in which floor assemblies that are required to be *fire separations* are penetrated by openings that are not provided with *closures*.



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Compendium 2024: Size, Occupant Load and Requirement for FAS 3.2.4.1 (unsprinklered)

	Occupant Load:			Low danger 3.2.4.1(2, 3, 4.1. 5,6)	Serving contained use 3.2.4.1(4) (a)	Impeded egress 3.2.4.1(4) (b)	Basement other than for equipment 2.2.3.1(1) (b) (iii)	Over 1 storey 2.2.3.1(1) (b)(ii)	Over 3 storeys incl. below ground 3.2.4.1(4) (c)	for more than 10 receiving care 3.2.4.1(4) (m)	Sleeping Accomodation over 10 persons 3.2.4.1(4) (j)	Load over 25 3.2.4.1(4) (k)	Load Over 40 3.2.4.1 (4) (f)	Load over 75 above or below first storey 3.2.4.1(4) (i)	Load Over 150 3.2.4.1(4) (g). 2.2.3.1 (1) (i)	Load above or below first storey over 150 3.2.4.1(4) (e)	Load over 300 3.2.4.1(4) (d)	Load over 300 below open air seating area 3.2.4.1(4) (l)
A	Assembly	1 Performing Arts																
		2 Not Elsewhere Classified	other															
			licensed beverage															
			school, college, child care															
		3 Arena type																
		4 Open Air Activities																
B	Care or Detention	1 Detention																
		2 Treatment																
		3 Care																
C	Residential		other															
			school, college, child care															
D	Business & Personal Service																	
E	Mercantile																	
F	Industrial	1 High Hazard																
		2 Medium Hazard																
		3 Low Hazard																
G	Farm	1 High Hazard Agricultural																
		2 Agricultural not elsewhere classified																
		3 Greenhouse																
		4 Agricultural no human occupancies 2.2.3																
Open Air Seating																		
Open Storage Garage, Noncombustible, <22M, <10kM²					n/a						n/a							

Group G added. Interconnected floor spaces removed.

optional required

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Highlights NFC 2020/Compendium

- **CAN/ULC S536-19** Inspection and Testing of Fire Alarm Systems
- **CAN/ULC S531-19** Standard for Smoke Alarms
- **CAN/ULC S540-13** Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance
- **CAN/ULC S552-14** Standard for Maintenance and Testing of Smoke Alarms
- **CAN/ULC S553-14** Standard for the Installation of Smoke Alarms
- **CAN/ULC S561-13** Installation and Services for Fire Signal Receiving Centres and Systems
- **CAN/ULC S1001-11** Integrated Systems Testing of Fire Protection and Life Safety Systems **NEW!**
- **NFPA 13-19** Installation of Sprinkler Systems

- (S537 and S524 no longer referenced in Fire Code, but remain in S536.)

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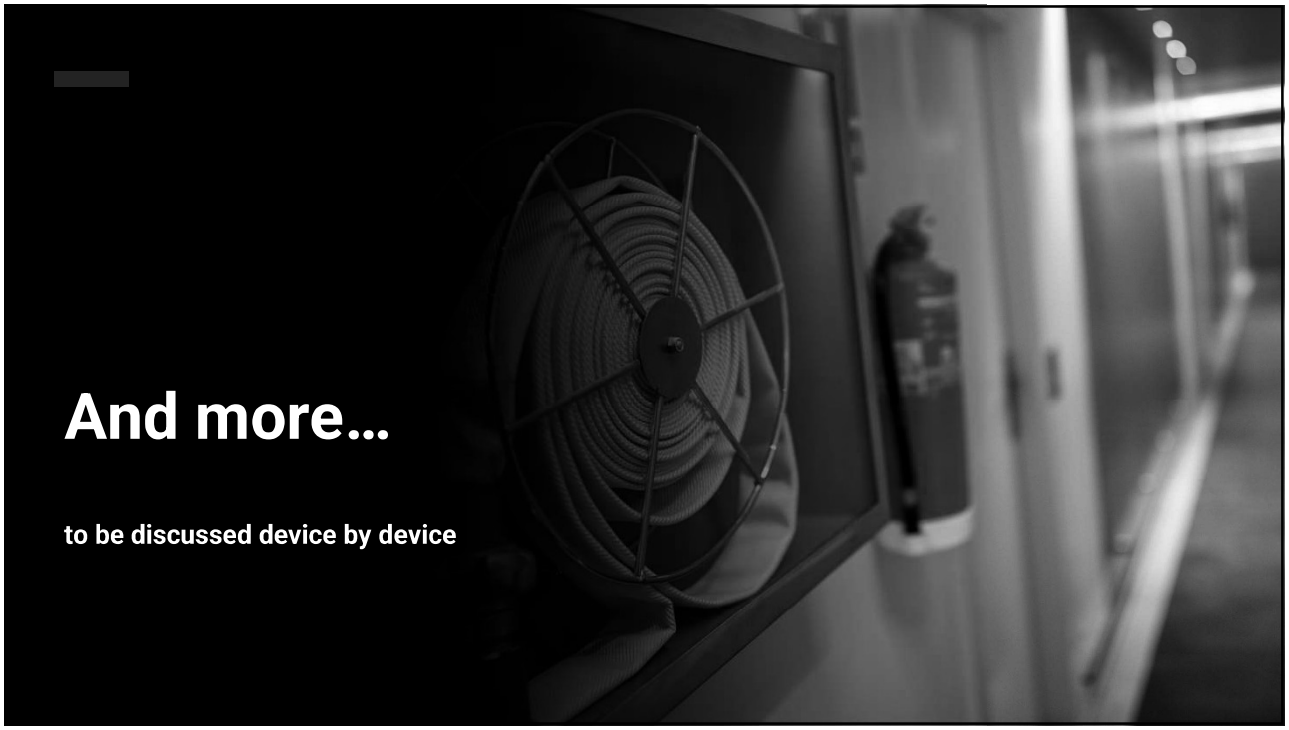

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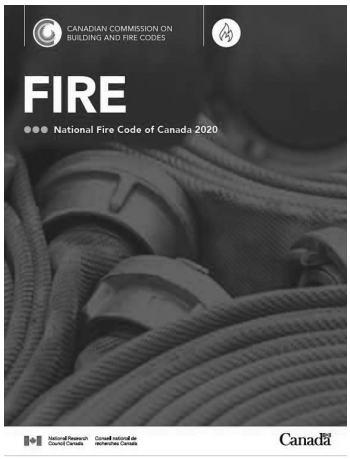
FIRE CODE CHANGES

National FIRE CODE

(“Compendium?”)



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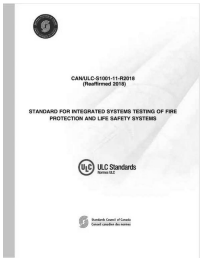
Ontario Fire Code

Moving target



- **Proposed to be harmonized with NFC 2020**
- **Has not happened yet but expected very soon**
- **Will require inspection under 536-19 and S1001-11 (Rev2)**

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But…Alignment of Codes and Standards

- **Building Code, S524, S537 and S536 were developed together to align with each other (2019)!**
- **We might as well learn them together.**

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New References to Other Standards

S537 and S536 both now refer to:

- CAN/ULC-S573, *Installation of Ancillary Devices Connected to the Fire Alarm System*
- CAN/ULC-S576, *Standard for Mass Notification System Equipment and Accessories*
- CAN/ULC-S588, *Standard for Gas and Vapour Detectors and Sensors, Including Accessories*
- CAN/ULC-S1001, *Integrated Systems Testing of Fire Protection and Life Safety Systems*
- Manufacturer's published installation/testing standards for CO Alarm
- CSA 6.19-17, Residential Carbon Monoxide Alarming Devices

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New References to Other Standards

S524 also now refers to:

- CAN/ULC-S553, *Installation of Smoke Alarms*
- CAN/ULC-S573, *Installation of Ancillary Devices Connected to the Fire Alarm System*
- CAN/ULC-S588, *Standard for Gas and Vapour Detectors, Including Accessories*
- CAN/ULC-S1001, *Integrated Systems Testing of Fire Protection and Life Safety Systems*

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CHANGES COMMON TO

Verifications and Inspections

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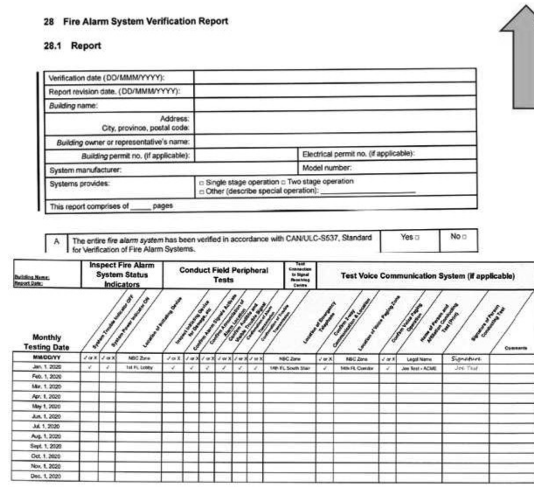
The Annex, the Whole Annex, and nothing but the Annex

The "Annex".. new in 524, 537 and 536

- We must use the forms ("Annexes") required by the standard (6,7)
  - Annual
  - Monthly
- Must keep:
  - Exact wording
  - All rows
- Can duplicate and can add company logo
- Must fill out every page and row



28 Fire Alarm System Verification Report

28.1 Report

Verification date (DD/MMM/YYYY):			
Report revision date. (DD/MMM/YYYY):			
Building name:			
Address: City, province, postal code:			
Building owner or representative's name:			
Building permit no. (if applicable):		Electrical permit no. (if applicable):	
System manufacturer:		Model number:	
Systems provides:	□ Single stage operation □ Two stage operation □ Other (describe special operation): ______		
This report comprises of _____ pages			

A	The entire fire alarm system has been verified in accordance with CAN/ULC-S537, Standard for Verification of Fire Alarm Systems.	Yes □	No □

Building Name: Report Date: Monthly Testing Date	Inspect Fire Alarm System Status Indicators		Conduct Field Peripheral Tests							Test Connection to Signal Receiving Centre	Test Voice Communication System (if applicable)						Comments
MM/DD/YY	✓ or X	✓ or X	NBC Zone	✓ or X	✓ or X	✓ or X	✓ or X	✓ or X	✓ or X	NBC Zone	✓ or X	NBC Zone	✓ or X	Legal Name	Signature		
Jan. 1, 2020	✓	✓	1st Fl. Lobby	✓	✓	✓	✓	✓	✓	14th Fl. South Stair	✓	14th Fl. Corridor	✓	Joe Test - ACME	Joe Test		
Feb. 1, 2020																	
Mar. 1, 2020																	
Apr. 1, 2020																	
May 1, 2020																	
Jun. 1, 2020																	
Jul. 1, 2020																	
Aug. 1, 2020																	
Sept. 1, 2020																	
Oct. 1, 2020																	
Nov. 1, 2020																	
Dec. 1, 2020																	

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When recording deficiencies and recommendations, cite the code section involved

Changes: 536 2013 to 2019

7.3 Upon completion of the individual tests and inspections required by this standard, records, including deficiencies, recommendations and measurements shall be provided in a report, which shall contain a minimum of all sections in order, and with included references, as shown in 20.1, Fire Alarm System Annual Test and Inspection Report.

What does "included references" mean?

20.2 Deficiencies

Item #	Device type	Device location	Deficiency	CAN/ULC S536 Standard reference clause	Date corrected (M/D/Y)	Work order or reference No.	Company which corrected deficiency	Technician name & certificate no. (HBW Sr. 21-1234567)
1.	Drawings	N/A	21-H drawings not on site	21-H		H23158		
2.	Em phone	3rd fl corridor	not loud enough, replace	8.5		H23159	HSMCFP	
3.	DS	z1-3rd fl	Wires cut	14.4.1.2		H23167		

20.2 Deficiencies

"references"

20.2.1 For the purposes of this standard, *deficiency* refers to a device or function that:

a) Does not operate as intended;

b) Due to alteration in the *building* layout or contents, is installed in a location which is not readily accessible for service, testing, maintenance purposes due to safety considerations, and was not tested in the last 24 months;

c) is installed in an environment which is not *compatible* with the documented operating conditions of the specified device; or

d) is installed in an orientation or location not specifically indicated by the installation instructions of the specified device.

NOTE: System and device installation locations may differ from those described in CAN/ULC-S524 if a performance based design and alternate solution documents were submitted and approved by the authority

The Inspection and Testing of any corrections/repairs of deficiencies noted on this form has been completed by qualified personnel in the columns marked "Technician Name & Certificate No." - page 2								
Item #	Device type	Device location	Deficiency	CAN/ULC S536 Standard reference clause	Date corrected (M/D/Y)	Work order or reference No.	Company which corrected deficiency	Technician name & certificate no. (HBW Sr. 21-1234567)
1.	Drawings	N/A	21-H drawings not on site	21- H		H23158		
2.	Em phone	3rd fl corridor	not loud enough. replace	8.5	01/10/23	H23159	HSMCFP	HBW Sr. 21-1234567
3.	DS	z1-3rd fl	Wires cut	14.4.1.2		H23167		

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"Revised and maintained (as-built) throughout the life"
Used to be last 2 years.

Changes: 536 2013 to 2019

536 4.13 Confirm the documentation is available and accessible on site as detailed in 21, Documentation and Appendix D, Description of Fire Alarm System for inspection and Test procedures. The location and format of the documentation shall be provided in accordance with the requirements of CAN.ULC-S524, Standard for the Installation of Fire Alarm Systems, *in* effect at the time of the system's original installation. …

537 5.6 … documentation shall be:

(a) Readily available to the inspection authority;
(b) Retained on site in a single location, and
(c) Revised and maintained throughout the life of the system

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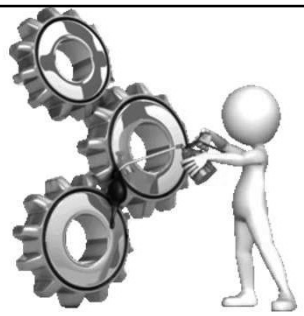
536 Documentation



29.1 The following shall be examined and documentation shall be:
a) Readily available to the *inspection* authority;
b) Retained on site in a single location; and
C) **Revised** and **MAINTAINED throughout the life of the *fire alarm system*.**

A	Instructions for resetting the system and silencing *alarm signals.*	Yes ☐	No ☐
	Instructions for silencing the *trouble signal* and action to be taken when the		

	vii) The **as-built drawings** of the building fire alarm system (See Annex D.)	Yes ☐	No ☐

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Changes: 536 and 537

BIG!

A1.2 As-Built Drawings

The **as-built** drawings of the building fire alarm system should include **fire alarm zoning**, device address and location of each control unit, transponder, remote power supply, field device of the fire alarm system including **fault isolators**, ancillary devices and annunciators, or display and control centers.

1. If drawings are there but not up to date, is it a deficiency or a recommendation?
2. Have changes been made since the last inspection? (Look for permits)

Deficiency

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"Can we stop changing fire alarm panels "like for like" once and for all?
Paul Latreille, Senior Fire Protection and Security Systems Specialist

"Like-for-Like"

Does panel change affect wiring? (manufacturer's requirements)

- **Panel change requires:**
  - Professional engineer
  - Building permit
  - As-built drawings needed for permit and must be up to date.
    - Fault isolators must show on drawing.
  - As-builts will need:
    - Zone schedules
    - Addresses
    - Remote power supplies
    - Fault isolators


TORONTO Building

BUILDING PERMIT

This card must be kept posted in a conspicuous place on site of construction.

Privacy Information

Site Address Privacy Information
Project Description SFD - Detached;
New Building
Date Issued Thursday August 09, 2012

Ann Borooah
Chief Building Official and Executive Director

Edward Tipping
Deputy Chief Building Official

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NOW in writing!

Changes: 536 2013 to 2019

DEFICIENCY – For the purposes of this Standard, this term refers to a device or function that:

a) Does not operate as intended *[2013 version ends here!];*
b) Due to alteration in the building layout or contents, is installed in a location which is not readily accessible for service, testing, maintenance purposes or safety considerations;
c) Is installed in an environment which is not compatible with the documented operating conditions of the specific device;
d) Is installed in an orientation or location not specifically indicated by the Installation Instructions of the specific device; or
e) Has been altered or modified from the manufacturer's installation instructions, or where the wiring to (or from) the device has been compromised

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NOW in writing!

Changes: 536 2013 to 2019

RECOMMENDATION – A proposal or suggestion as to the best course of action for improvement of system components or system operation / installation, including safety considerations, such as:

a) Identifying antiquated or obsolete equipment;
b) Availability of newer cost-effective technology; or
c) Alternate methods of detection

Gone

Remark

Not defined or mentioned in the standard… but there are other terms…"measurement"…"comment"

Building Name: _____ Date (M/D/Y): _____ Page _____ Of _____

Device Location	Annunciated Device Label/LCD Text (if applicable)	Device Type (or Abbreviation)	Requires Service or Missing	Circuit Number or Device Address	Annunciated FIRE ZONE	Correctly Installed	Measurements	Alarm/Activation Confirmed	Annunciator Indication	Supervised Circuit Trouble Signal	General Alarm Circuit (if applicable)	Comments
First Floor Main Lobby	1st FL Lobby	Manual Station		M1-1	ZN 1 - 1st FLR	✓		✓	✓	✓	G.A. 1	GeneralAlarmKeySwitch
First Floor Main Lobby	1st FL Lobby	S		M1-2	ZN 1 - 1st FLR	✓	3.00%	✓	✓	✓		

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536: New Device Sheet Legend Notes since 04 version

… 4 new notes
Gone Note 15: Test and confirm conventional field device suspension of wiring. Why?

- Note 5: Transport time of *air sampling type detector* to be confirmed and recorded in the *measurements* column.
- Note 20: "Correctly installed" refers to the version of CAN/ULC-S524, Standard for Installation of Fire Alarm Systems, applicable at the time of installation of the device being tested."
- Note 21: *Smoke detectors* that employ sounder bases or activate local audible *signaling device(s),* used in lieu of smoke alarms, to be tested to confirm local sounder operation and annunciation at the control panel, including visible device operation, as applicable and individually recorded.
- Note 22: When batteries are replaced in the short-range radio frequency (wireless) devices, battery replacement date to be identified in the comments section.

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23 Field Device Records

23.1 Field Device Testing – Legend and Notes

Note: Add additional line items for each additional type and/or model number of devices forming part of the *fire alarm system* as necessary to this Legend.

Device type	Description	Type	Model no.
M	*Manual Station*		
RHT	*Heat Detector*, Restorable		
S	Manufacturer Sensitivity Range:		
SSS	Suite Silencing Switch		
SSAD	Suite Silencing Audible Device		
AD	*Ancillary Device*		
ET	*Emergency Telephone*		
EOL	End-of-Line Device		

NOTE: Refer to Section 14, Field Devices.

23.1.1 The following notes apply to 23.2, Individual Device Record:

NOTE 1: *Smoke detector* sensitivity reading confirmed by the control panel or measurement obtained through testing to be recorded in the *measurements* column.

50 CAN/ULC 536:2024 AUGUST 5, 2024

NOTE 2: *Smoke detector* cleaning or replacement date to also be recorded in the *measurements* column.

NOTE 3: Status Change, including time delay, to be recorded in the *measurements* column. Refer to Annex A3.73 and Annex F.

NOTE 4: Duct *smoke detector* pressure differential to be confirmed and recorded in the *measurements* column.

NOTE 5: Transport time of *air sampling type detector* to be confirmed and recorded in the *measurements* column.

NOTE 5: Transport time of *air sampling type detector* to be confirmed and recorded in the *measurements* column.

NOTE 9: Low temperature setting to be recorded in the *measurements* column.

NOTE 20: "Correctly installed" refers to the version of CAN/ULC-S524, Standard for Installation of Fire Alarm Systems, applicable at the time of installation of the system or device being tested.

NOTE 21: *Smoke detectors* that employ sounder bases or activate local audible *signaling* device(s), used in lieu of smoke alarms, to be tested to confirm local sounder operation and annunciation at the control panel, including visible device operation, as applicable, and individually recorded.

NOTE 22: When batteries are replaced in the short-range radio frequency (wireless) devices, battery replacement date to be identified in the comments section.

NOTE 20: Correctly installed" refers to the version of CAN/ULC-S524, Standard for Installation of Fire Alarm Systems, applicable at the time of installation of the system or device being tested.

