District of Sooke

January 16, 2020

Construction Industry, Designers, Contractors and Suppliers providing services in Sooke

Advisory #7– Interconnection of Smoke Alarms in Dwelling Units and between Dwelling Units and Secondary Suites

The British Columbia Building Code 2018, (BCBC) which is adopted in Sooke, by the District of Sooke Building Bylaw, contains several provisions that apply to installation and interconnection of Smoke Alarms in dwelling units and between dwelling units and secondary suites, which are regulated under Part 9 of the 2018 BCBC. We are alerting you to the need for building owners, as well as their designers, builders and material suppliers on their behalf, to comply with the requirements of the 2018 BCBC regarding the installation and interconnection of Smoke Alarms in dwelling units and between dwelling units and secondary suites is to be taken into account when designing, constructing and renovating these dwelling units with secondary suites.

This enclosed Advisory #7 includes a summary of the significant 2018 BCBC provisions and a brief description of an alternative method of the interconnection of Smoke Alarms in dwelling units and between dwelling units and secondary suites.

We hope that this advisory will help eliminate confusion regarding an alternative method of installing and interconnecting Smoke Alarms between a dwelling unit and a secondary suite and will encourage uniform application of the 2018 BCBC requirements. Please feel free to make copies of this advisory available to your customers as you see fit. Your assistance in achieving these goals will be greatly appreciated.

The BC Building, Plumbing and Fire Codes are available to read online at:
https://www.bcpublications.ca/BCPublications/

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Compliance with the Building Bylaw are addressed in this advisory. The British Columbia Building Code 2018, (BCBC) which is adopted in Sooke, by the District of Sooke Building Bylaw.
Words in *italics* are defined in the 2018 BCBC.

Note: This advisory applies to the requirements of the 2018 BCBC regarding the installation and interconnection of Smoke Alarms in dwelling units and between dwelling units and secondary suites:

2018 BCBC - Division B

9.10.19.1. Required Smoke Alarms

1) Except as permitted by Article 9.10.19.8., smoke alarms conforming to CAN/ULC-S531, "Standard for Smoke Alarms," shall be installed in
a) each dwelling unit, and
b) each sleeping room not within a dwelling unit

9.10.19.3. Location of Smoke Alarms

1) Within dwelling units, sufficient smoke alarms shall be installed so that
a) there is at least one smoke alarm installed on each storey, including basements, and
b) on any storey of a dwelling unit containing sleeping rooms, a smoke alarm is installed
   i) in each sleeping room, and
   ii) in a location between the sleeping rooms and the remainder of the storey, and if the sleeping rooms are served by a hallway, the smoke alarm shall be located in the hallway.

(See Note A-9.10.19.3.(1).)

A-9.10.19.3.(1) Location of Smoke Alarms. There are two important points to bear in mind when considering where to locate smoke alarms in dwelling units:
• The most frequent point of origin for fires in dwelling units is the living area.
• The main concern in locating smoke alarms is to provide warning to people asleep in bedrooms.
A smoke alarm located in the living area and wired so as to sound another smoke alarm located near the bedrooms is the ideal solution. However, it is difficult to define exactly what is meant by "living area." It is felt to be too stringent to require a smoke alarm in every part of a dwelling unit that could conceivably be considered a "living area" (living room, family room, study,etc.). Sentence9.10.19.3.(1) addresses these issues by requiring at least one smoke alarm on every storey containing a sleeping room. Thus,in a dwelling unit complying with Sentence9.10.19.3.(1), every living area will probably be located within a reasonable distance of a smoke alarm. Nevertheless, where a choice arises as to where on a storey to locate the required smoke alarm or alarms, one should be located as close as possible to a living area, provided the requirements related to proximity to bedrooms are also satisfied.
A smoke alarm is not required on each level in a split-level dwelling unit as each level does not count as a separate storey. Determine the number of storeys in a split-level dwelling unit and which levels are part of which storey as follows:
1. establish grade, which is the lowest of the average levels of finished ground adjoining each exterior wall of a building;
2. identify the first storey, which is the uppermost storey having its floor level not more than 2m above grade;
3. identify the basement, which is the storey or storeys located below the first storey;
4. identify the second storey and, where applicable, the third storey.
As a minimum, one smoke alarm is required to be installed in each storey, preferably on the upper level of each one. As noted above, however, when the dwelling unit contains more than one sleeping area, an alarm must be installed to serve each area. Where the sleeping areas are on two levels of a single storey in a split-level dwelling unit, an additional smoke alarm must be installed so that both areas are protected. See Figure A-9.10.19.3.(1).