NOTE 21: *Smoke detectors* that employ sounder bases or activate local audible *signaling* device(s), used in lieu of smoke alarms, to be tested to confirm local sounder operation and annunciation at the control panel, including visible device operation, as applicable, and individually recorded.

NOTE 22: When batteries are replaced in the short-range radio frequency (wireless) devices, battery replacement date to be identified in the comments section.

Old note 15 gone.

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To be or not to be. That is the question.

"should be"

Now "to be" in most places. Not "should be".

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29 New items in Glossary:

Changes: 536-2013 to 2019

- Air sampling Type Detector
- Care
- Care occupancy
- Central Alarm and Control Facility
- Circuit
- Class A Circuit
- Class B Circuit
- Combination Type Detector
- Compatible
- Data Communication Link Style A
- Data Communication Link Style B
- Data Communication Link Style C
- Data Communication Link Style N
- Abnormal System Conditions
- Distributed Type System
- Emergency Telephone
- Event
- Floor Area
- Optical Fiber cable
- Releasing Device Service
- Response Time
- Short -Range Radio Frequency Device
- Short-Range Radio Frequency Device Link
- Status Change Confirmation
- Voice communication
- Voice paging
- Water flow device

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Changes: 536-2013 to 2019

3.21 *COMPATIBLE* – The correct electrical, electronic or mechanical interaction between a series of system components that depend on individual unique characteristics that are connected together to meet the requirements of this Standard (**e.g. *control unit* and/or *transponder* and *field devices***).

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** Who is the "WITNESS"?
** No longer just the relay!

Changes: 536 2013 to 2019

536 15.3.1 Where *unit* or *transponder* be **witnessed** to c panel initiates the (e.g. alarm, trouble

Also 537 21.3.1

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Who is the "WITNESS"?
Actually must run generator.

Changes: 536 2013 to 2019

9.3 Testing of the emergency power generator, if applicable, shall be witnessed to confirm……

c) Where provided, a Generator Run condition at the emergency generator shall result in an audible common *trouble signal* and a visual indication at the required *annunciator.*

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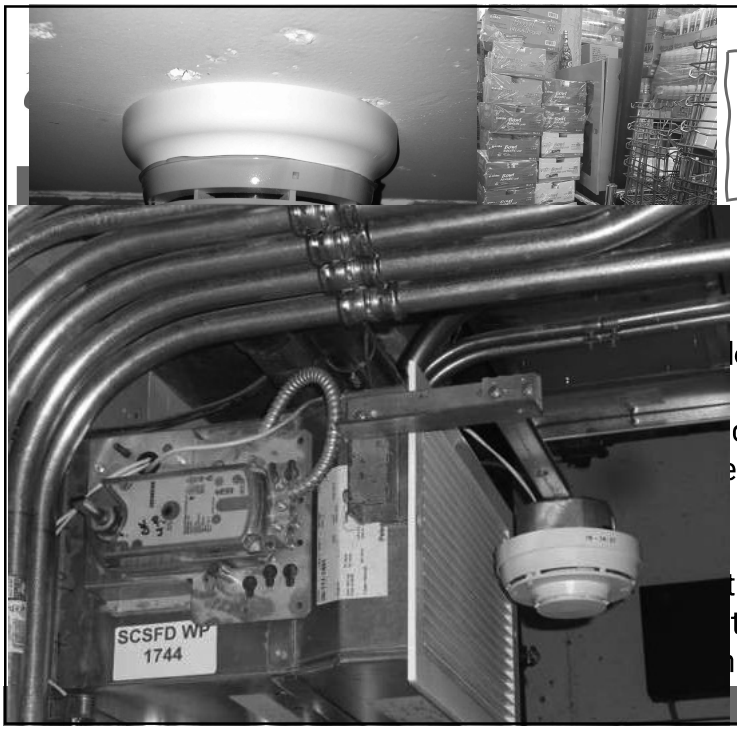
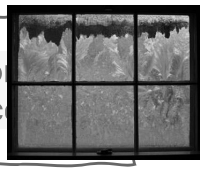


- Expanded explanato
  material in appendic



Placement Deficiencies

leficiencies if:

concealed spaces)
e.g. high ceilings)

vaults
ted application (below 0°C, above
ty greater than 1.5 m/sec, unless
ns.

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See S537:19 appendix A3.78. "retard-reset-restart period" to be recorded.

New section in 536/537 Status Change Confirmation Feature

When alarm verification feature provided (excerpt from ULC 527):

- **Max. 60 sec alarm confirmation period** following retard-reset-restart period
- Within the 60 seconds, immediate alarm if
  - Detector that initiated the cycle is re-actuated
  - Another smoke detector on same zone is actuated
  - Alarm from another zone
- **Exceptions**
  - **when 2** or more protected premises are connected to a supervising station OR 2 local control units are networked
  - When alarm verification is to be done on a multiple-zone or system basis
- **Specific Procedure provided** for determining retard-reset-duration

NOTE 3: Status Change, including time delay, to be recorded in the *measurements* column. Refer to Annex A3.78 and Annex F.

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Note 10: Identify specific ancillary devices in the "Comments" column

536 Other Legend Note changes since 04 version

CAN/ULC - S536-19-REV1

23.2 Individual Device Record

Building Name : _____ Date (M/D/Y): _____ Page ____ of ____

Device Location	Annunciated Device Label/LCD Text (if applicable)	Device Type (or abbreviation)	Requires Service or Missing	Circuit Number or Device Address	Annunciated FIRE ZONE	Correctly Installed	Measurements	Alarm/Activation Confirmed	Annunciator Indication	Supervised Circuit Trouble Signal	General Alarm Circuit (if applicable)	Comments
First Floor Main Lobby	1st FL Lobby	Manual Station		M1-1	ZN 1 - 1st FLR	✓		✓	✓	✓	G.A.1	General Alarm Key in box
First Floor Main Lobby	1st FL Lobby	S		M1-2	ZN 1 - 1st FLR	✓	3.00%	✓	✓	✓		
Kitchen First Floor	Kitch 1st FL	AD		K1-2	ZN 2- KITCH	✓	2.0"	✓	✓	✓		suppression system alarm

Has to be witnessed

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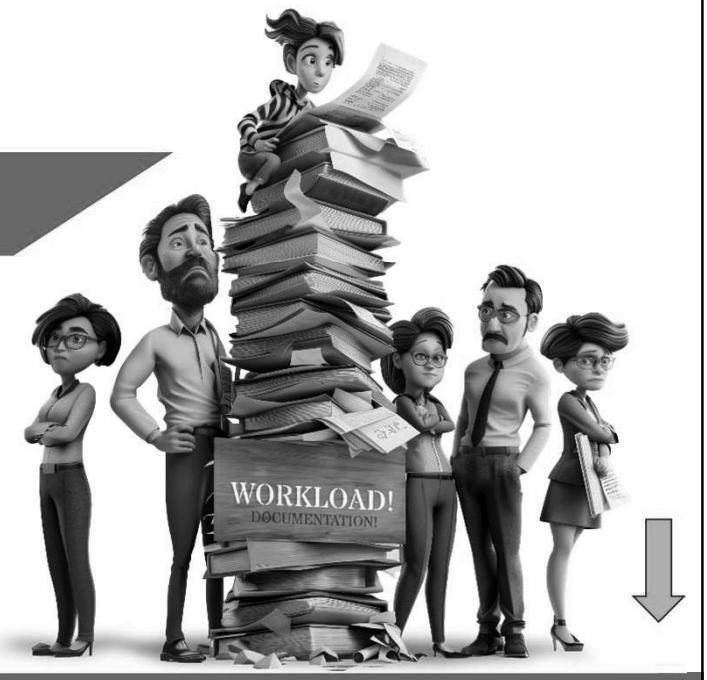
Summary: What's New in 2019: 536 and 537 (high level)



- **More labour**
  - more report rows
  - more pages
  - deficiency summary
  - more measurements
  - S1001
  - Etc.
- **More documents** (as-builts)
- **Many definition changes**
- **Missing documentation identified**

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What's New in 537/536? (high level)

- **New testing and inspections:**
  - **Control units and transponders (8.3/22.1)**
  - **Interconnection to FSRC (8.4/22.11)**
  - **Power supplies (9/22.4** UPS/secondary power**)**
  - **Ancillary devices (22.10) (also S1001)**
  - **Battery tests and calculations changed (ANNEX C: Informative)**
  - **New Operation tests for non-DCL circuits (13/23.3)**

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New technologies (high level)

- More requirements re air sampling detectors (14.4.4.1, 23.1.1)
- New- carbon monoxide detectors connected to FAS (14.6)
- Also CO/smoke detectors ("combination type" 14.7)
- Style N Data Communication Link (DCL) (3.28, table 3.1)
- New wireless "Short Range Radio Frequency Devices" (3.62, Note 22, 14.1.3, 14.8)
- New note and exception re sprinklers (15.3.1 "fixed type")
- Automated signal device testing (17.1, 17.2)

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Most common and critical items of non-conformance per ULC

- On-site fire alarm system description document missing (includes things like as-builts, riser diagrams!)
- On-site fire alarm system verification report(s) missing
- On-site fire alarm system periodic inspection report(s) missing
- Equipment not installed per manufacturer's installation instructions
- Inspection reports incorrectly and inaccurately filled out

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CHANGES SPECIFIC TO

Verifications

in general

CAN/ULC-S537:2019-REV1
(Including Revision 1)

STANDARD FOR VERIFICATION OF FIRE ALARM SYSTEMS

ULC Standards
Normes ULC

scc ccn

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S537 changes

Report revision date. (DD/MMM/YYYY):			
Building name:			
Address: City. province. postal code:			
Building owner or representative's name:			
Building permit no. (if applicable):		Electrical permit no. (if applicable):	
System manufacturer:		Model number:	
Systems provides:	☐ Single stage operation ☐ Two stage operation ☐ Other (describe special operation):		

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	(If "No", provide explanation below)			
	Record Edition of CAN/ULC-S524 to which this system was verified:			
	Record Edition of Building Code in effect in the Jurisdiction applicable for the *Design*:			
	Record Edition of CEC (Canadian Electrical Code) in effect for the *Design*:			
F	The *fire alarm system* documentation is on site (per Section 29, Documentation).	Yes ☐	No ☐	
G	The *fire alarm system* sequence of operation specified in the *design* is confirmed and documentation is provided on site (per Section 29, Documentation).	Yes ☐	No ☐	
H	The *fire alarm system* is connected to a fire *signal receiving centre*.	Yes ☐	No ☐	
	If connected, indicate the fire *signal receiving centre*:			
I	The *fire alarm system* is fully functional (if "No" or N/A, provide comments below).	Yes ☐	No ☐	N/A ☐
J	Comments:			
K	A copy of this report will be given to the following, who is the owner or owner's representative for this *building*:	Yes ☐	No ☐	
	During Verification, were any Deficiencies Identified? See Page 3, if applicable	Yes ☐	No ☐	
	As of the following Date (M/D/Y) all identified Deficiencies have been corrected:			
	During Verification, were any *Recommendations* Identified? See Page 4, if applicable	Yes ☐	No ☐	

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30. INDIVIDUAL FIELD DEVICE, RELATED CIRCUITS AND CIRCUIT FAULT TOLERANCE – TEST AND INSPECTION

NOTE 1: See 6.1.3, 6.3.1, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 10.3 and A6.4.5.
NOTE 2: Where a short circuit occurs during an alarm condition, *signaling* operation outside the affected *zone* may be interrupted to a maximum of 30 s. Refer to Annex A, A6.4.5.

L	Confirm circuit fault tolerance operation under *OPEN CIRCUIT FAULT* conditions (Record individual operation in 33.2, Individual Device Record and 33.4, Circuit Fault Tolerance Test Sheet).	Yes ☐	No ☐	N/A ☐
M	Confirm circuit fault tolerance operation under *SHORT CIRCUIT FAULT* conditions (Record Individual operation in 33.2, Individual Device Record and 33.4, Circuit Fault Tolerance Test Sheet).	Yes ☐	No ☐	N/A ☐
N	Confirm circuit fault tolerance operation under *GROUND FAULT* conditions (Record Individual operation in 33.2, Individual Device Record and 33.4, Circuit Fault Tolerance Test Sheet).	Yes ☐	No ☐	N/A ☐
O	Where *suite fault isolators* are provided, confirm in-suite signal circuit fault tolerance operation under *SHORT CIRCUIT FAULT* conditions (Record Individual operation in 33.2, Individual Device Record and 33.4, Circuit Fault Tolerance Test Sheet).	Yes ☐	No ☐	N/A ☐
P	Under an alarm condition, confirm device operation on the source side of each shorted residential suite isolation module. (Confirm individual operation in 33.2, Individual Device Record and 33.4, Circuit Fault Tolerance Test Sheet).	Yes ☐	No ☐	N/A ☐
Q	Where *voice communication* systems are used to broadcast messages not related to life safety (e.g., general paging), fault detection for *signaling busses* or circuits is maintained while broadcasting. (Confirm operation in 32.4, Non-life Safety Message Circuit Supervision Test).	Yes ☐	No ☐	N/A ☐

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32.2 CONTROL UNIT OR TRANSPONDER TEST

NOTE 1: Refer to 5.4, 8.3.1, and 7.1.
NOTE 2: Complete section for each *control unit* or *transponder*.

Control unit or *transponder* location:				
Control unit or *transponder* identification:				
A	Power 'ON' visual indicator operates.	Yes ☐	No ☐	
B	Time and date indication corresponds with local time and date.	Yes ☐	No ☐	N/A ☐

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32.3 VOICE COMMUNICATION TEST

NOTE: Refer to 5.4 and 8.4.1.

There are no *Voice Communication* Capabilities on this system. ☐				
A	Power 'ON' indicator operates.	Yes ☐	No ☐	N/A ☐
B	Common visual *trouble signal* operates.	Yes ☐	No ☐	N/A ☐
C	Common audible *trouble signal* operates.	Yes ☐	No ☐	N/A ☐
D	*Trouble signal* silence switch operates.	Yes ☐	No ☐	N/A ☐
E	All-call *voice paging*, including visual indicator, operates.	Yes ☐	No ☐	N/A ☐

R	Where the *voice paging* system is also used for non life safety related messages, the life safety related messages take precedence.	Yes ☐	No ☐	N/A ☐

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CAN/ULC-S537:2019 – FIRE ALARM SYSTEM VERIFICATION REPORT

33.3SUBSEQUENT ALARM (ALARM RESOUND) CONTROL PANEL TEST SHEET

NOTE: Refer to 8.3.1(o).

Initial fire alarm input zone test location	Field device label	Subsequent alarm activation test (following *alarm signal* silence)	Field device label	Alarm signals remain silent		Note: If signals re-activated following signal silence - in result of fire alarm device located in same NBC zone, deficiency note required.
Identify NBC zone designation where initial fire alarm condition was activated	Identify fire alarm device used to initiate fire alarm signals activation	Identify NBC zone designation where subsequent fire alarm device was activated following *alarm signal* silence	Identify subsequent fire alarm device activated in same NBC zone following signal silence.	Yes	No	Record system deficiency in Section 28.2, Deficiencies
First Floor Main Lobby - *Zone* 1	1st FL Lobby - *Manual Station*	First Floor Main Lobby-Zone 1	1st FL Lobby *Smoke Detector*	☐		
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	

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A FEW CHANGES AFFECTING ONLY

Inspections

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The Annex, the Whole Annex, and nothing but the Annex when Fire Code Adopted

Inspection Attendance Log

7.4 A record of the testing dates and times as outlined in clause 20.4, Technicians Attendance Log shall be completed for each date the inspection is conducted. The last date recorded in the log shall be the inspection date of record.

20.4 Technician Attendance Log

NOTE: See 7.4

Date (MM/DD/YY)	Time in/ Time out	Notes (for the day)	Primary Technician printed name	Primary Technician certification no.
March 1 2024	8:00-		HB Wolfeschlegelsteinhausenbergerdorff Sr.	21-1234567

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The Annex, the Whole Annex, and nothing but the Annex when Fire Code Adopted

S536-19

4.10 The inspection and test records required by this Standard and this Section, shall follow a tabular format as shown. Tests or inspections may not be reworded or revised in order or format. Companies my recreate these required reports for their use, which may contain additions such as a corporate logo as an example.

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Changes: 536 2013 to 2019

NEW!.....Signature of Building Owner/Representative on Deficiencies Page

I understand that all Deficiencies noted in the table above have been corrected:

Building **Owner/Owner's Representative Name:** _____

Building **Owner/Owner's Representative Signature** _____

Date of Signature _____

NOTE: Only the above table needs to be updated on correction of deficiencies. The entire report does not have to be reissued.

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Changes: 536 2013 to 2019

4.2 For the purposes of this Standard, an annual inspection and test shall be conducted within a period not exceeding 12 months from the date of the previous inspection or a complete system verification conducted in accordance with CAN/ULC-S537, Standard for Verification of Fire Alarm Systems.

Clarification (for instance after panel replacement)

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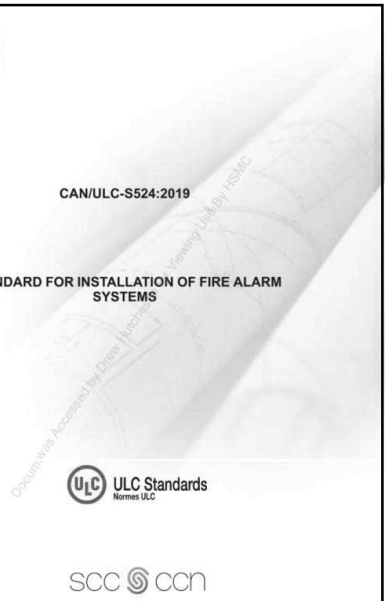
CHANGES SPECIFIC TO

Installations

S524-14 to 19



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524-19 Reference Publications

1.2 - The installation of devices not covered by these requirements shall be in accordance with good engineering practice and manufacturer's published installation instructions and the following standards, as applicable:

a) CAN/ULC-S553, Installation of Smoke Alarms;
b) CAN/ULC-S561, Installation and Services of Fire Signal Receiving Centres;
c) CAN/ULC-S573, Installation of Ancillary Devices Connected to Fire Alarm Systems;
d) CAN/ULC-S576, Standard for Mass Notification System Equipment and Accessories;
e) CAN/ULC-S588, Gas and Vapour Detectors and Sensors, Including Accessories; and
f) CAN/ULC-S1001, Integrated Systems Testing of Fire Protection and Life Safety Systems.

524-19 Reference Publications

- CAN/ULC-S139:2017, *Standard Method of Fire Test for Evaluation of Integrity of Electrical Cables*
- CAN/ULC-S139:2017-REV1 (2018), *Standard Method of Fire Test for Evaluation of Integrity of Electrical Cables*
- CAN/ULC-S525:2016, *Audible Signal Devices for Fire Alarm Systems, Including Accessories*
- CAN/ULC-S526:2016, *Visible Signal Devices for Fire Alarm Systems, Including Accessories*
- CAN/ULC-S526:2016-REV1 (2017), *Visible Signal Devices for Fire Alarm Systems, Including Accessories*
- CAN/ULC-S527-11-AMD1 (2014), *Standard for Control Units for Fire Alarm Systems*
- CAN/ULC-S528-14-AMD1 (2017), *Standard for Manual Stations for Fire Alarm Systems, Including Accessories*
- CAN/ULC-S529:2016, *Smoke Detectors for Fire Alarm Systems*
- CAN/ULC-S530-M91 ((R2018)), *Heat Actuated Fire Detectors for Fire Alarm Systems*
- CAN/ULC-S533:2015, *Egress Door Securing and Releasing Devices*
- CAN/ULC-S541:2016, *Speakers for Fire Alarm Systems, Including Accessories*
- CAN/ULC-S541:2016–REV1 (2017), *Speakers for Fire Alarm Systems, Including Accessories*
- CAN/ULC-S548:2015, *Devices and Accessories for Water Type Extinguishing Systems*
- CAN/ULC-S553:2014, *Installation of Smoke Alarms*
- CAN/ULC-S553:2014 (R2019), *Installation of Smoke Alarms*
- CAN/ULC-S559-13 (R2018), *Standard for Equipment for Fire Signal Receiving Centres and Systems*
- CAN/ULC-S561:2013 (R2018), *Standard for Installation and Services for Fire Signal Receiving Centres and Systems*
- CAN/ULC-S573:2014, *Installation of Ancillary Devices Connected to the Fire Alarm System*
- CAN/ULC-S576:2014, *Standard for Mass Notification System Equipment and Accessories*
- CAN/ULC-S588:2017, *Standard for Gas and Vapour Detectors and Sensors, Including Accessories.*
- CAN/ULC-S1001:2011 (R2018), Integrated Systems Testing of Fire Protection and Life Safety Systems
- ULC/ORD-C228-12, Door Closers and Holders

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New items in Glossary:

Changes: 524-2014 to 2019

3.54 MAIN POWER SUPPLY – The primary source of electrical energy used to power the fire alarm system.

3.63 RISK ANALYSIS – A process that will document the likelihood, vulnerability, and magnitude of incidents associated with natural, technological, and man-made disasters and other emergencies that address scenarios of concern, their probability, and their potential consequences.

3.67 SITE SPECIFIC DATA – Alterable data required for the control unit to operate in a defined system configuration (e.g. labelling, zoning, alarm organization).

3.71 SMOKE CONTROL SYSTEM – An engineered system that utilizes mechanical fans and dampers to produce airflows and pressure differences across smoke barriers to limit and direct smoke movement.

3.77 SPECIFICATION – A detailed and precise presentation of required work and performance approved by the designer.

3.81 SUBSEQUENT ALARM – Activation of another input zone before the control unit is reset.

3.82 SUITE FAULT ISOLATOR – A fault isolator intended for use on signal circuits serving suites of a residential or care occupancy to ensure that a short circuit fault on a signal circuit in one suite of a residential or care occupancy does not prevent the normal operation of a signal device in another suite of a residential or care occupancy.

3.94 ZONE – A building area or location that has a separate visible indication at the control unit or transponder, and/or annunciator. Refer to Annex B (Informative), Fire Detection Zones and Annunciation of Fire Alarms.

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4 Requirements of Fire Alarm Systems – Monitoring & Ancillary Devices

- 4.4 - Interconnection of the fire alarm system with the fire signal receiving centres shall be in accordance with CAN/ULC-S561, Standard for Installation and Services for Fire Signal Receiving Centres and Systems.

- 4.6 - The connection of ancillary devices or systems to the fire alarm system shall not interfere with the operation of the fire alarm system and shall be in accordance with CAN/ULC-S573, Installation of Ancillary Devices Connected to the Fire Alarm System.

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4 –Labelling

- 4.12 - All non-caution and non-warning label designations, including French equivalents of English markings shall be provided in accordance with, or equivalent to, Table 4.2, Abbreviations for the Label Designations, as applicable.

Table 4.2
Abbreviations for Label Designations

Designated term / Terme désigné	Abbreviation	
	English	French
Acknowledge / accorder	Ack	Acc
Activate / active	Act	Act
Alarm / alarme	Alm	Alme

Designated term / Terme désigné	Abbreviation	
	English	French
Automatic / automatique	Auto	Autom
Building / bâtiment	Bldg	Bat
Bypass / dériver	Bypass	Der
Circuit / *circuit*	Ckt	Cct
Emergency / urgence	Emg	Urg
Fault / faille	Flt	Déf
Pre-announce / pré-annonce	Pre-ann	Pré-ann
Releasing / déclanchement	Rel	Decl.
Signal / signal	Signal	Sig
Silence / neutraliser	Sil	Neutr
Supervisory / supervision	Sup	Sup
System / système	Sys	Syst
Telephone / téléphone	Tel	Tél
Timer / minuteur	Tmr	Temp
Trouble / défectuosité	Tbl	Déf

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5.5 – Engine-Driven Generators

5.5.3 - Where provided, a “generator running” condition shall cause a non-latching supervisory signal on the building’s fire alarm system.

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A.13.16 Shared Control Functions and Indicators for Multiple Display and Control Centres

- **Indicators and Controls:**
- **Request Control** – Request Control Function Privileges be Granted:
- When a Control Location requests access to Control Functions, an indicator should activate for the requesting location.
- **Grant Access** – Grant Control Function Privileges to a Control Location:
- When a Control Location requests access to Control Functions, the Control Location presently “in control” should manually transfer Control Function Privileges to the Requesting Control Location.
- **Deny Access** – Deny Control Function Privileges to a Control Location:
- When a Control Location requests access to Control Functions, the Control Location presently “in control” should manually deny the transfer of Control Function Privileges to the Requesting Control Location. As a result, an indication at the requesting Control Location should activate to signify that access to Control Functions has been denied.
- **Access Status** – Displays the status of access to Control Function Privileges:
- At each Control Location, the current status and the location of Control Function Privileges should be displayed for all Control Locations.
- **Fail Safe Auto Transfer** – Automatic transfer of Control Function Privileges:
- When a Control Location which currently holds Control Function Privileges fails to respond to a Request to Grant Control Function Privileges, all Control Function Privileges should automatically transfer to the requesting Control Location.

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16 – Remote Power Supplies

- 16.2 - A remote power supply shall be installed in an accessible location and shall not be installed in a concealed space or a restricted access room.
- A.16.2 - An electrical closet is considered to be an accessible space. Restricted access rooms are areas where building owners or operators do not have normal access such as municipal electrical equipment vaults, telecommunication equipment rooms, etc. A high voltage electrical room is such an area.

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18 - Circuit Fault Tolerance

18.1 - Except as permitted in 18.3, **where any type of fire alarm circuit** serves more than one National Building Code of Canada required fire alarm zone, a single fault (open circuit fault, short circuit fault or ground fault) shall not prevent the normal operation of input or output field devices in more than one National Building Code of Canada required fire alarm zone.

NOTE 1: As described in Table 4.3, Response Times for Control Units and Transponders, the normal operation time is applied outside of the fire alarm zone affected by the fault condition.

NOTE 2: Fault Isolators, or an equivalent method, may be utilized to meet the requirements of 18.1.

NOTE 3: Fault isolators that employ a unique identifier (addressable) are considered active field devices.

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18.4 - Circuit Fault Tolerance

- NOTE 1: This Clause includes such field devices as water flow devices and supervisory devices on fire suppression systems, duct type smoke detectors on HVAC systems and ancillary device.
- NOTE 2: Fire suppression systems within the same National Building Code required fire alarm zone that are separately annunciated need not be separately fault isolated from other devices within that fire alarm zone.
- 18.5 Circuits connecting control units, transponders or annunciators shall be subject to the requirements of 18.1.

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19 - Data Communication Link (DCL)

19.1.1.3 - Systems utilizing *data communication link(s) Style C (DCLC)* do not require detection of a single *ground* on the *data communication link*. Refer to Table 3.1, Performance of Data Communications Links (DCL), provided:

A *ground fault* on an *input circuit* or *output circuit* shall be indicated by at least one common *ground fault* indication and common *trouble signal*; and

b) The presence of a second *ground fault* on the data communications link would not prevent the transmission of data.

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19 - Data Communication Link (DCL) - DCLN

19.1.1.4 - A pathway designated as data communication link(s) Style N (**DCLN**) shall perform as follows:

a) It includes two or more pathways where operational capability of the primary pathway and a redundant pathway to each device shall be verified through end-to-end communication;

Exception: When only one field device is served, only one pathway shall be required.

b) A loss of intended communications between endpoints shall be annunciated as a trouble signal;

c) A single open, ground, short, or combination of faults on one pathway shall not affect any other pathway;

d) Conditions that affect the operation of the primary pathway(s) and redundant pathway(s) shall be annunciated as a trouble signal when the system's minimal operational requirements cannot be met; and

e) Primary and redundant pathways shall not be permitted to share traffic over the same physical segment.

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25 – Protective Covers And Accessories

25.4 - Protective covers for visible signal devices and audible signal devices shall be compatible for use with the protected device. The compatibility of protective covers for visible signal devices and audible signal devices shall be in accordance with the applicable Standard referenced in 4.3.

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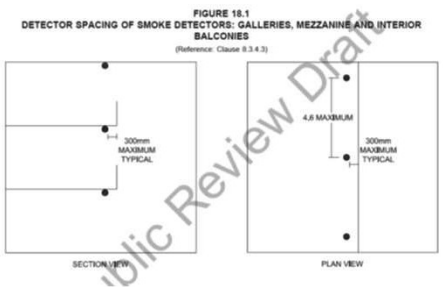
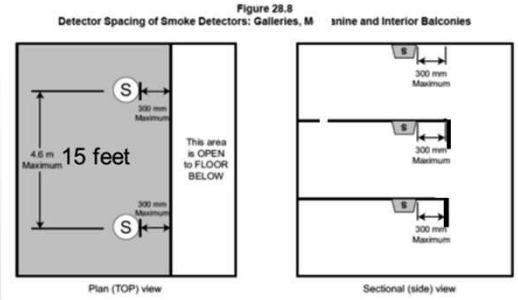
28.4 - Detector Spacing of Smoke Detectors: Galleries, Mezzanine and Interior Balconies

- 28.4.3 Smoke detectors installed in compliance with the requirements of Subsection 3.2.8 of the National Building Code shall be installed within 300 mm of the opening through the floor assembly and shall be spaced at a maximum spacing of 4.6 m. Refer to Figure 28.8.



ULC-S524-14



ULC-S524-19

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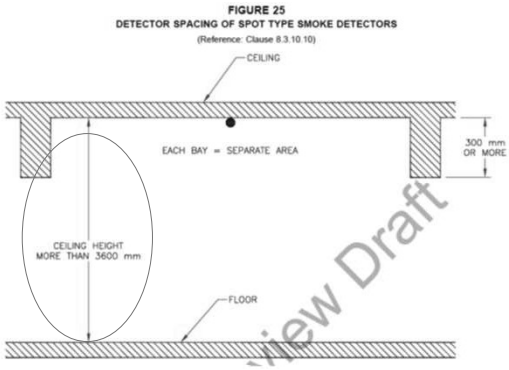
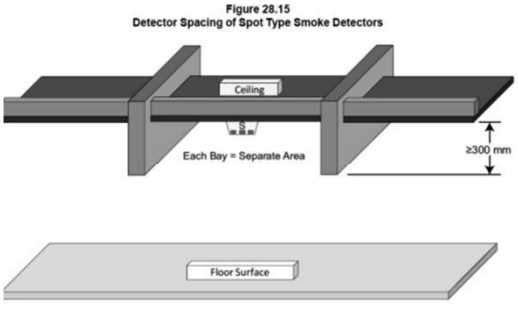
28.10 – Beam Construction

- 28.10.10 - Where the beams project more than 300 mm below the ceiling, each bay or area formed by the beams shall be treated as a separate area. (Refer to Figure 28.15.)

ULC-S524-14



ULC-S524-19



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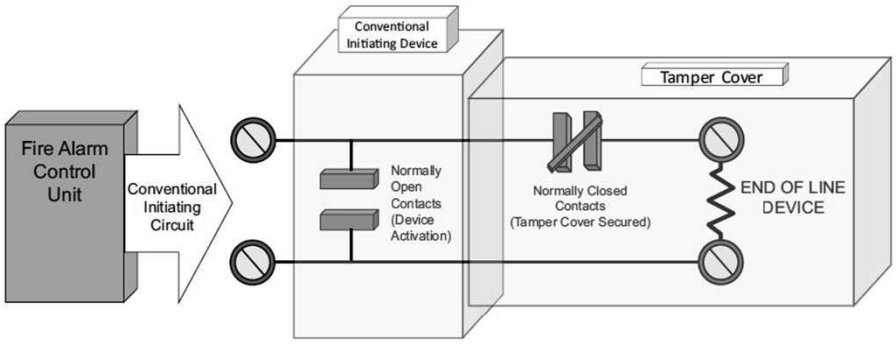
New Illustrations

Figure 52.1
Example of Tamper Field Devices Serving Fire Suppression System



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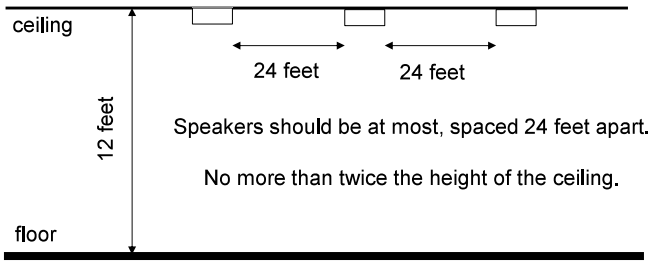
40 – Audible Signal Devices Locations

A.40.1 Voice Intelligibility Guide
A. Intelligibility
The concept of intelligibility expressed in this Standard is intended to mean that a person with average hearing and cognitive abilities is able to understand the messages that are transmitted into the space occupied by the person.
There is no absolute measure to predetermine the effect of loudspeakers and it may be necessary, once the building has been furnished and occupied, to increase the number of loudspeakers to improve the quality of the messages.



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42 – Visual Signal Devices (Strobe Lights)

42.4 - Wall-mounted strobe lights shall be installed in accordance with Table 42.1, Light Output for Wall-Mounted Strobe Lights for Various Room Sizes, using one of the following:

a) A single strobe light;

b) Two strobe lights located on opposite walls; or

c) Four strobe lights. Refer to Annex D (Informative), Figure D.3, for guidance.

Table 42.1
Light Output for Wall-Mounted Strobe Lights for Various Room Sizes

Maximum area of coverage (m)	Minimum light output, candela (effective luminous intensity)		
	One light per area	Two lights per area	Four lights per area
6.10 x 6.10	15	Not allowable	Not allowable
8.53 x 8.53	30	15	Not allowable
9.14 x 9.14	34	15	Not allowable
12.2 x 12.2	60	30	15
13.7 x 13.7	75	60	30
15.2 x 15.2	94	60	30
16.5 x16.5	110	60	30
18.3 x 18.3	135	95	30
21.3 x 21.3	184	95	60
24.4 x 24.4	240	135	60
27.4 x 27.4	304	185	95
30.5 x 30.5	375	240	95
33.5 x 33.5	455	240	135
36.6 x 36.6	540	305	135
39.6 x 39.6	635	375	185

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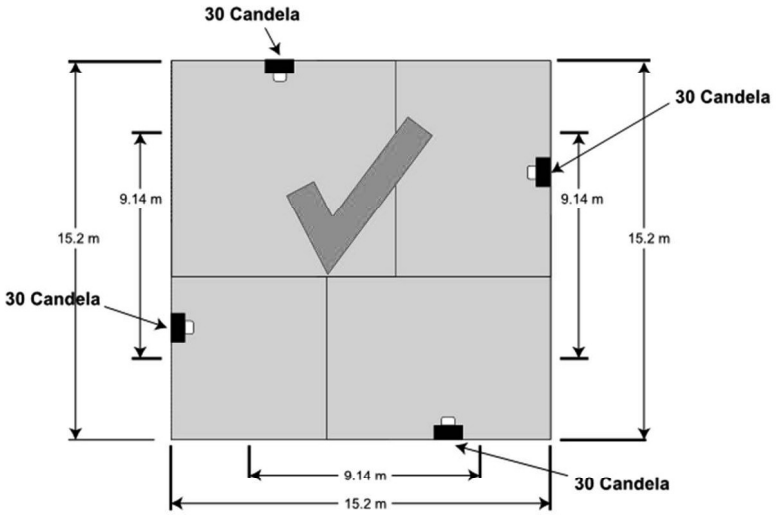
42 – Visual Signal Devices (Strobe Lights)

Figure D.3
Room Spacing Allocation – Correct



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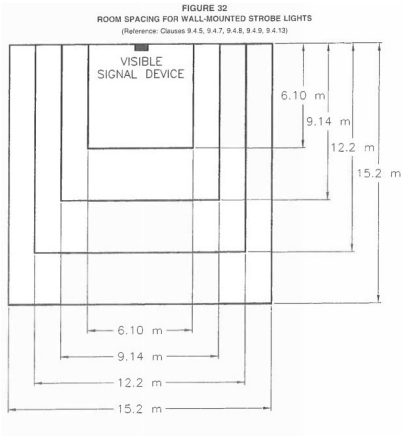
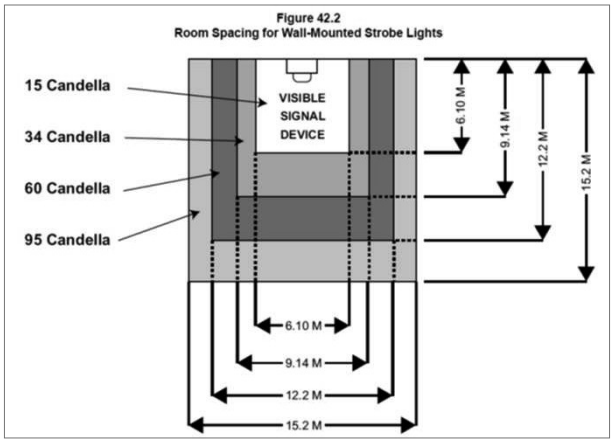
42 – Visual Signal Devices (Strobe Lights)

ULC-S524-14



ULC-S524-19



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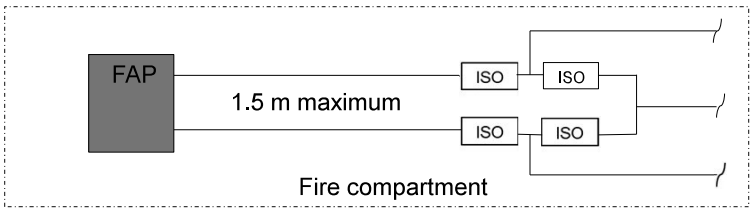
48 – Fault Isolators

48.9 - Fault isolators that are not integral to a control unit or transponder shall be mounted in the same fire compartment and within 1.5 m of the control unit or transponder.



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52.5 - Releasing and Abort Stations for Suppression Systems

52.5.3 - Abort stations shall be of a constant pressure type and comply with the requirements of CAN/ULC-S527, Standard for Control Units for Fire Alarm Systems, Subsection 4.25.2.3, Abort Feature.