2) A smoke alarm required by Sentence (1) shall be installed in conformance with CAN/ULC-S553, "Installation of Smoke Alarms."

3) Smoke alarms required in Article 9.10.19.1. and Sentence (1) shall be installed on or near the ceiling.

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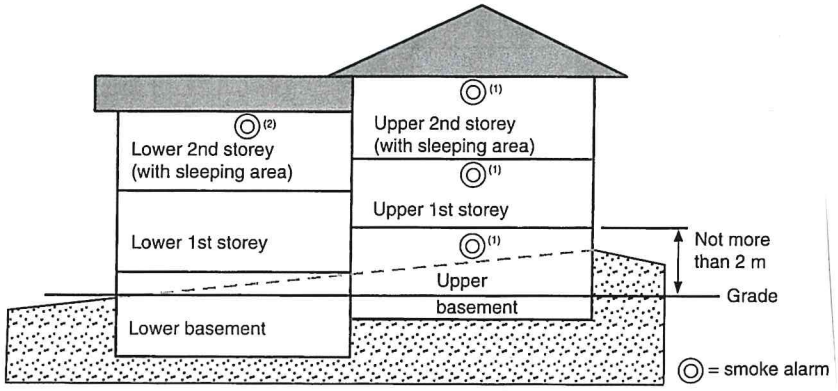

Figure A-9.10.19.3.(1) Two-storey split-level building

Notes to FigureA-9.10.19.3.(1):

(1) One smoke alarm required for each of the basement, first storey and second storey.
(2) An additional smoke alarm is required on the lower level of the second storey outside the sleeping rooms.

9.10.19.4. Power Supply

1) Except as provided in Sentences (2) and (3), smoke alarms described in Sentence 9.10.19.1.(1) shall

a) be installed with permanent connections to an electrical circuit (see Note A-3.2.4.20.(7)(a)),

A-3.2.4.20.(7)(a) Smoke Alarm Installation. CSA C22.1, "Canadian Electrical Code, Partl," which is adopted by the Electrical Safety Regulation, permits a smoke alarm to be installed on most residential circuits that carry lighting outlets and receptacles. It is the intent of the British Columbia Building Code that any other item on a circuit with a smoke alarm should be unlikely to be overloaded and trip the breaker with a resultant loss of power that is not sufficiently annoying for the breaker to be restored to the on position. It is considered that an interior bathroom light or a kitchen light fulfills this intent, but that circuits restricted to receptacles do not fulfill this intent.

b) have no disconnect switch between the overcurrent device and the smoke alarm, and
c) in case the regular power supply to the smoke alarm is interrupted, be provided with a battery as an alternative power source that can continue to provide power to the smoke alarm for a period of no less than 7 days in the normal condition, followed by 4 minutes of alarm.

2) Where the building is not supplied with electrical power, smoke alarms are permitted to be battery-operated.

3) Suites of residential occupancy are permitted to be equipped with smoke detectors in lieu of smoke alarms, provided the smoke detectors
a) are capable of independently sounding audible signals within the individual suites,
b) except as permitted in Sentence (4), are installed in conformance with CAN/ULC-S524, "Installation of Fire Alarm Systems," and
c) form part of the fire alarm system.
(See Note A-3.2.4.20.(8)

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A-3.2.4.20.(8) Smoke Detectors in lieu of Smoke Alarms. It is intended that the smoke detector in this application will function as per the requirements of a smoke alarm; specifically, it will be a localized alarm to that suite. The advantage of this type of installation is that the detector would be monitored by the fire alarm panel, which would provide notification to supervisory personnel and be inspected as per CAN/ULC-S524, "Installation of Fire Alarm Systems."

4) Smoke detectors permitted to be installed in lieu of smoke alarms as stated in Sentence (3) are permitted to sound localized alarms within individual suites, and need not sound an alarm throughout the rest of the building.

9.10.19.5. Interconnection of Smoke Alarms
1) Where more than one smoke alarm is required in a dwelling unit, the smoke alarms shall be wired so that the activation of one alarm will cause all alarms within the dwelling unit to sound.