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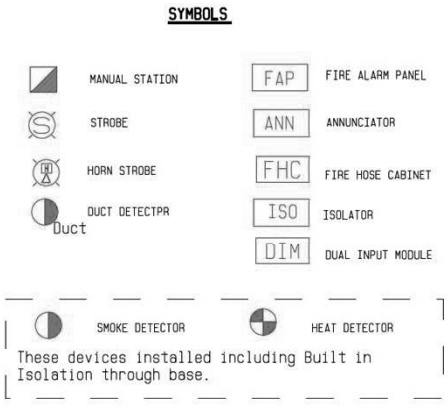
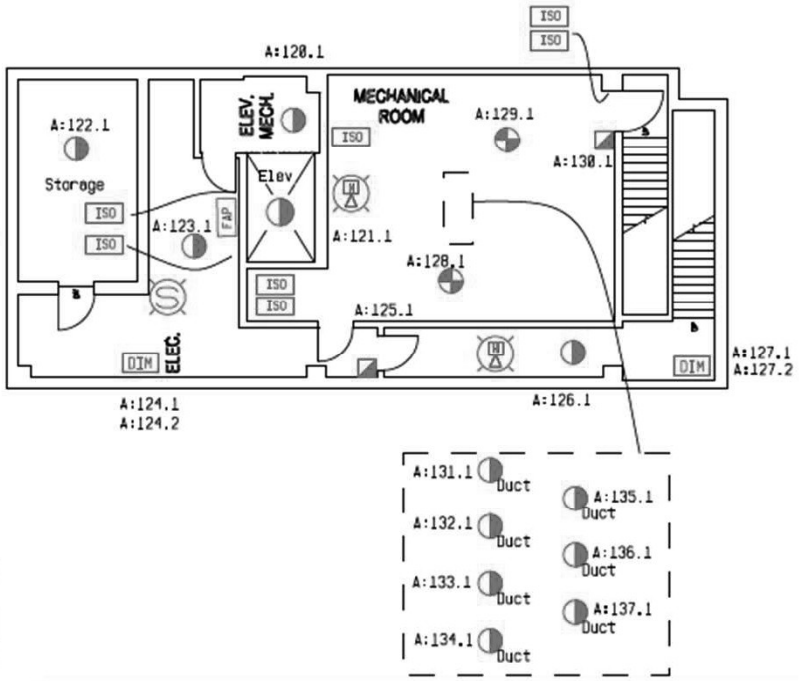
4.7.2 The plans of the building shall sh
zoning, device address and the locatio





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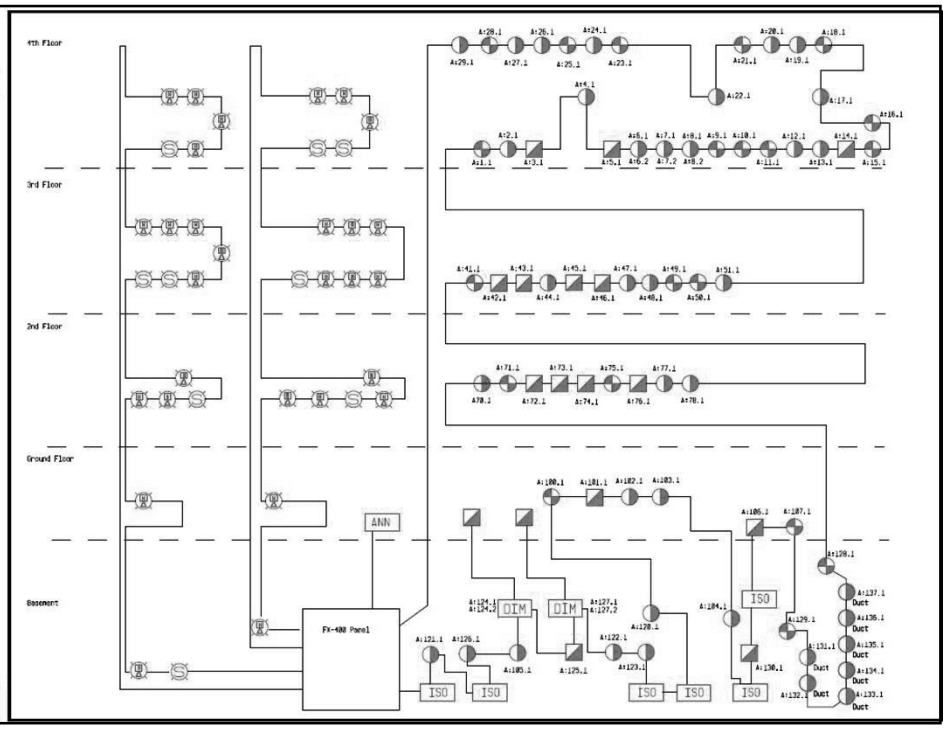
Zone Schedule 1 Raleigh Drive

1 Top of Stair A
2 Top of Stair B
3 Top of Elev Shaft
4 4th Floor
5 3rd Floor
6 2nd Floor
7 Ground Floor
8 Basement Smoke Stair A
9 Basement Smoke Stair B
10 Elev Pit Smoke
11 Base Elev Mach Rm
12 Basement
13 Base Mech Room



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Now being asked for by various AHJs

11.4 Documentation for the *fire alarm system* shall include the following description of the *fire alarm system*:

a. Instructions for resetting the system and silencing *alarm signals*
b. Instructions for silencing the *trouble signal* and action to be taken when the *trouble signal* sounds
c. Description of the function of each operating control and indicator on the fire alarm unit
d. Description of the area of fire zone protected by each alarm detection *circuit* (this may be in the form of a list or plan drawing)
e. Description of the sequence of operation
f. Description of *ancillary* devices controlled by the *fire alarm system*
g. Equipment operating instructions or manuals
h. Equipment maintenance or testing instructions
i. Optical Time Domain Reflectometer (OTDR) report for fibre optical *circuits*
j. Name and contact information of the installing and servicing company of the fire alarm system; and
k. Access levels and the functions permitted by the equipment. Refer to Annex A (Informative) Explanatory Materials, A.11.4.

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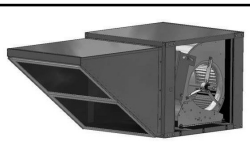

11.5 Documentation for a *fire alarm system* that provides logical control of a smoke control system shall:

a. Include a sequence of operation of the smoke control system
b. Include a *building* diagram that clearly indicates the type and location of all smoke control equipment (fans, dampers, etc.)
c. Identify the *building* areas that the smoke control system serves as either:
   i. A part of the fire smoke control system (FSCS), or
   ii. A separate drawing with instructions to mount adjacent to the FSCS

•NOTE: Refer to the National Building Code of Canada for the smoke control system controls required to be provided.

•11.6 Documentation for a *fire alarm system* that provides logical control of a smoke venting system shall include a sequence of operation and identify *building* areas and equipment (fans, dampers, etc.) where *building* exhaust systems serve as a means for smoke venting.

•11.7 The documentation required by Clauses 4.7.1 to 4.7.6 shall be maintained on site.

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BUILDING CODE CHANGES

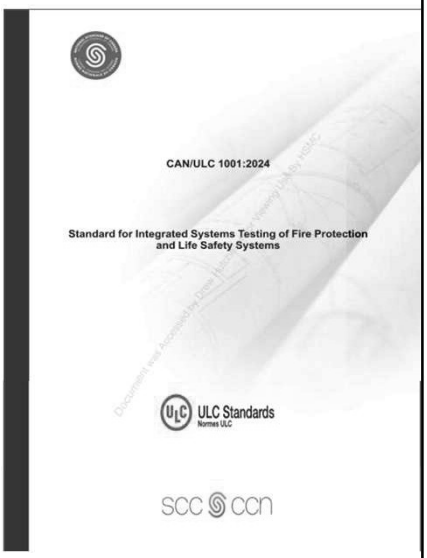
S1001-11

Referenced in NFC2020 and Compendium as S1001-11.

Already in OBC 2024 (the old version). Still -11 version. BUT last update was Nov 2021 "REV2".

Which revision applies? Code does not say!

- Engineering best practice: use the latest revision (but S1001-2023 and S1001-2024 are not referenced in Building Code, therefore not enforceable).
- AHJ relations: don't get into arguments!



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524 CHANGES

5. Integration with Other Systems
enhanced provisions for the integration of fire alarm systems with other life safety systems, like smoke control, emergency lighting, sprinkler systems and Building Automation Systems (BAS), (e.g. to coordinate emergency responses across multiple systems).

1.2 The installation of devices not covered by these requirements shall be in accordance with good engineering practice and manufacturer's published installation instructions and the following standards, as applicable:
(a) CAN/ULC-S553, Installation of Smoke Alarms;
....
(a) CAN/ULC-S573, Installation and Services of Fire Signal Receiving Centres;
(b) CAN/ULC-S576, Standard for Mass Notification System Equipment and Accessories;
(c) CAN/ULC-S588, Gas and Vapour Detectors and Sensors, Including Accessories, and
(f) CAN/ULC-S1001, Integrated Systems Testing of Fire Protection and Life Safety Systems
•CAN/ULC S524-19

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ANCILLARY CIRCUITS: S536

- Explanatory: Ancillary circuits must be tested and method noted

New Section a22.7 Method of Confirmation: Annunciators and Ancillary Devices

- Standard requires testing of ancillary circuits for operation, but not testing of the ancillary devices
- S1001 requires testing of devices

- Confirmation methods may include:
  - Physical observation of expected result (e.g. elevators recall to correct level or air handler unit shuts down as required)
  - Use of meter across contacts
  - Other methods

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g) Ancillary devices shall be recorded, refer to 22.10.

Changes: 536 Ancillary Testing

22.10 Ancillary Device Circuit Test

Specific type of ancillary *circuit*	Ancillary *circuit* powered by:		Operation of ancillary *circuit* confirmed		Method of confirmation See Annex A, A22.10
	FACU* Check if applicable	Others specify			
	◻		Yes ◻	No ◻	
	◻		Yes ◻	No ◻	
*FACU – fire alarm *control unit*					

NOTE: The tests reported on this Form may not include the actual operational test of ancillary devices, except when noted in the Method of Confirmation column. See Annex A, A22.10.

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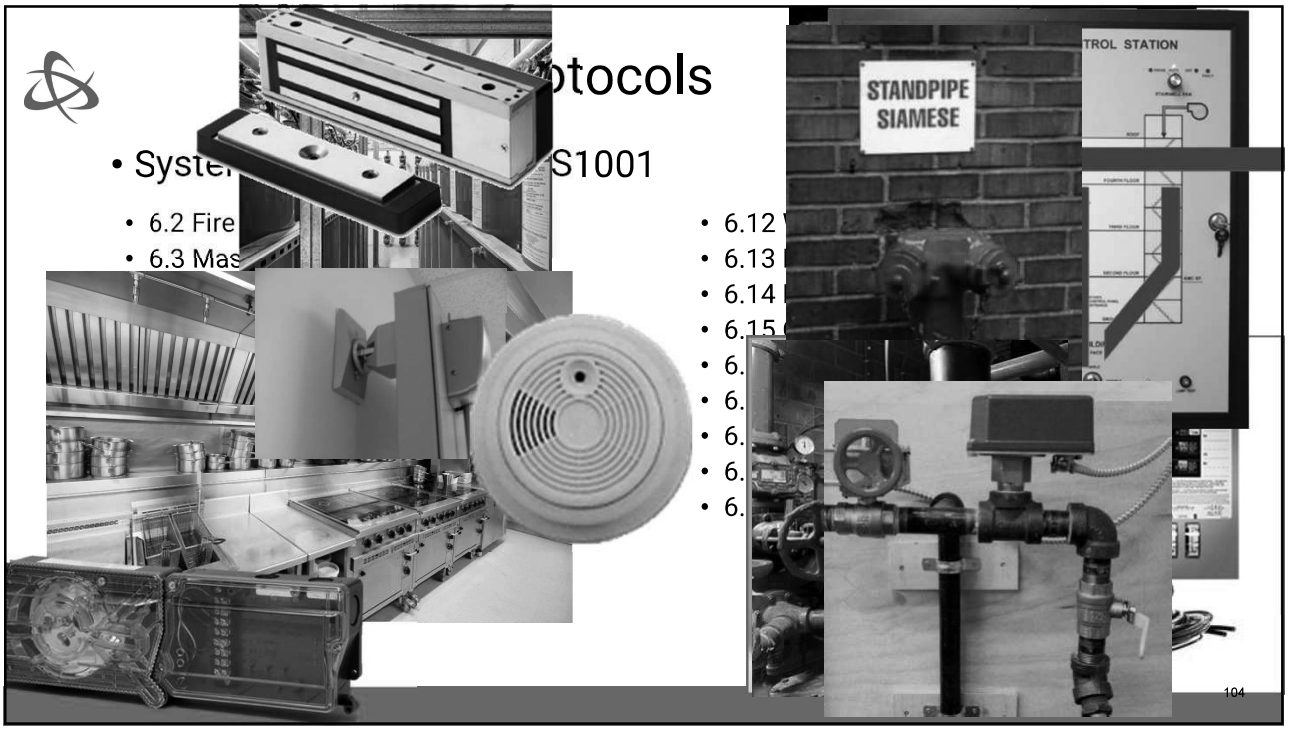

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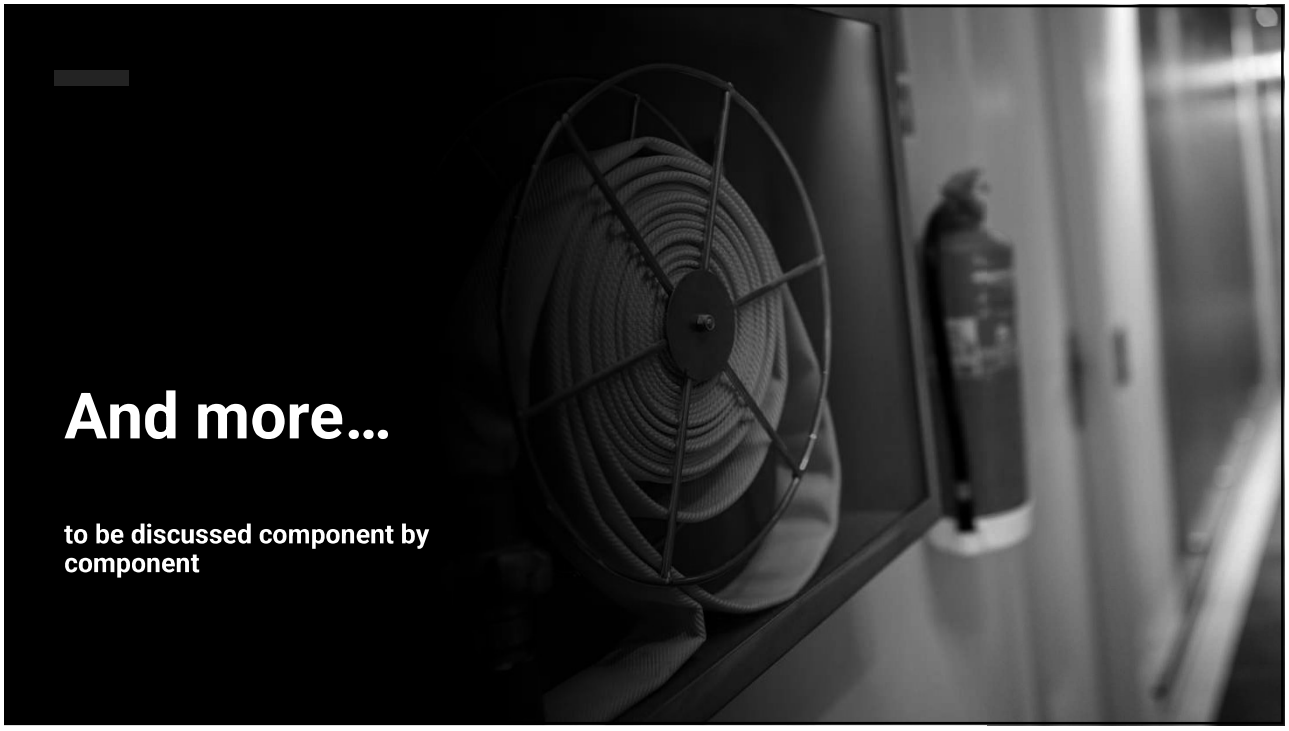

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SPECIFIC CHANGES

Device by Device

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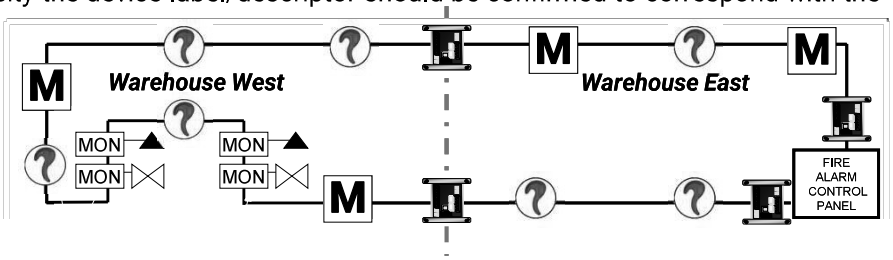
- Clarification: addressable only

Field Device Labels

S536-19 11.1

d) Where *active and supporting field devices* are utilized, the device location and programmed device label/descriptor shall be confirmed.

Note: In the case of field devices which are not physically located in the same area as they serve in a fire detection capacity the device label/descriptor should be confirmed to correspond with the fire zone they service.



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- One alarm indication per NBC-required geographic zone

524: New Idea of "Zone"

New idea of "zone"

- "Zone" now defined in 524 Glossary as "A bu… a or location that has a separate visible indication at the control unit or transponder, and/or annu…
- "Input zone" was always defined as "An are… vice within a building which initiates annunciator indication as **required** by the National Bu… Canada."
- NBC/Compendium do not define "zone" b… ISO 7240-1 which has FIRE DETECTION ZONE – geographic sub-division of the protected … in which one or more points are installed and for which a common zonal indication is provi…

524 Appendix B1 says that it is the aim of … annunciators are not cluttered by more than one alarm indication per NBC zone, for instan… are multiple addressable devices in that zone.

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ZONING and coverage

Compendium 3.2.4.8
Annunciator and Zone Indication

Was 3.2.4.9
Removes requirement for a separate zone indication in each: (2) (i) *fire compartment* required to be separated by vertical *fire separations* having a *fire-resistance rating* not less than 2 h, other than dwelling *units* described in Subsection 3.3.4."

- **As-builts will now require zone schedules (536)**

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Changes: 536 2013 to 2019

- If multiple addressable devices in a building code zone they must show as 1 zone on panel

- New Appendix Section A12.2: **Circuit Fault Tolerance**
- **Notes that S524-2019 revised approach to circuit fault tolerance to a performance-based approach:**
  - Refers to section 18 of 524
  - Intent is to make one input or output circuit serve one zone, as in conventional systems
  - Applies to DCL, network data communication links, power circuits, audio circuits…

Can be done with isolators BUT does not prohibit alternative solutions

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13 Operation Tests for Non-DCL Fire Alarm Circuits

A short in one Non-DCL (conventional) zone should not affect any other zone, (except shared devices like waterflow, suppression, duct smoke and other ancillaries.

536 Changes: Non-DCL zones

…

13.1 Where a *circuit* or a *buss* serves more than one National Building Code of Canada required fire alarm *zone*, wiring shall be shorted in one zone during non-fire alarm condition, annunciation of the fault confirmed, and then a device in another *zone* shall be operated, as applicable, and activation confirmed at the *control unit* or *transponder*. Record the results in 23.3 Circuit Fault Tolerance Test Sheet.

NOTE 1: *Field devices* that are located within a National Building Code of Canada required fire alarm *zone* which serve other National Building Code of Canada required fire alarm *zones*, need not comply with the required *circuit* fault tolerance of 13.1 for the fire alarm *zone* in which the *field devices* are located.

i) This Clause includes such *field devices* as *water flow devices* and *supervisory devices* on fire suppression systems, duct type *smoke detectors* on HVAC systems and ancillary devices;

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23.3 Circuit Fault Tolerance Test Sheet

NOTE 1: Refer to Section 12 and 13.

NOTE 2: Refer to Annex A, A3.86 for an explanation regarding the National Building Code (NBC) Fire Alarm (FA) Zone.

Circuit Fault Tolerance Test Sheet

***Building* name**				**Date (M/D/Y):**	**Page**	
					of	
Circuit Fault test location	**Type of fault (Record response time or indicate N/A)**			**Isolation results**	**Non-faulted circuit location**	
Identify Device Location where circuit fault was introduced and description of affected NBC Fire Alarm zone or area.	**Short**	**Open**	**Ground**	**Identify NBC Alarm Zone or area location where devices failed due to fault condition.**	**Identify individual device tested for operation located in Non Faulted NBC Fire Alarm zone or area**	**Pass/Fail**
EM 2ND FL W	X			Z4 2ND FL W	M Z5 3RD FL W	P
EM 2ND FL W	X			Z4 2ND FL	M Z3 1ST FL	P

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524: Fault tolerance and isolators

- Fault tolerance includes ALL circuits of any type: addressable and conventional

Circuit fault tolerance requirements and installation of fault isolators

- fault tolerance requirements now affect ALL CIRCUITS leaving a fire alarm control panel. Addressable, conventional zone or power riser, etc. A fault on one circuit cannot affect other zones.

18 Circuit Fault Tolerance
NOTE: Refer to Annex A (Informative) Explanatory Materials, A.18, Circuit Fault Tolerance.
18.1 Except as permitted in 18.3, where any type of fire alarm circuit serves more than one National Building Code of Canada required fire alarm zone, a single fault (open circuit fault, short circuit fault or ground fault) shall not prevent the normal operation of input or output field devices in more than one National Building Code of Canada required fire alarm zone.
…
18.3 Where a short circuit occurs during an alarm condition, signaling operation outside the affected zone may be interrupted to a maximum of 30 s. [for instance when fire damages wiring causing a short. System can take time to adjust.]