9.10.19.6. Silencing of Smoke Alarms
1) Except as permitted in Sentence (2), a manually operated device shall be incorporated within the circuitry of a smoke alarm installed in a dwelling unit so that the signal emitted by the smoke alarm can be silenced for a period of not more than 10 min, after which the smoke alarm will reset and sound again if the level of smoke in the vicinity is sufficient to re-actuate it.

2) Suites of residential occupancy equipped with smoke detectors installed to CAN/ULC-S524, "Installation of Fire Alarm Systems," which are part of the fire alarm system in lieu of smoke alarms as permitted in Sentence 9.10.19.4.(3), need not incorporate the manually operated device required in Sentence (1).

9.10.19.7. Instructions for Maintenance and Care
1) Where instructions are necessary to describe the maintenance and care required for smoke alarms to ensure continuing satisfactory performance, they shall be posted in a location where they will be readily available to the occupants for reference.

9.10.19.8. Residential Fire Warning Systems
1) Except where a fire alarm system is installed or required in a building, smoke detectors forming part of a residential fire warning system installed in conformance with CAN/ULC-S540, "Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance," are permitted to be installed in lieu of all smoke alarms required by Articles 9.10.19.1. and 9.10.19.3., provided that the fire warning system
a) is capable of sounding audible signals as stated in Articles 9.10.19.2. and 9.10.19.5.,
b) is powered as stated in Article 9.10.19.4., and
c) is equipped with a silencing device as stated in Article 9.10.19.6.

9.37.2.19. Smoke Alarms (See Note A-9.37.2.19.)
A-9.37.2.19. Smoke Alarms. This Article requires an interconnected photoelectric smoke alarm in each suite where fire separations having a fire-resistance rating of 30 min are used. The purpose of these interconnected alarms is to provide early warning to both suites in the event of a fire in one suite. Photoelectric type alarms are required as they are less prone to nuisance false alarms such as can occur during cooking, but careful consideration is still required as to their location.

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It is important to note that these alarms are additional to the requirements of Subsection 9.10.19. and that each suite is still required to be provided with alarms in conformance with Subsection 9.10.19.

The additional smoke alarm should not be interconnected to the other smoke alarm(s) located within the same suite.

This additional smoke alarm system is not required when the fire-resistance ratings required in Articles 9.10.9.14. and 9.10.9.15. are not reduced, or when the building is sprinklered.

1) Except as permitted by Sentence (3), an additional smoke alarm of photo-electric type conforming to CAN/ULC-S531, "Standard for Smoke Alarms," shall be installed in each suite.

2) Smoke alarms required in Sentence (1) shall be wired so that the activation of the additional alarm in one suite will cause the additional alarm in the other suite to sound.

3) An additional interconnected smoke alarm is not required to be installed in each suite provided
a) the fire separations required in Articles 9.37.2.15. and 9.37.2.16. have a fire-resistance rating of 45 min or greater, or
b) the building is sprinklered.

Interconnected: Installed to operate in combination with other Smoke Alarms to provide common signaling on all Smoke Alarms such that the activation of one Smoke Alarm will cause all connected Smoke Alarms to sound. (CAN/ULC-S553 "Installation of Smoke Alarms")

Wireless technology is permitted to be used to Interconnect Smoke Alarms within dwelling units

The 2018 BCBC requires that smoke alarms within dwellings be connected to the electrical system within dwelling unit with no override between the Smoke Alarm and the overcurrent device and be interconnected by way of a physical connection with each other or they may now relay on wireless technology for the interconnection.

Wireless technology is required to be used by the Canadian Electrical Code to interconnect photo-electric type Smoke Alarms between dwelling units and secondary suites

The 2018 BCBC requires that a photo-electric type Smoke Alarm be installed and connected to the electrical system within a dwelling unit with a secondary suite with no override between the Smoke Alarm and the overcurrent device. Additionally, the 2018 BCBC also requires that a photo-electric type Smoke Alarm be installed and connected to the electrical system within the secondary suite with no override between the Smoke Alarm and the overcurrent device.

These photo-electric type Smoke Alarm are not permitted to be interconnected by way of a physical connection with each other by the Canadian Electrical Code, as this would create a safety hazard. Therefore, these photo-electric type Smoke Alarms shall relay on the new wireless technology for the interconnection of these photo-electric type Smoke Alarms.