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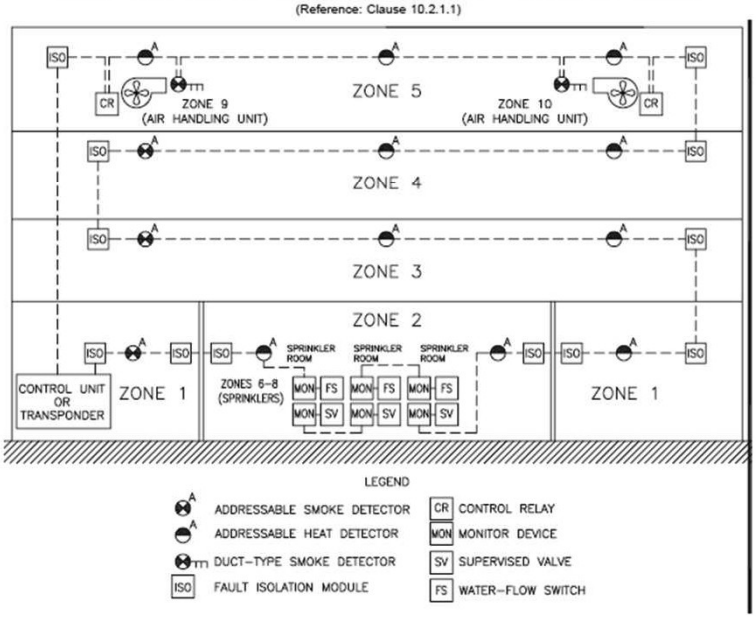
Changes: 536 2013 to 2019

FAULT ISOLATOR – A device used for wire to wire short circuit protection. [no longer “fault isolation module”]

- Clarification: now includes isolator bases and built-in isolation

FIGURE 33.4
EXAMPLE OF ISOLATORS FOR SPRINKLER RISERS AND DUCT-TYPE SMOKE DETECTORS
(Reference: Clause 10.2.1.1)



Source: ULC S524-19

NOTE: This diagram shows the sprinkler room (Zone 2) as a separate National Building Code of Canada fire alarm required zone.

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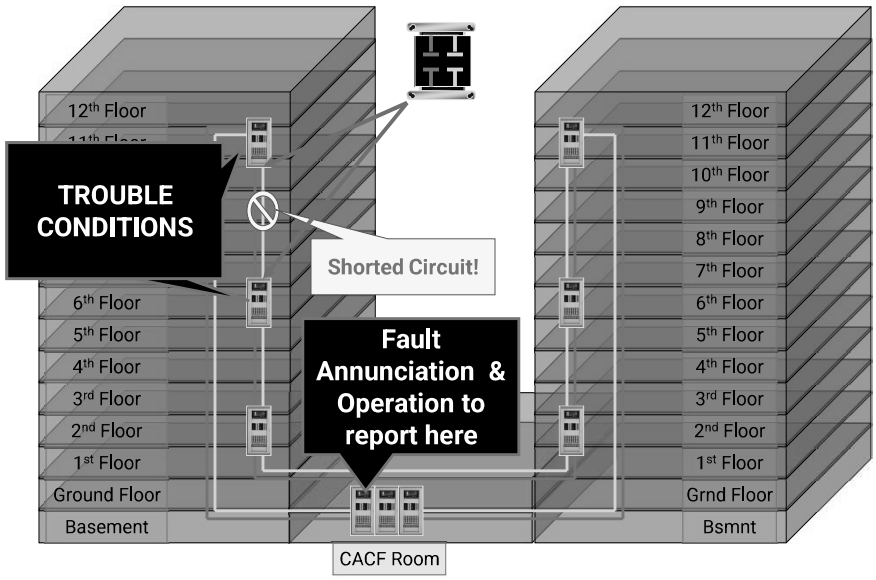
fire resistance and isolators

S524-19 48.4 and 48.6 Fire resistance ratings and isolators

48.4 Where a fire separation having a fire resistance rating of not less than 45 min is provided between National Building Code required fire alarm *zones, fault isolators* required by 48.1 shall be installed on each side of that fire separation

48.6 Where no fire separation, or a fire separation having a fire resistance rating of less than 45 min, is provided between National Building Code of Canada required fire alarm *zones*, a single *fault isolator* shall be utilized when isolating *zones* within the same *floor area*.

DCL-N Wiring

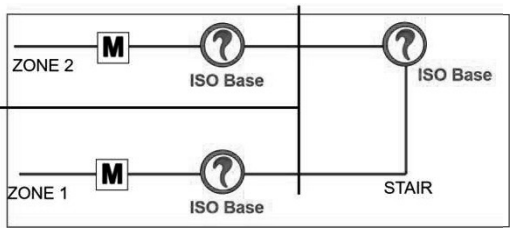


117

Isolator Installation Requirements

48.3 *Field devices* incorporating *fault isolators* complying with 48.1 do not require additional dedicated *fault isolators*.

Source: CAN/ULC-S524-19



48.10 *Fault isolators* shall have an identifying mark or label on the cover plate or *field device*. The identifier shall be visible after installation. Where *field devices* incorporating data *fault isolators* are used to comply with 48.1, the first *field device* entering and the last field device leaving each National Building Code of Canada required fire alarm zone shall be marked..

Source: CAN/ULC-S524-19

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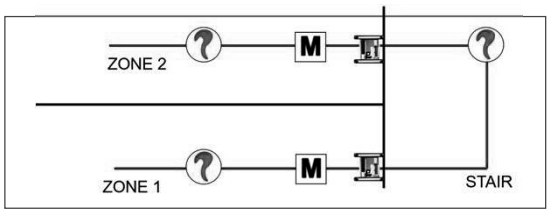
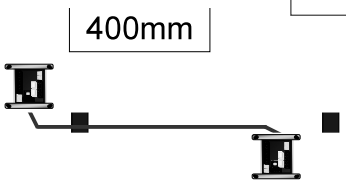
Isolator Installation Requirements

48.4 Where a fire separation having a fire resistance rating of not less than 45 min is provided between National Building Code of Canada required fire alarm *zones*, *fault isolators* required by 48.1 shall be installed on each side of that fire separation.
Source: CAN/ULC-S524-19





48.5 *Fault isolators* installed on opposite sides of the same fire separation shall be offset horizontally a minimum of 400 mm, and not located within the same stud space.
Source: CAN/ULC-S524-19

48.7 *Fault isolators* serving a single *field device* in an exit or vertical service space shall be installed on the *floor area* side.
Note: *Fault isolators* modules are not required on the exit or vertical service space side. See Figure 19.4

Source: CAN/ULC-S524-19

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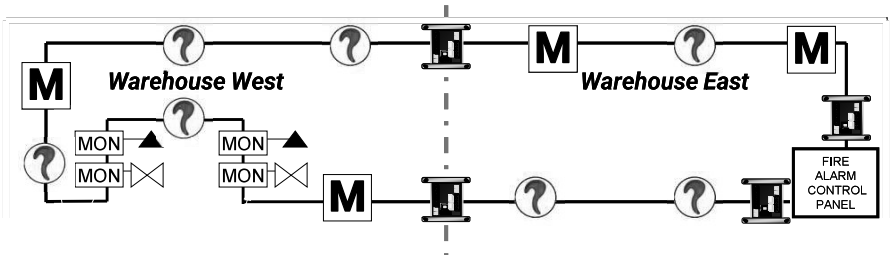
Requirements for Fault Isolators

DCL-A Wiring

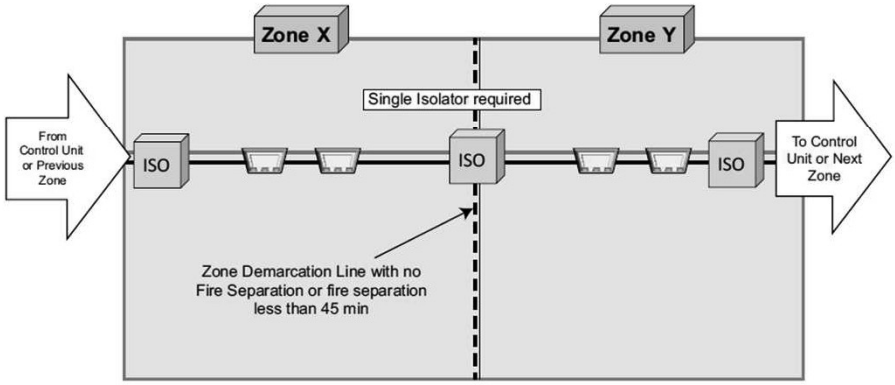
48.6 Where no fire separation, or a fire separation having a fire resistance rating of less than 45 min, is provided between National Building Code of Canada required fire alarm *zones*, a single *fault isolator* shall be utilized when isolating *zones* within the same *floor area*. See Figure 19.8
Note: This Clause would be applicable to large horizontal *buildings* e.g., warehouses, shopping malls, factories, etc.
Source: CAN/ULC-S524-19



120

New illustration

Figure 19.8
Example of Fault Isolator Installed per 48.6



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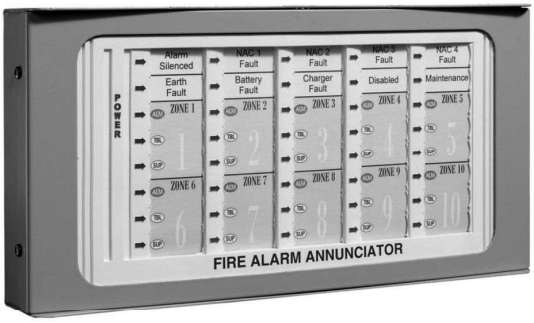
524 CHANGES



Zones and Resounding, clarification of Building Code, Ann

- Building Code requires **one alarm per Zone.**
- Conventional vs Addressable Devices- previous editions of the standards did not align.
  - Conventional – activate one device on a zone and signals are silenced- no other alarm will sound on that zone. Resounding will only happen if the smoke travels to another zone
  - Addressable- activate one device on a zone and the signals are silenced – another device on that zone can be activated and an alarm will sound.
- New addressable systems should meet building code, for instance by:
  - One LED per zone, with or without device ID, or
  - Simultaneous annunciation of at least 8 zones
- BUT a zone should resound if a new alarm from a new input zone is triggered in a zone where a notification has been silenced.

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537 Resounding/"subsequent alarm"

- 8.1.4 One *active* ["active" means "addressable"] *field device* in each zone shall be operated to confirm appropriate *output circuit* operation. Other *active field devices* within the *zone* may be tested with the *output circuits* inhibited. A printout of the input to output *software* correlation report shall be provided as part of the verification documentation.
- NOTE: When testing the system to confirm proper resound operation, a single fire alarm device is to be operated, then the fire alarm *control unit is* to have its signals silenced, and then another fire alarm device is to be operated within the same zone to confirm that *alarm signal* resound DOES NOT occur. [See 8.3.1(o)].

CAN/ULC-S537:2019 – FIRE ALARM SYSTEM VERIFICATION REPORT

33.3SUBSEQUENT ALARM (ALARM RESOUND) CONTROL PANEL TEST SHEET

NOTE: Refer to 8.3.1(o).

Initial fire alarm input zone test location	Field device label	Subsequent alarm activation test (following *alarm signal* silence)	Field device label	Alarm signals remain silent	Note: If signals re-activated following signal silence - in result of fire alarm device located in same NBC zone, deficiency note required.

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537 Resounding/"subsequent alarm"

3.91 *SUBSEQUENT ALARM* – Activation of another *input zone* before the *control unit* is reset.

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CAN/ULC-S537:2019 – FIRE ALARM SYSTEM VERIFICATION REPORT

33.3SUBSEQUENT ALARM (ALARM RESOUND) CONTROL PANEL TEST SHEET

NOTE: Refer to 8.3.1(o).

Initial fire alarm input zone test location	Field device label	Subsequent alarm activation test (following *alarm signal* silence)	Field device label	Alarm signals remain silent		Note: If signals re-activated following signal silence - in result of fire alarm device located in same NBC zone, deficiency note required.
Identify NBC zone designation where initial fire alarm condition was activated	Identify fire alarm device used to initiate fire alarm signals activation	Identify NBC zone designation where subsequent fire alarm device was activated following *alarm signal* silence	Identify subsequent fire alarm device activated in same NBC zone following signal silence.	Yes	No	Record system deficiency in Section 28.2, Deficiencies
First Floor Main Lobby - *Zone* 1	1st FL Lobby - *Manual Station*	First Floor Main Lobby-*Zone* 1	1st FL Lobby *Smoke Detector*	☐		
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	
		☐	☐	☐	☐	

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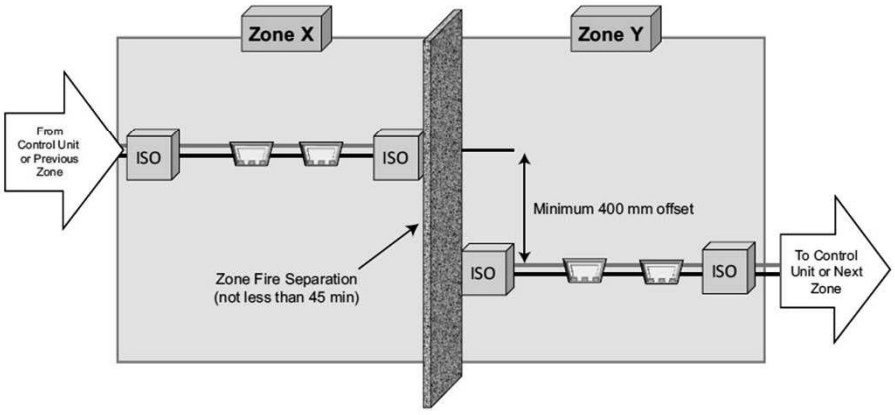
New illustration

Figure 19.7
Example of Fault Isolators Installed on Opposite Sides of Same Fire Separation



48.5 *Fault isolators* installed on opposite sides of the same fire separation shall be offset horizontally a minimum of 400 mm, and not located within the same stud space.

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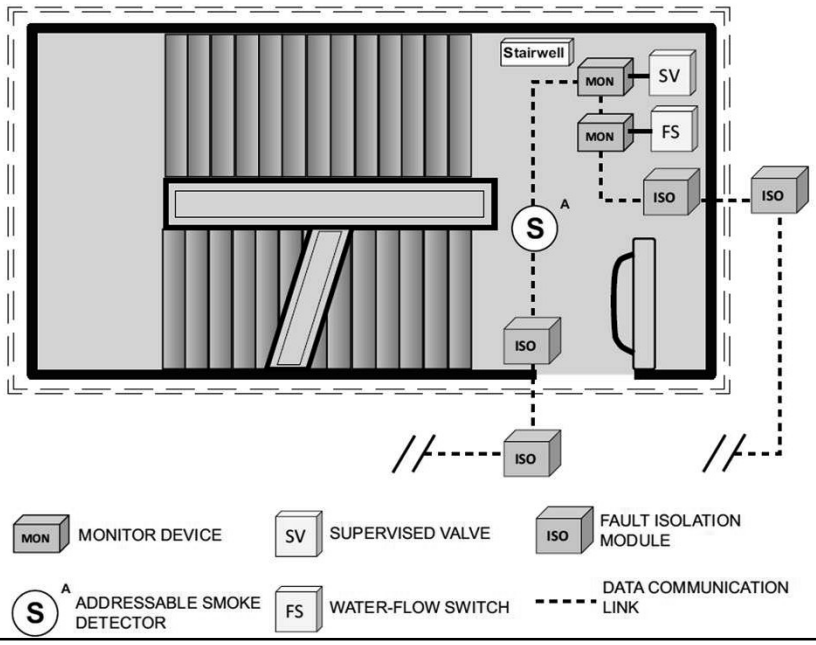
New illustration

Figure 18-5
Example of Fault Isolator Serving Multiple Field Devices in an Exit Stair



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Definitions…

524 CHANGES

Control Panel and Power Supply

- What was the "Primary Power Supply" is now the "***Main Power Supply***", defined as "The primary source of electrical energy…"
- "*Emergency Power*" is now defined as "A **secondary source of electrical energy,** independent of the *main power supply*, used to power the *fire alarm system* in response to failure of the *main power supply*".

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Can't buy UPS over the counter

524 CHANGES

5.6 Uninterruptible Power Supply [NEW, high points summarized. See 524-19]
5.6.1 *Emergency power supply* may from an uninterruptible power supply (UPS)
5.6.2 Input and output UPS system shall have **hard-wired** permanent connections… with exceptions..
5.6.4 for maintenance and repair service, a **means for disconnecting** while maintaining continuity of power … fitted with a locking device to prevent unauthorized operation.
5.6.5 O**ff-normal position** of UPS disconnecting means shall result in a non-latching ***supervisory signal*** or specific ***trouble signal***.
5.6.8 UPS shall be located in **same room as the equipment served** or in an **electrical service room** or a **dedicated room within the same fire compartment**

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Uninterruptible Power Supply [NEW]

Lots of trouble and supervisories, some unclear

524 CHANGES

5.6.6 UPS designed to provide service for essential *building* operation and services must be backed up by emergency generators that ….
(b) Provide indication to the *fire alarm system* upon failure of *building* utility electrical service; and
(c) Provide *supervisory signal* on the *fire alarm system* indicating any common UPS fault that may affect operation of the *fire alarm system*.
5.6.7 Where emergency power is provided from a self-contained uninterruptible power supply (UPS):
…. (c) UPS system shall provide a trouble signal to the fire alarm system indicating …:
1) UPS switches from primary power source to the secondary power source;
2) A charging circuit failure, which causes charging voltage to decrease below the marked nominal rated battery voltage; and
3) UPS trouble.

Ask the AHJ

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"identified"

Changes: 536 2013 to 2019

9.1 Power Supplies

b) The primary supply is equipped with the identified disconnect means in compliance with Section 32 of CSA C22.1, Canadian Electrical code and CAN/ULC-S524, Installation of Fire Alarm Systems, as required at the time of installation.

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22.4 Power Supply Inspection

NOTE: See 9, Power Supplies

Control unit or *transponder* location:				
Control unit or *transponder* identification:				
Circuit disconnect means or breaker location:				
Circuit disconnect means or breaker identification:				
A	Fused in accordance with the Manufacturer's marked rating of the system.	Yes ☑	No ☐	N/A ☐
B	The primary supply is equipped with the identified disconnect means.	Yes ☑	No ☐	N/A ☐
C	Adequate to meet the requirements of the system.	Yes ☑	No ☐	N/A ☐
D	A short on the isolated side of each power isolation module results in a trouble condition.	Yes ☑	No ☐	N/A ☐
E	Operation of a device on the source side of each shorted power isolation module is confirmed.	Yes ☑	No ☐	N/A ☐
F	Power for ancillary devices is taken from a source separate from the *fire alarm system control unit* or *transponder* power supply.	Yes ☐	No ☑	N/A ☐
G	Power for ancillary devices is taken from the *control unit* or *transponder* that is designed to provide such power.	Yes ☑	No ☐	N/A ☐
H	Ancillary devices, which are powered from *control unit* or *transponder*, are recorded.	Yes ☑	No ☐	N/A ☐

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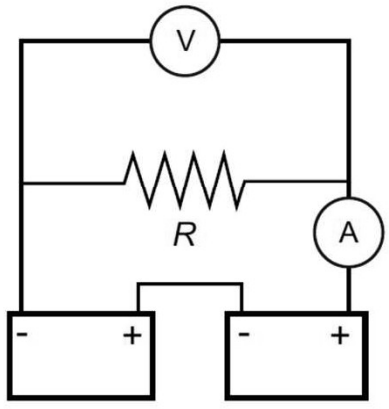
Batteries

536-19 Annex C (Informative) Battery Tests - updated

ANNEX C (INFORMATIVE) – BATTERY TESTS

C1 New Silent Accelerated Test Method

C1.1 This method is performed using a 5 OHMS load resistor with a minimum wattage of 200 Watts for a period of 5 min.



C1.2 The test method should be as follows:

a) Disconnect the batteries from the system;

b) Connect the load resistor R across the batteries for 5 min;

c) Note the end point batteries voltage in 22.5(r);

d) Remove the load resistor R and reconnect batteries to the system; and

e) Note the battery charging current in 22.5(s).

C1.3 As an alternate to the C1.1, the battery may be discharged in accordance with the battery manufacturer's capacity chart for the specific battery using suitable sized load resistors with supporting documentation from the manufacturer.

22.5 Emergency Power Supply Test and Inspection

NOTE 1: See 9.2, 9.3, 9.4 and Annex C, Battery Tests

NOTE 2: Complete section for each *emergency power supply*

Emergency power supply location: 3rd Floor Electrical Room									
Emergency power supply identification: Transponder #1									
Emergency power supply provided by: Batteries									
Batteries ✓		Generator		UPS		Combination			
NBC required full time load alarm operation time		2 h		1 h ✓		30 min		5 min	
Installed batteries Qty:	2	V dc:	12	A·h:	60				

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4 years!

Changes: 536 2013 to 2019

Battery Replacement different wording:

9.4 Replace the battery based on the manufacturer's indication date code or the interval as recommended and documented by the manufacturer. Where there is no manufacturer's documentation of battery service life, the battery shall be replaced within 4 years.

[**used to say** "In lieu of the above battery tests, replace the battery… as recommended by the manufacturer **of the fire alarm system**… **5** years]

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"correct type": sealed gel cell, lead acid

Changes: 536 2013 to 2019

9.2 Each battery shall be inspected and tested to confirm operability, including the following functions, as applicable (Refer to 22.5, Emergency Power Supply Test and Inspection.):

Correct type and capacity size as specified by the *control unit* manufacturer for the installed system;

c). Battery voltage and current with *main power supply* 'ON'

n) Disconnection of battery causes *trouble signal* at the fire alarm *control unit*

o) battery test item ...

ii) new silent accelerated test method

iii) Battery manufacturer's method (Refer to Appendix C2)

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Fire-rated cables to last an hour or more in fire

524 changes: 7.10, re Wiring

Cable and Wiring Requirements

- Protected as per NBC 3.2.7.10, which says that electrical conductors serving fire alarms in "high buildings" must conform to **S139, Fire Test for Evaluation of Integrity of Electrical Power, Data and Optical Fibre Cables**,

- Where fire rated/circuit integrity cables are used, these cables shall:
  - Be installed in accordance with cable manufacturer instructions
  - Conform to **S139, Fire Test for Evaluation of Integrity of Electrical Power, Data and Optical Fibre Cables**, including the hose stream application, to provide a *circuit* integrity rating of **not less than 1 hour.**

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- Follow the manufacturer guidelines

Changes: 536 2013 to 2019

15.3.1 Each power loss (e.g. fire pump and air compressor) *supervisory device* shall be tested by disconnecting the *main power supply* utilizing the designated disconnect means for the equipment, to result in an audible trouble signal and a visual indication.

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DCLN Circuits in 524-19
new section 9

- Typically between transponders and panels. Can be traditional, optical or ethernet

Installed in accordance with:
- CSA 22.1 Canadian Electrical Code
- FAS manufacturer instructions
- Cable manufacturer's instructions
- If optical cables, further 524-19 rules
- May also be ethernet
- 9.2 mechanical protection similar to electrical conduit or conductors within raceways
- 9.3 dedicated to the FAS
- 9.4 each junction access marked "Fire Alarm" and/or "Alarme Incendie"
- 9.5 protected "equivalent to" requirements of rest of 524-19 and 527 Control Units for Fire Alarms
- 9.6 where they leave building, lightning arrestors and bonding per Electrical Code and manufacturer instructions

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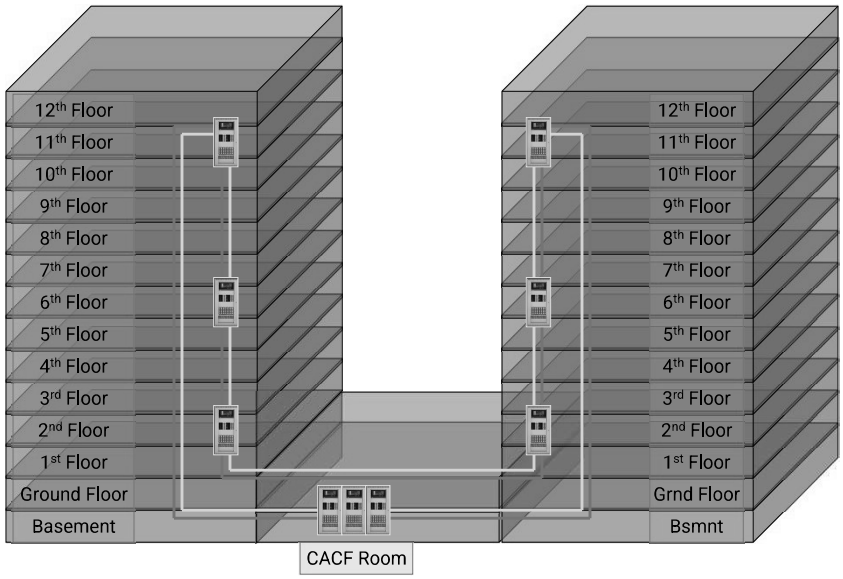
DCL-N Wiring



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New tech

3.28 *DATA COMMUNICATION LINK STYLE N (DCLN)* – A data communication link style with a primary wiring *circuit* and an alternate wiring *circuit* with operational characteristics as detailed in Table 3.1

CAN/ULC - S536-19-REV1

Table 3.1
Abnormal System Conditions

Abnormal operating condition in a link at the same location	Data communication link (DCL) styles				
	DCLA	DCLB	DCLC	DCLN (Per pathway)	DCLN (Endpoint connected via single pathway)
Single Open	S	T	S	S	t
Single Ground	S	S	S	See Note 2	See Note 2
Wire to Wire Short	T	T	S1	S	T
Wire to Wire Short & Ground	T	T	S1	S	T
Open and Ground	S	T	S1	S	T
Loss of Communication	T	T	T	-	-
LEGEND					
T=Trouble indication at the control unit.					
S=Trouble indication at the control unit and alarm receipt capability during abnormal operation.					
S1=Trouble indication at the control unit and alarm receipt capability (beyond the isolated fault section of the link) during abnormal operation					
NOTE 1: Systems utilizing data communication link(s) Style C (DCLC) do not required detection of a single ground on the data communication link.					
NOTE 2: Systems utilizing data communication link(s) Style N (DCLN) do not required detection of a single ground on the data communication link.					

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Each system abnormal condition specified in Table 3.1, Abnormal System Conditions, *tested* for each data communication link at the *control unit* or *transponder*.

Table 3.1
Abnormal System Conditions

Abnormal operating condition in a link at the same location	Data communication link (DCL) styles				
	DCLA	DCLB	DCLC	DCLN (Per pathway)	DCLN (Endpoint connected via single pathway)
Single Open	S	T	S	S	T
Single *Ground*	S	S	S	See Note 2	See Note 2
Wire to Wire Short	T	T	S1	S	T
Wire to Wire Short *& Ground*	T	T	S1	S	T
Open and *Ground*	S	T	S	S	T
Loss of Communication	T	T	T	-	-
LEGEND					
T = Trouble indication at the *control unit*.					
S = Trouble indication at the *control unit* and alarm receipt capability during abnormal operation.					
S1 = Trouble indication at the *control unit* and alarm receipt capability (beyond the isolated fault section of the link) during abnormal operation.					
NOTE 1: Systems utilizing data communication link(s) Style C (DCLC) do not require detection of a single *ground* on the data communication link .					
NOTE 2: Systems utilizing data communication link(s) Style N (DCLN) do not require detection of a single *ground* on the data communication link .					

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Changes: 536 2013 to 2019

DEGRADED MODE CAPABILITY – A feature where, under conditions of partial data communication link failure, control units and/or transponders, which remain connected to each other, are capable of receiving inputs and activating outputs in the areas served by the control units and/or transponders which remain in communication with each other.

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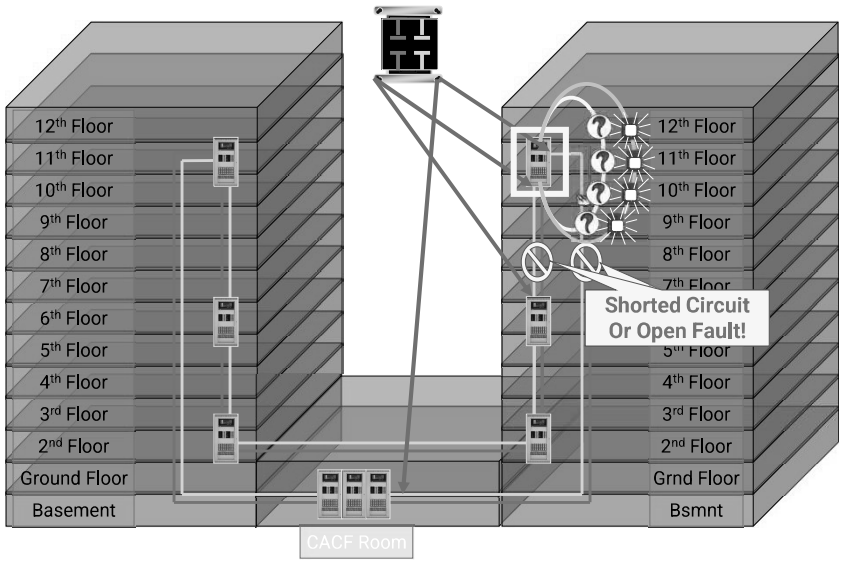
DEGRADED & STANDALONE MODES



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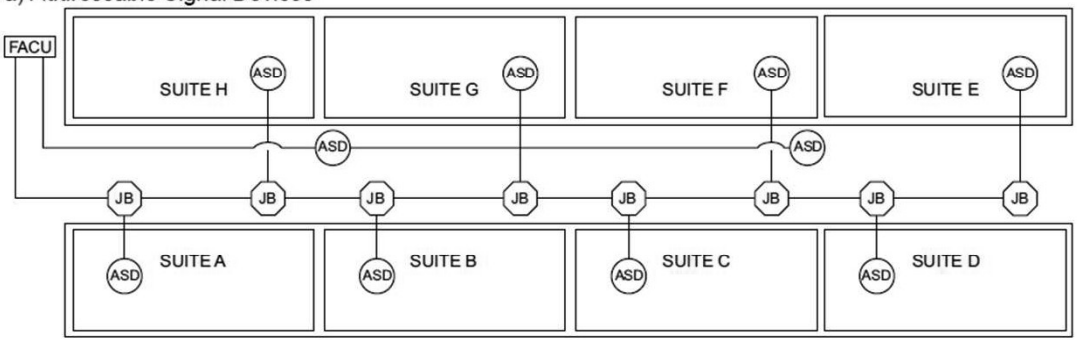
A.49.1 **Examples of Wiring Configurations for Residential Notification Devices**

a) Addressable Signal Devices



NOTE: This example represents one way of meeting the requirement but there may be other methods that are also acceptable.

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DEVICES

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Physical Integrity of Devices: Things to look for

Device	Authority	Check for	Min	Max	note
All Field Devices	524-19 24.7	unpainted, unmodified			
	524-19 24.3	space for access, maintenance, testing			per manuf. instructions
Manual	524-19 26.1	height from finished floor	1050 mm	1150 mm	to centreline of station
	Compendium '24 3.4.6.16 (5) (f)	distance from door		600 mm	where maglocks installed
	524-19 26.2	visible at all times			
	524-19 26.2	where possible, on latch side of single door			
	524-19 26.5	distance from both sides of door opening		1500 mm	where series of doors exceeds 12m total width
Visual Signal Device	Compendium '24 2.2.3.4 (2)	signal from at least one device visible throughout floor area			
Wall Strobe light (Visual Signal)	524-19 42.3	height above floor	2000 mm	2400 mm	where ceiling heights allow or good engineering practice
Ceiling Strobe	524-19 42.10	height above floor		9000 mm	see Table 42.2
EOL	524-19 47.1	centre of EOL to finished floor		1800 mm	
Wall Smoke or Heat	524-19 27.3.2	top of detector distance below ceiling	100 mm	300 mm	per manuf. instructions
Audible Signal Device	524-19 39.2	top of wall-mounted device to ceiling	150 mm		where ceiling heights allow
	524-19 39.1	top of device to finished floor	2300 mm		where ceiling heights allow

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Wireless (536)

Field Devices 14.1.1

Each *field device*, including short-range (wireless) devices, shall be inspected to confirm the following….

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Changes: 536 2013 to 2019

14.8 Short-Range Radio Frequency (Wireless) Devices

14.8.1 Short-range radio frequency (wireless) devices shall comply with the applicable requirements of this standard's device testing requirements for the device type. Refer to 14.1.1.

NOTE: Manufacturers may require additional testing.

14.8.2 The location of each short-range radio frequency (wireless) device shall be visually inspected for correct placement in accordance with the original *design* or documented revision. Where short-range radio frequency (wireless) devices are installed on **removable surfaces**, confirm that the product is listed for installation on removable surfaces.

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- Removable surface … e.g. ceiling tile

Changes: 536 2013 to 2019

14.8 Short-Range Radio Frequency (Wireless) Devices

14.8.3 Where short-range radio frequency (wireless) devices are installed on a removable surface, confirm operation of the manufacturer's tamper method(s) results in a specific *trouble signal*.

14.8.4 Where a system is designed to restrict a user's ability to clear the trouble or fault condition on a short-range radio frequency (wireless) device, this function shall be tested.

14.8.5 The replacement date of the transmitter battery shall be recorded in the Individual Device Record

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MANUAL PULL STATIONS

3.2.4 Fire Alarm and Detection Systems (non-automatic input)

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Helicopter Landing Area

Compendium 3.2.4.16. Manual Stations

Adds:

- Adds 3.2.4.16 (5) "Where a fire alarm system is installed, a manually operated fire alarm station shall be installed on the roof at each *exit* from a helicopter landing area"

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What's New in BUILDING CODE?
(OBC 2015 vs Compendium 2024)

3.2.4.7 Signals to Fire Department

New: (3.2.4.7) (6) Helicopter landing areas on roofs shall be provided with telephone extensions **or** means to notify the fire department.

Ornge C-GYHP departing from the Kitchener hospital | Date= 2015-11-26 | Author= The Commons | Permission= | Other versions= }}

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Manual Stations: 537

14.1 Each manual station shall be inspected and tested to confirm operability, as applicable.

...

d) *Alarm signal* operation in response to the operation of the *manual station* within the same fire alarm *zone*, shall occur within 5 s as indicated in Table 6.1 Required System Response Times.

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Confirm and record

Manual Stations: 537

14.2

14.2.5 Each manual station shall be confirmed as having sufficient clearance to facilitate ease of access and proper operation.

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Just clarifications

Smoke and Heat Detectors

Compendium 3.2.4.11

Was 3.2.4.12

- "If a fire alarm system is required" changes to "If a fire alarm system is installed"
- (1) (e) **Removes requirement** for smoke detectors in exit stairs "serving only a Group A, Division 4 major *occupancy* or an open *storage garage*".

- **Removes requirement** for heat detectors in (2)
  (a) every room in portions of *buildings* classified as Group A, Division 1,
  (b) except in a *hotel*, in every *suite*, and every room not located within a *suite*, in portions of buildings classified as Group C major occupancy and more than 3 storeys in *building height*, …

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Just clarifications

Fire Detectors

Compendium 3.2.4.10

Was 3.2.4.11

Added:

(3) *Fire detectors* required by Sentence (2) *[which affects unsprinklered buildings*] need not be provided within *floor areas* that are *sprinklered.*

(4) *Fire detectors* required by Sentence (2) *[which affects unsprinklered buildings*] shall be installed in elevator hoistways and dumbwaiter shafts where a sprinkler system is not installed within the hoistway or shaft."

VS

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VS

Fire Detectors

Compendium 3.2.4.10

(2) Except as permitted by Sentence (3), if a fire alarm system is required in a *building* that is not *sprinklered*, *fire detectors* shall be installed in the following spaces:

a) storage rooms not within *dwelling units*.
b) service rooms not within dwelling units,
c) janitors' rooms
d) rooms in which hazardous substances are to be used or stored (See Note A-3.3.1.2.(1)),
e) elevator hoistways or dumbwaiter shafts,
f) laundry rooms in *buildings* of *residential occupancy*, but not those within *dwelling units*, and
g) *hazardous classrooms* and change rooms in elementary or secondary schools.

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Sprinklers in Lieu of Fire Detectors

OBC Former 3.2.4.16. Sprinklers in Lieu of Fire Detectors

- **GONE:**
- Said "(1) Fire detectors required by Article 3.2.4.11. and heat detectors required by Sentence 3.2.4.12.(2) need not be provided within a floor area if the floor area is sprinklered and the sprinkler system is electrically supervised in conformance with Sentence 3.2.4.10.(3).

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Air Duct Smoke Detectors: 536-19

14.4.5.1 Each air duct type smoke detector shall be inspected and tested including the following as applicable:

a) Rated for the air duct size and installed correctly in the air duct system to ensure device operation;
b) The positive airflow and/or differential pressure at the sampling tubes is within the manufacturer's specified limits for the detector; and
c) Confirm operability by introducing smoke or simulated smoke to the detector in accordance with the manufacturer's instructions.

NO MAGNETS

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Air Duct Smoke Detectors: 536-19

14.4.5.2 Remote test switches, magnetic test points, etc. shall not be used to confirm operability.

- *Please note that the airflow and differential pressure tests must be performed along with actual functional tests and that test switches are no longer allowed to be used to confirm operability.*

Smoke Only

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Air Duct Smoke Detectors: 524

Additional Requirements for Air Duct Type Smoke Detectors

33.4 Where sampling ports are not readily accessible, a test port shall be provided in an area which is readily accessible to permit inspection and testing to comply with 27.1.2

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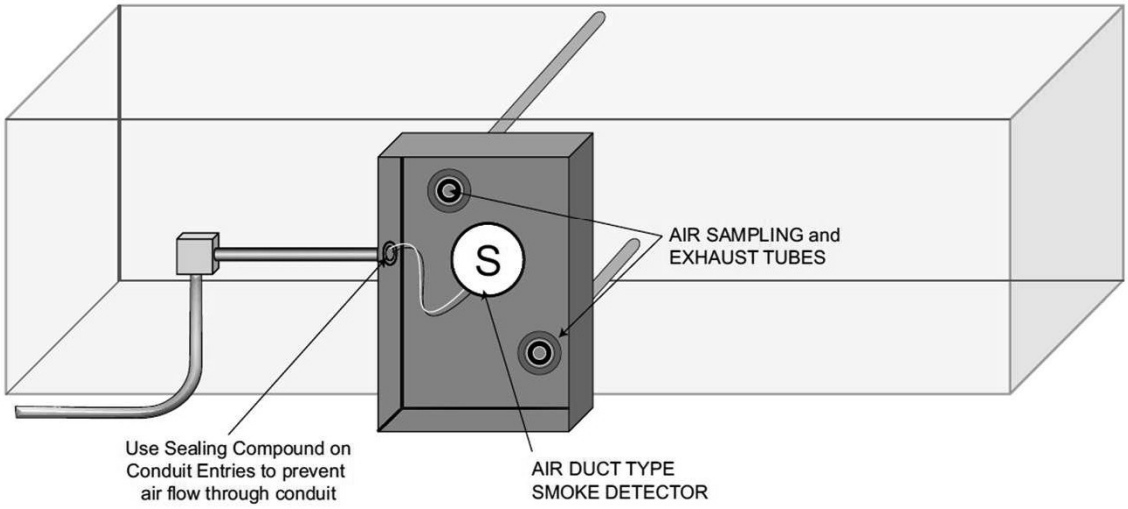
Figure 31.2-B
Sealing Compound on Conduit Entries of Air Duct Type Smoke Detectors



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- Transport time is new. Must be recorded in Inspection reports

Air Sampling Detectors: 536

14.4.4 Additional Requirements for Air Sampling Type Detectors

14.4.4.1 Each *air sampling type detector* shall be inspected and tested to confirm operability in accordance with the manufacturer's installation instructions by:

a) Introduce smoke or simulated smoke to the end sampling port or point on each pipe run and confirm that the transport time of the *air sampling type detector* is in accordance with the original design as noted on the verification report but does not exceed 120 seconds, and

b) Confirm that the air flow is within the manufacturer's specified range through visual confirmation at the *control unit*.

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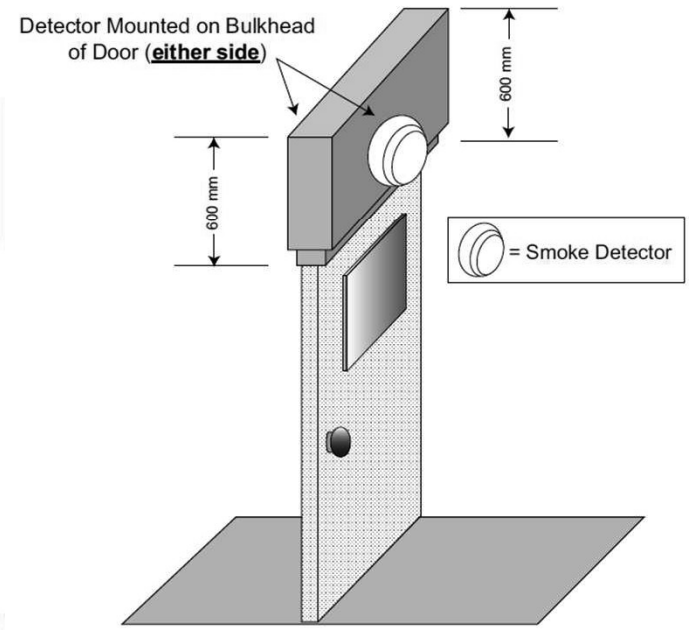
improved illustrations S524



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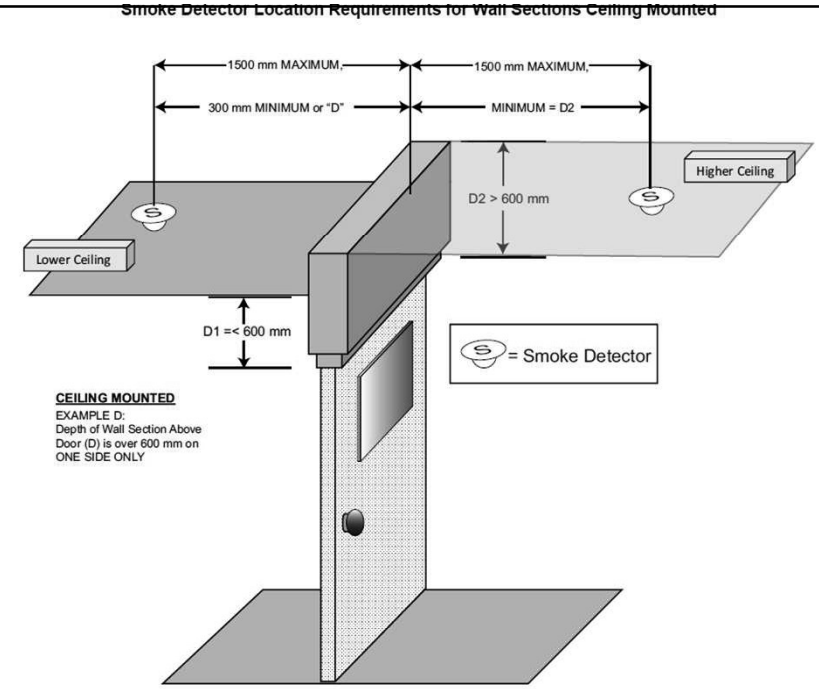
improved illustrations S524



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Clarification only. Visual component was always required in required smoke alarms

Smoke Detectors in lieu of Smoke Alarms

524-19: 3.2.4.20

10) *Suites of residential occupancy* are permitted to be equipped with *smoke detectors* instead of *smoke alarms* provided the *smoke detectors…*
(d) [NEW] are equipped with visual signaling components that meet the requirements of Sentences (17) to (19). (See Note A3.2.4.20(10))

VS

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New optional test. Why would building owner want this?

Heat Detectors (536)

14.3.3 Note: Non-restorable heat detectors **may be replaced or tested** on an annual lot sampling basis with the initial test following 15 years of service. The results of the initial tests and examination for deterioration will determine the frequency of subsequent tests. Sample sizes of one unit for lots of 20 or less, two units for lots of 21 to 99, and 2% for lots exceeding 99, are recommended as a minimum. Selected samples should be subjected to the Operating Temperature Test detailed in the Standard for Heat Actuated Fire Detectors for Fire Alarm Systems, CAN/ULC-S530. When failures are encountered, the lot sample size should be increased and further tests conducted to determined if more replacements are required.

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TESTING METHODS

Heat De

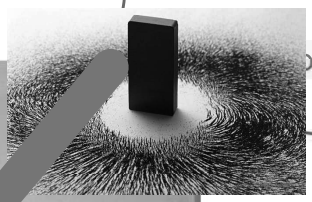
14.3 Hea

41.3.1....

...on

...urce shall not be used for

...penc soldering iron/gun,



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References in Codes:

DETECTORS: CO

NFC

ULC S552, Standard for Maintenance and Testing of Smoke Alarms
ULC S540, Standard for Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance

Compendium

CSA 6.19-17, Residential Carbon Monoxide Alarming Devices
UL 2034, "Single and Multiple Station Carbon Monoxide Alarms"

524, 537 and 536

Manufacturer's published installation/testing standards
S588:2016, Gas and Vapour Detectors and Sensors, Including Accessories
CSA 6.19-17, Residential Carbon Monoxide Alarming Devices

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new

CO Detectors:536

14.6 Carbon Monoxide Detectors Connected to the Fire Alarm System

14.6.1 Each CO detector shall be inspected to confirm the following, as applicable:

a) Detector is installed in accordance with the *design*; and

b) Detector is oriented so as to detect the hazard.

See Annex A, A14.6.1

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CO Detectors:536

14.6.2 Each carbon monoxide detector shall be tested to confirm operability, including the following functions, as applicable:

a) Alarm initiation using alarm initiating source recommended by the manufacturer;

b) Documentation relating to sensitivity testing; as per manufacturer's instructions, has been reviewed

c) Confirm the *alarm signals* generated by a carbon monoxide detection device activate a latching Priority 2 signal in accordance with Table 4.1, Control Unit Priority of CAN/ULC-S524 , and provide a visual indication means that describes the physical location of the activated carbon monoxide detection device on the fire alarm annunciator and/or display and control center; and

d) Confirm that the alarms generated by the CO detection device cause a local audible *alarm signal* which follows the Temporal 4 pattern.

NOTE: See Annex A, A14.6.2 for the standardized alarm signal temporal 4 pattern for carbon monoxide detection.

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Table 4.1
Control Unit Priority

CO Detectors:524

Input	Priority level
Fire alarm signals	1
Signals related to life safety emergency conditions	2
Fire supervisory signals	3
Signals associated with property and building safety	4
Trouble signals associated with fire alarm, life and/or property safety	5
Other	6
NOTE: refer to Annex A (informative), Explanatory Materials A-TABLE 4.1, Examples of typical conditions resulting in status changes	

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- ADDED: Care occupancy *buildings* with sleeping rooms if there is a fuel-burning appliance or flue or storage garage on the other side of the wall, ceiling or floor or if heat is supplied by forced air…

CO Alarms

Compendium 6.9.3
Carbon Monoxide Alarms

6.9.3.1. Application
(1) Article 6.9.3.2. applies to every *building* that
(a) contains a residential occupancy, a care occupancy with ind
care occupancy containing sleeping rooms not within a suite, a
burning appliance or a **storage garage**, or
(b) contains a residential occupancy and is served by a forced-a
appliance not contained within the building. [used to say "*residential occupancy* and contains a fuel-burning *appliance* or a *storage garage*."]
(2) Articles 6.9.3.3. and 6.9.3.4. apply to every building.

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- Residential suites if there is a fuel-burning appliance or flue or storage garage on the other side of the wall, ceiling or floor or if heat is supplied by forced air…

CO Alarms

Compendium 6.9.3.2. Location of Carbon Monoxide Alarms

(1) A *carbon monoxide alarm* shall be installed in a *suite* of *residential occupancy* where
(a) a fuel-burning *appliance* or a *flue* is installed in the suite,
(b) a forced-air fuel-burning *appliance* provides heated air directly to the *suite*,
(c) a fuel-burning *appliance* or a *flue* is located in a room, *suite* or area that shares a common wall or floor or ceiling assembly with the *suite*, or [new wording. Avoids "service room"]
(d) a *storage garage* shares a common wall or floor or ceiling assembly with the *suite*. [no change]

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- Adjacent to sleeping rooms, in combined living/sleep areas, and on storeys without sleeping rooms
- if there is a fuel-burning appliance or flue or storage garage on the other side of the wall, ceiling or floor or if heat is supplied by forced air…

CO Alarms

6.9.3.2. Location of Carbon Monoxide Alarms

(2) Where a *carbon monoxide alarm* is required by Sentence (1) to be installed in a *suite* of *residential occupancy*, other than a *suite* that consists of a combined living and sleeping area, a *carbon monoxide alarm* shall be installed
(a) adjacent to each sleeping room in the *suite*, and [no change]
(b) on each *storey* without a sleeping room in the *suite*.

(3) Where a *carbon monoxide alarm* is required by Sentence (1) to be installed in a *suite* of *residential occupancy* that consists of a combined living and sleeping area, a *carbon monoxide alarm* shall be installed in the combined living and sleeping area.

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- In sleeping rooms if there is a fuel-burning appliance or flue or storage garage on the other side of the wall, ceiling or floor or if heat is supplied by forced air…

CO Alarms

Compendium 6.9.3.2. Location of Carbon Monoxide Alarms

((4) In addition to the *carbon monoxide alarms* required to be installed in a *suite* of *residential* or *care occupancy* in accordance with Sentence (2), a *carbon monoxide alarm* shall be installed in each sleeping room within the suite where the sleeping room

(a) contains a fuel-burning appliance or a flue, or [new]

(b) shares a common wall or floor or ceiling assembly with

(i) a room, suite or area that is located outside the suite and contains a fuel-burning appliance or a flue, or

(ii) a storage garage. [not new]

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CO Alarms

Compendium 6.9.3.2. More about Carbon Monoxide Alarms

- (6.9.3.4) wired so that activation of one alarm within a residential suite will activate all within suite [not new]
- Activation of one in a public corridor will activate all alarms in suites on that corridor
- Be audible within sleeping rooms when doors are closed [not new]
- If building has power, must have a visual signaling component.

has building power

No building power.
Battery operated
No visual.

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Changes: 536-19 when adopted

See Annex A, A14.6.1.

14.6.2 Each carbon monoxide detector shall be tested to confirm operability, including the following functions, as applicable:

a) Alarm initiation using alarm initiating source recommended by the manufacturer;

b) Documentation relating to sensitivity testing, as per manufacturer's instructions, has been reviewed;

c) Confirm the *alarm signals* generated by a carbon monoxide detection device activate a latching Priority 2 signal in accordance with Table 3, Control Unit Priority of CAN/ULC-S524, and provide a visual indication means that describes the physical location of the activated carbon monoxide detection device on the fire alarm *annunciator* and/or display and control centre; and

d) Confirm that the alarms generated by the CO detection device cause a local audible *alarm signal* which follows the Temporal 4 pattern.

Carbon Monoxide Alarms

Manufacturer test procedure (example)

TESTING

Detector must be tested after installation.

NOTE: Before testing, notify the proper authorities to avoid any nuisance alarms.

Ensure proper wiring and power is applied. After power up, allow 80 seconds for the detector to stabilize before testing.

Test the CO1224T/CO1224TR detector as follows:

1. A test button is located on the detector housing (See Figure 4).
2. Use the tip of your finger to press and hold the test button for 1-4 seconds.
3. If the sounder beeps twice in the Temporal 4 tone and the LED's light up, the detector is operational.
4. The detector now enters Realtest speed up test mode indicated by a quickly blinking green LED. See Functional Gas Test section for instructions on testing with canned CO.

If a detector fails the above test method, its wiring should be checked. If the detector still fails after rewiring, it should be replaced.

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524 CHANGES

- **Use of co detectors in lieu of CO alarms**
- **New- carbon monoxide detectors connected to FAS (14.6)**
- **Also CO/smoke detectors ("combination type" 14.7)**

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- What new circuits?

524 Sec 36 CO Detection Devices

36.1 Location and *detector* spacing of carbon monoxide devices shall ll in accordance with the manufacturer's published installation instructions

36.2 Audible signals … shall be a localized Temporal 4 pattern as specified in CAN/ULC-S588, Standard for Gas and Vapour Detectors and Sensors.

36.3 The activation of a carbon monoxide device shall cause a Priority 2 signal in accordance with Table 4.1, Control Unit Priority, and provide a visual indication means that describes the physical location of the activated carbon monoxide detection device on the fire alarm *annunciator* and/or *display and control centre*.

36.4 Signals generated … shall activate a distinctive carbon monoxide *event* notification (requiring acknowledgement) to the *building* operator via the fire alarm *control unit*.

NOTE: Prolonged concentrations … above prescribed thresholds may activate audible and visible alarm signals beyond the localized alarm.

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524 Sec 36 CO Detection Devices

What category are CO alarms?

Table 4.1
Control Unit Priority

Input	Priority level
Fire alarm signals	1
Signals related to life safety emergency conditions	2
Fire supervisory signals	3
Signals associated with property and building safety	4
Trouble signals associated with fire alarm, life and/or property safety	5
Other	6
NOTE: refer to Annex A (informative), Explanatory Materials A-TABLE 4.1, Examples of typical conditions resulting in status changes	

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524 Sec 36 CO Detection Devices

What's the significance in regards to power requirement?

36.5 An end-of-life signal from a carbon monoxide detection device shall initiate a *trouble signal* at the *control unit*.

36.6 Where a combination system includes carbon monoxide signaling, the *emergency power supply* shall provide not less than **12 h of carbon monoxide signaling, in addition to the requirements of fire alarm signaling** required in 5.3.3 and 5.3.4

Exception: The 12 h period is permitted to be eliminated when the system is monitored by a fire signal receiving centre with emergency response.

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524 Sec 37 CO Detectors in Lieu of CO Alarms

- Localized ONLY

37.1 Where CO detectors are installed in lieu of CO alarms as required by the National Building Code of Canada, the activation of the CO detectors shall:

a) Cause localized audible signal within the affected area to operate;

NOTE: where multiple CO detectors are installed within a suite of residential occupancy, they shall be designed so that activation of one detector will activate all CO detectors within the suite.

b) Not generate signals throughout the building, and

b) Provide a local audible indication, and a visible indication that describes the physical location of the activated … on the fire alarm *annunciator* and/or *display and control centre*.

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524 Sec 37 CO Detectors in Lieu of CO Alarms

- Both Audible and Visible are distinct from fire alarm signals

37.2 The audible signals required by 37.1 shall:

a) Conform to the Temporal 4 pattern as defined in CAN/ULC-S588, Standard for Gas and Vapour Detectors and Sensors.
b) Be not less than 75 dBA measured in a sleeping room within a *building* of residential occupancy when any intervening doors between the device and the sleeping room are closed.
c) Be not less than 10 dBA above ambient but not less than 65 dBA in non-sleeping rooms; and

37.3 Where ambient noise levels are above 87 dBA or where occupants wear hearing protection, CO detectors' audible signals shall be supplemented by visible signals which are **visibly** distinct from fire alarm visible signals.

T4 **T3**

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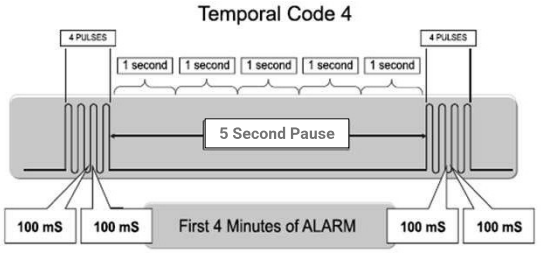
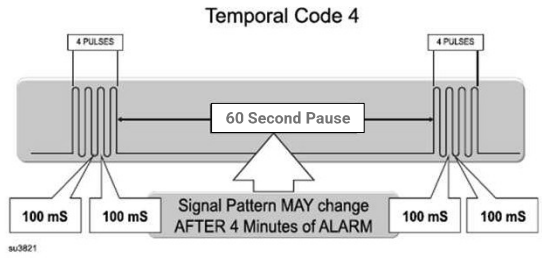
A14.6.2 Standardized Alarm Signal Temporal 4 Pattern for Carbon Monoxide Detection





NOTE: Testing CO detection devices in "normal" mode can be very time consuming and can be dangerous to the health of the technician due to exposure to CO gas. Prior to testing CO detection devices, consult manufacturer's testing recommendations to access testing modes which allow device performance to be tested in shorter time period and without prolonged exposure to CO gas.

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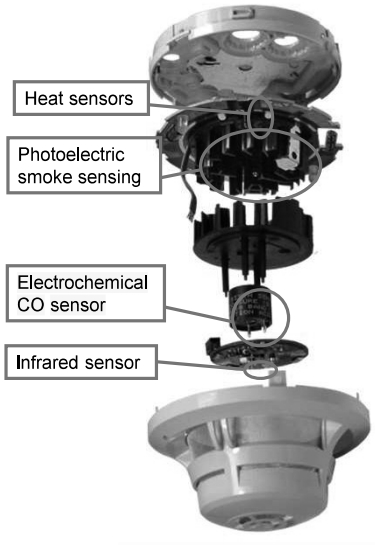
524 Sec 29 Multi Sensors

29 Multi Sensor (multi-criteria) Devices

29.1 Fire detectors that contain multiple types of sensing devices shall meet the applicable installation requirements for all types of sensing elements incorporated into the device.

- Not cheap



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Clarification -- water-flow devices added

Waterflow switches trigger alarm

Compendium 3.2.4.4

- **Used to say:** "(1) A single stage fire alarm system shall, upon the operation of any manual pull station or *fire detector*, cause an *alarm signal* to sound on all audible signal devices in the system."
- **Now says:** "(1) A single stage fire alarm system shall, upon the operation of any manual pull station, waterflow detecting device, or *fire detector*, cause an *alarm signal* to sound on all audible signal devices in the system."
- (same for 2-stage systems (2))

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Clarification

Waterflow switch separate annunciation

Compendium 3.2.4.15
System Monitoring

Was 3.2.4.17

- **New:**
- (3) The actuation of each **waterflow detecting device** required by Sentence (1) [about all sprinkler systems with annunciators required by 3.2.4.8] shall be **indicated separately** on the fire alarm system annunciator.

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Electrical Supervision

Compendium 3.2.4.9
Sections 3 to 5

These 2 sentences (as before) require fire alarm system supervisory signal to annunciator signal for…

(3) (a) movement of a valve handle that controls the supply of water to sprinklers,
(b) loss of excess water pressure required to prevent false alarms in a wet pipe system,
(c) loss of air pressure in a dry pipe system,
(d) loss of air pressure in a pressure tank,
(e) a significant change in water level in any water storage container used for firefighting purposes,
(f) loss of power to any automatically starting fire pump, and
(g) a temperature approaching the freezing point in any dry pipe valve enclosure or water storage container used for firefighting purposes….

(5) … loss of power to a heat tracing cable that is installed to heat
(a) a standpipe riser,
(b) a sprinkler line as part of a fire suppression system, or
(c) an *exit* or *means of egress* to keep it free of ice and snow.


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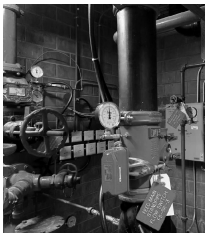

Electrical Supervision

Compendium 3.2.4.9

(4) ~~If a fire alarm system is installed,~~ a fire pump shall be electrically supervised as stipulated in NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection.

A fire alarm system is required if a sprinkler system is installed, and the fire pump must be supervised with the required zoning.

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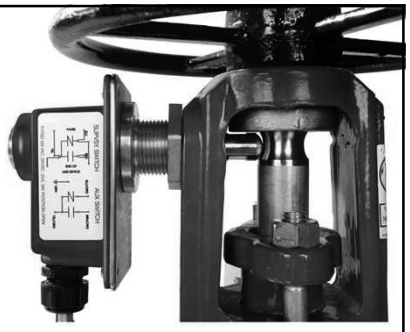
Supervisory Devices



15.2 Supervisory Devices (536-2019)

15.2.1 Each shut-off valve position supervisory switch shall be *tested* to determine that within two turns of the valve handle, or when the stem of the valve has moved 20% from its normal position, it shall result in a *supervisory signal.*

Exception: *Where a fire alarm system ~~does not provide~~ did not include the provision to initiate a supervisory signal, a trouble signal is acceptable.*

- If design did not have a supervisory signal, (as opposed to as-built state…)

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Terms: Notification Appliance

Updated Terminology and Definitions
•S524-19, S537-19 to better align with current fire protection industry practices, they introduce "**Notification Appliance**" **(not in glossary but in some of the language)**

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Bright!

524 CHANGES: Strobe Lights

42.19 *Where visible signal devices* are installed in sleeping rooms, each *visible signal device* shall have a minimum candela rating of **177 cd** where the device is installed less than 610 mm from the *ceiling* and a minimum candela of **110 cd** for all other locations.
Note: the *visible signal device* should be located within 4.87 m of the pillow.

42.1 Except as noted in 42.19, the effective luminous intensity of each strobe light shall be rated not less than **15** candela (cd).

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Automated testing is new

automated signal device testing

- **17.2A Audible and/or Visible or combination Audible/Visible signal devices** that provide automated testing means to confirm operation shall be permitted to be used to comply with the functional tests described in Clause 17.2, provided the failure of any automated test shall result in a latching trouble condition on the fire control panel which will not clear until the defective device(s) are repaired and re-tested to confirm normal operation.

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Changes: 536 2013 to 2019

17 Signal Devices

17.1 Each *audible signal device* and visible signal device shall be inspected to confirm the following:

a) Proper installation and tightness of shell or housing and no evidence of tampering, such as physical obstruction of moving mechanical parts or presence of sound suppressing devices or coverings; and …

clarification

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Changes: 536-19 when adopted

Audible - Signal Devices

Fuses are new.
Does not say “test”.
Only “inspect”

…

17.4 Each *audible signal* device for use in suites of residential occupancy shall be **inspected** to confirm the following additional functions, as applicable:

…

(c) *Signal Circuit Isolator* Operation: In applications where isolation devices are used on a *signal circuit* that serves more than on residential suite, a wire-to-wire *short circuit fault* shall be imposed within each suite in an alarm condition. The wire-to-wire *short circuit fault* shall not interfere with the ability of devices in other dwelling units, public corridors, or suites to sound the alarm.

*Exception: Where isolators employ fuses to provide the required protection in lieu of 17.4(c) the fuse shall be **inspected** to ensure it has the correct rating and capacity.*

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What's New in BUILDING CODE?
(OBC 2015 vs Compendium 2024)

3.2.4.18 Audibility of Alarm Systems

Was 3.2.4.20 New

(6) Audible signal devices in sleeping rooms in a *building* of *residential* or *care occupancy* shall emit a **low frequency signal**. (See Note A-3.2.4.18.(6))

Note above says low frequency signal is in range of 470 Hz to 570 Hz

- Tests show lower frequency wakens hearing-impaired people much better than standard 3 KHz signal

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What's New in BUILDING CODE?
(OBC 2015 vs Compendium 2024)

3.2.4.18 Audibility of Alarm Systems (See Note A-3.2.4.18.)

Was 3.2.4.20
Sound Pressure Level limit raised.

(4) In all normally occupied spaces, the fire *alarm signal* sound pressure level
(a) **shall be not more than 110 dBA** [was 100 dBA] when measured from a distance of 3 m from the device, or
(b) is permitted to be more than 100 dBA provided the sound pressure level measured 2 000 mm above floor level is not more than 100 dBA. (See Note A-3.2.4.18.)

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What's New in BUILDING CODE?
(OBC 2015 vs Compendium 2024)

3.2.4.18 Audibility of Alarm Systems (See Note A-3.2.4.18.)

Was 3.2.4.20 (7)
Red wording added: clarification
(7) Except as required by Sentence (5), the sound pressure level from a fire alarm system's audible signal device within a *floor area* shall be not less than 10 dBA above the ambient noise level and not less than 65 dBA **when any intervening doors between the device and the rest of the *floor area* are closed.**

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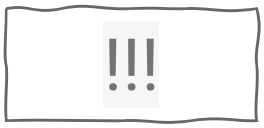
Building Code: visual notificaton



3.2.4.20 re smoke detectors used in lieu of smoke alarms

They must have visual signaling components that meet sentences 17 to 19 (see note A-3.2.4.20(10)

- Conform to Light, Color and Pulse Characteristics of 18.5.3 in NFPA National Fire and Signaling Code
- Do not have to have battery backup
- **Do not need synchronized flash rates when installed in a dwelling unit**
- Minimum luminous intensity of 175 cd

DO NOT NEED SYNCHRONIZED FLASH RATES??

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New in Compendium 3.2.4.22

Two Way Voice Communication Systems

(7) Where the facility is not equipped with staff trained to provide instructions over the loudspeakers, a pre-recorded message shall be provided.

Wording changed. Does it matter?

Was 3.2.4.23:
(7) A voice communication system referred to in Sentence (1) that is installed in a building that is not intended to be staffed, at times when the building will be occupied, with persons trained to provide instructions over the system shall include a pre-recorded message.

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Signals to Fire Department

Compendium 3.2.4.9 Electrical Supervision

Was 3.2.4.10 Relates to supervisories (sprinkler, fire pump, heat tracers…)

Used to require a supervisory signal to be "transmitted to a proprietary control centre or to an independent central station.", only for High Buildings.

Now requires notification of fire department for all buildings

- Removes (5) "If a fire alarm system is required in a building…"
- Removes (6) "In a *building* regulated by the provisions of Subsection 3.2.6" [High Buildings]…"

- **Now says** "The indication of a **supervisory** signal in accordance with Sentence (3) and (5) [see next slide] shall be transmitted to a proprietary control centre or to an independent central station.

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Compendium 3.2.4.9 Electrical Supervision

Signals to Fire Department

Sentences 3 to 5 (we have seen these before today)…

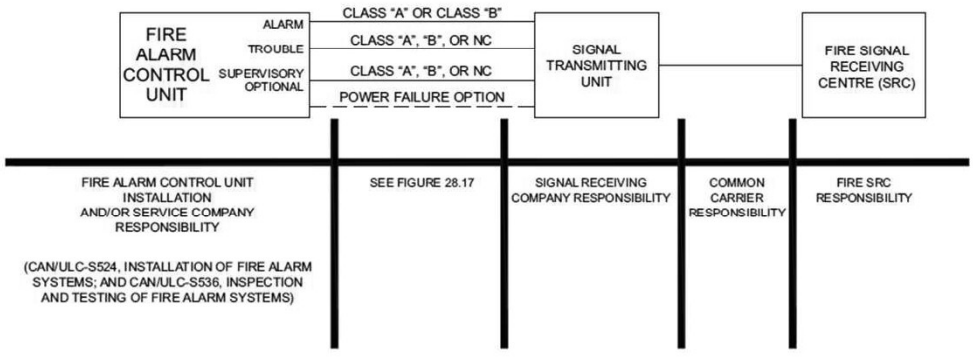
(3) (a) movement of a valve handle that controls the supply of water to sprinklers,
(b) loss of excess water pressure required to prevent false alarms in a wet pipe system,
(c) loss of air pressure in a dry pipe system,
(d) loss of air pressure in a pressure tank,
(e) a significant change in water level in any water storage container used for firefighting purposes,
(f) loss of power to any automatically starting fire pump, and
(g) a temperature approaching the freezing point in any dry pipe valve enclosure or water storage container used for firefighting purposes….

(4) A fire pump shall be electrically supervised as stipulated in NFPA 20….

(5) … loss of power to a heat tracing cable that is installed to heat
(a) a standpipe riser,
(b) a sprinkler line as part of a fire suppression system, or
(c) an *exit* or *means of egress* to keep it free of ice and snow.

ANNEX E (INFORMATIVE) – RESPONSIBILITY DEMARCATIONS FOR INTERCONNECTION OF FIRE SIGNAL RECEIVING CENTRE

E.1 Responsibility Demarcations – Supervised Communication Facility Installations



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Interconnection to FSRC

Changes: 536 2013 to 2019

8.4.1 Where an interconnection to the fire signal receiving center is provided, the interconnection shall be tested for operability, as applicable:

A The fire signal receiving center transmitter is integral to the fire alarm control unit **or** an interconnection between the fire alarm control unit and a separate fire signal receiving center transmitter is provided;

...

E Disabling or bypassing the fire signal receiving center transmitter results in a specific trouble signal at the control unit;

F Disabling or bypassing the fire signal receiving center transmitter automatically transmits a trouble signal to the fire signal receiving center;

C	Tested and confirmed operation of alarm relay.	Yes ❑	No ❑	N/A ❑
D	Tested and confirmed operation of trouble relay	Yes ❑	No ❑	N/A ❑
E	Tested and confirmed operation of supervisory relay.	Yes ❑	No ❑	N/A ❑

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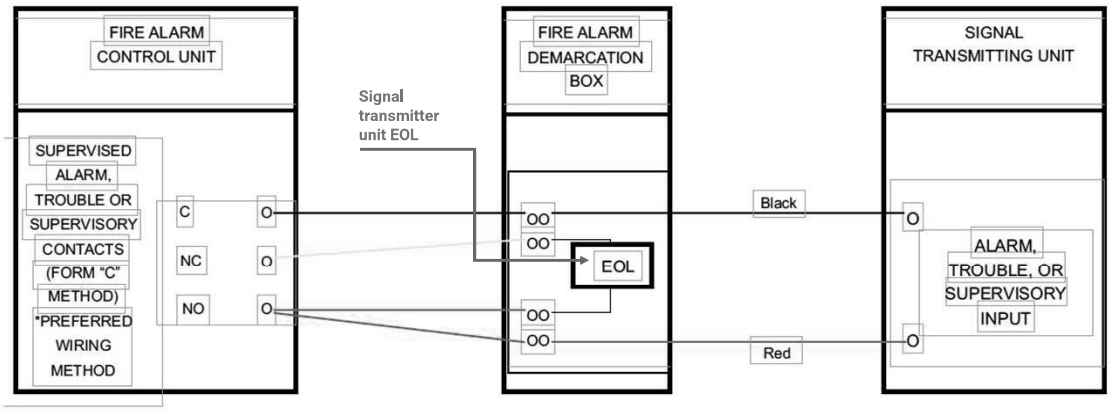
E.6 Removable Terminal Blocks



NOTE 1: Provide a suitable terminal box as the point of demarcation between the fire alarm *control unit* and the signal transmitting unit. Alarm, trouble and supervisory contacts are extended from the fire alarm *control unit* to the demarcation. The fire alarm *control unit* technician connects in the fire alarm *control unit* and the junction box and tags the conductors in the terminal box.

NOTE 2: Unsupervised connections to the fire alarm transmitting unit are intended for the monitoring of non-critical *building* functions that are unrelated to the operation of the *fire alarm system*.

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Signals to Fire Department

Compendium 3.2.4.7

Used to say: (3.2.4.8) (1) If a fire alarm system is required to be installed and a single stage system is provided, the system shall be designed to notify the fire department in conformance with Sentence (4) that an *alarm signal* has been initiated in,

(a) a Group A *occupancy* having an *occupant load* more than 300,

~~(b) a Group B *occupancy*,~~

~~(c) a Group F, Division 1 *occupancy*,~~

~~(d) a *building* regulated by the provisions of Subsection 3.2.6.,~~

~~(e) a *building* containing *interconnected floor space* required to conform to Articles 3.2.8.3. to 3.2.8.11., or~~

(f) a *retirement home*.

Now says: (3.2.4.7) (1) A single-stage fire alarm system shall be designed to notify the fire department in conformance with Sentence (4) that an *alarm signal* has been initiated in,

(a) a *building* of Group A *occupancy* having an *occupant load* more than 300, or

(b) a *retirement home*.

Gone, BUT…

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Signals to Fire Department

Compendium 3.2.4.7

(2) A fire alarm system that includes waterflow indicating devices shall be designed to notify that fire department in conformance with Sentence (4) [as per CAN/ULC S561**], when a** fire alarm **is initiated.**

Translation:

- Group B, Group F2 and “High Buildings” will still need monitoring

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accessibility

Door Release Hardware (Compendium)

3.4.6.16 Door Release Hardware (2) and (3)

(2) If a door is equipped with a latching mechanism, a device complying with Sentence (3) shall be installed on

a) every *exit* door from … *assembly occupancy* … *occupant load* more than 100

b) every door leading to an *exit* lobby from an *exit* stair shaft, and every exterior door leading from an *exit* stair shaft in a *building*… *occupant load* more than 100, and

c) every *exit* door from a *floor area* having a *high-hazard industrial occupancy*.

(3) The device required in Sentence (2) shall extend across not less than one-half of the width of the door….

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Door Release Hardware

Compendium 3.4.6.16

BIG CHANGE

(5) (c) the locking device releases immediately upon ~~loss of power to the fire alarm control panel or~~ loss of power controlling the electromagnetic locking mechanism and its associated auxiliary controls,

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Compendium 3.4.6.16

Door Release Hardware

(5) (g) a visual information sign complying with Article 3.8.3.1. that displays the words EMERGENCY EXIT UNLOCKED BY FIRE ALARM is permanently mounted on the door,
(h) a tactile information sign complying with Article 3.8.3.1. that displays the words EMERGENCY EXIT UNLOCKED BY FIRE ALARM is permanently mounted near the door,

Wording changed. Does it matter?

Was 3.2.4.16:
(g) a legible sign having the words EMERGENCY EXIT UNLOCKED BY FIRE ALARM is permanently mounted on the door,
(h) the lettering on the sign required in Clause (g) is at least 25 mm high with a 5 mm stroke,

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Door Release Crossovers

ndium 3.4.6.16

(5) …electromagnetic locks that do not incor… ar devices … permitted with conditions regarding crossovers.

(k) emergency lighting conforming to 3.… say emergency lighting provided at the doors], and
(l) [new] where they are installed on doors providing emergency crossover access to *floor areas* from *exit* stairs in accordance with Article 3.4.6.18.
(i) the locking device releases immediately upon the operation of a manual station for the fire alarm system located on the wall on the *exit* stair side not more than 600 mm from the door,
(ii) a visual information sign displaying the words RE-ENTRY DOOR UNLOCKED BY FIRE ALARM that complies with Article 3.8.3.1. is permanently mounted on the door on the *exit* stair side, and
(iii) a tactile information sign displaying the words RE-ENTRY DOOR UNLOCKED BY FIRE ALARM that complies with Article 3.8.3.1. is permanently mounted near the door on the exit stair side.

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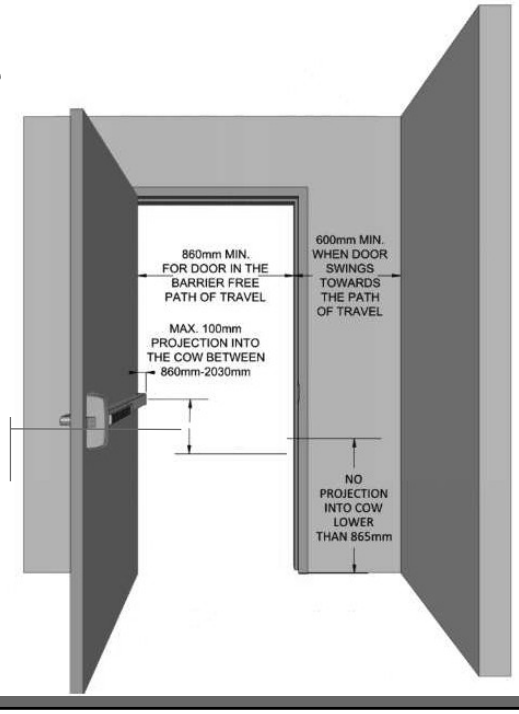
Compendium 3.4.6.16

Door Release Hardware

(7) Door release hardware for the operation of the doors referred to in this Section shall be installed between 900 mm and 1100 mm above the finished floor. [was "not more than 1200 mm" above finished floor]

RELEASE HARDWARE BETWEEN 900-1100 MM

Accessibility at exit doors



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Auto Door Openers need to be de-energized on fire

Automatic Door Openers: Compendium

9.10.13.1 on "Openings in required *fire separations*": Points to NFPA 80-13 6.1.3.4, which says Power-operated fire doors shall be equipped with a releasing device that shall automatically disconnect the power operator at the time of fire, allowing a self-closing or automatic device to close and latch the door regardless of power failure or manual operation.

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- If it has to do with safety, it must be well-illuminated

Lighting: Compendium 3.2.7.1

A minimum level of illumination, of at least 200 lx is required:

- 3.2.7.1(6) Where visual information is provided to controls required by Article 3.8.1.5 [which include occupant controls for safety devices] with exemption for signs with visual information internally illuminated, and
- at signs displaying visual information required by (Clauses 3.4.6.10.(5)(b) [horizontal exits] and 3.4.6.16.(5)(g) [maglock], Subclause 3.4.6.16.(5)(I)(ii) [maglock], Clause 3.4.6.16.(6)(d) ["Exit Unlocked by Fire Alarm"], Sentence 3.4.6.18.(3) [crossovers], Clause 3.4.6.18.(4)(a)[locked doors preventing entry from an exit stair] and Articles 3.4.6.19.[floor numbering] and 3.8.3.1 [Accessibility signs]).

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Accessibility Signs (OBC 2015 vs Compendium 2024)

3.8.3.1 Accessibility Signs

- Relates to barrier-free buildings
- A lot of new wording
- Refers to CSA B651 "Accessible Design for the Built Environment" which is very specific about positioning, character size, colours, etc. (up to lighting people to comply)

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Building Code: NBC 2015/OBC 2012
section 3.2.4. Fire Alarm and Detection Systems

Translation: FAS needed if over 8 sprinkler heads and not a small family dwelling

3.2.4. Fire Alarm and Detection Systems
(See Note A-3.2.4.)

3.2.4.1. Determination of Requirement for a Fire Alarm System

1) [NBC only! "Reserved" in Ontario] Except as permitted in Sentences (2) and (3), a fire alarm system shall be installed in *buildings* in which an automatic sprinkler system is installed.

2) [NBC only!] *Buildings* in which a sprinkler system is installed in accordance with NFPA 13D, "Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes," need not comply with Sentence (1).

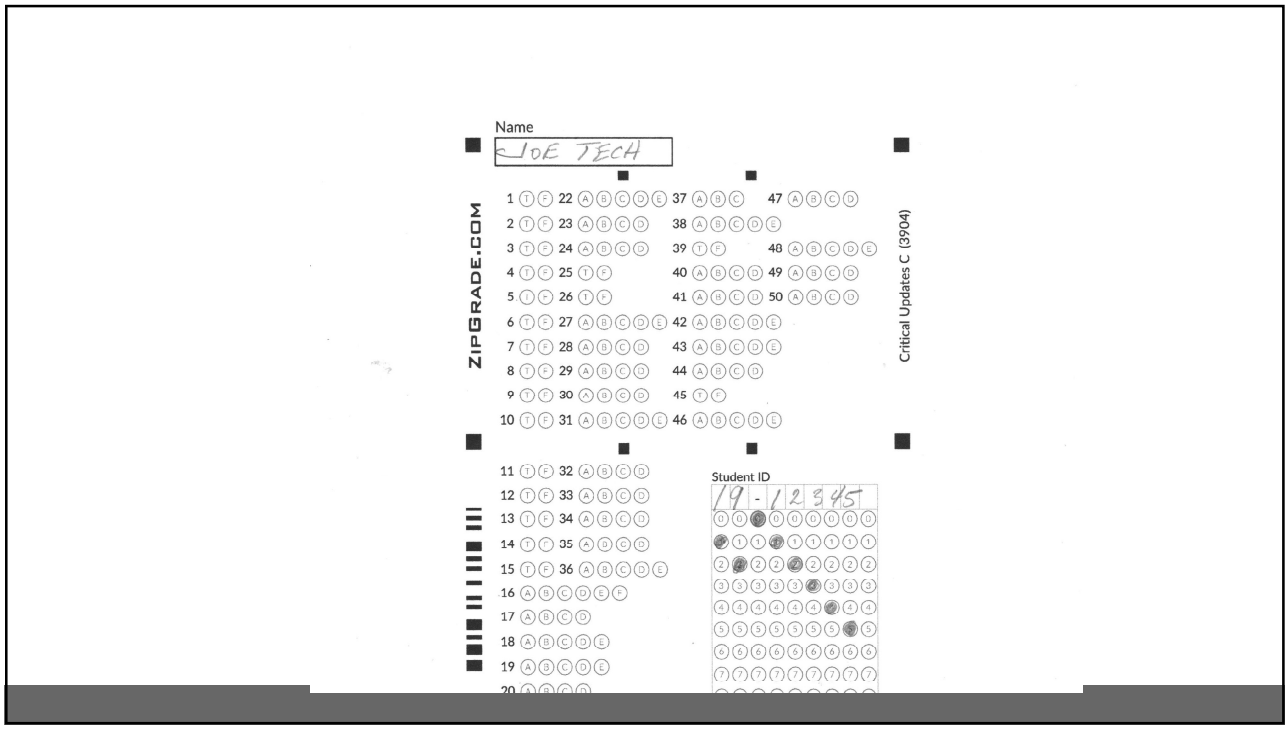
3) [NBC only!]*Buildings* that contain fewer than 9 sprinklers conforming to Sentence 3.2.5.12.(4) need not comply with Sentence (1).

Knowledge Review Time

Attendance = Four (4) Category 2 Continuing Education Credits

Attendance plus successful completion of the knowledge review = Eight (8) Category 1 Continuing Education Credits

Knowledge Review is sixty (60) multiple choice and true/false questions. 70% or greater is required for successful completion.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