District of Sooke

January 22, 2020

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

Advisory #8

Adequate Water Supply for Fire Suppression and Fire Protection requirements for Firefighting Purposes of Buildings and for Buildings within the Interface Zone

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 providing adequate water supply for fire suppression and fire protection requirements for firefighting purposes of Buildings and for Buildings within the Interface Zone. 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.

This enclosed Advisory #8 includes a summary of the significant 2018 BCBC provisions that apply to providing adequate water supply for fire suppression and fire protection requirements for firefighting purposes.

We hope that this advisory will help eliminate confusion regarding the Intent of what is required and how an adequate water supply for firefighting purposes of Buildings and for Buildings within the Interface Zone 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/

Stan Dueck CRBO
Chief Building Official
Building Safety
District of Sooke
Phone: (250) 642-1634

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

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 Intent of what is required and how an adequate water supply for firefighting purposes of Buildings and for Buildings within the Interface Zone:

Adequate W ater Supply for Firefighting Purposes of Buildings

2018 BCBC - Division B

Buildings regulated by 1.3.3.2. of Division "A" of the 2018 BCBC:

1.3.3.2. Application of Parts 3, 4, 5 and 6

1) Parts 3, 4, 5, and 6 of Division B apply to all buildings described in Article1.1.1.1. and

a) classified as post-disaster buildings,

b) used for major occupancies classified as

i) Group A, assembly occupancies,

ii) Group B, care, treatment or detention occupancies, or

iii) Group F, Division1, high-hazard industrial occupancies, or

c) exceeding 600m2 in building area or exceeding 3 storeys in building height used for major occupancies classified as

i) Group C, residential occupancies,

ii) Group D, business and personal services occupancies,

iii) Group E, mercantile occupancies, or

iv) Group F, Divisions 2 and 3, medium- and low-hazard industrial occupancies.

3.2.5.7. Water Supply (See Note A-3.2.5.7.(1).)

1) Every building shall be provided with an adequate water supply for firefighting.

A-3.2.5.7.(1) Water Supply.

The intent of Sentence3.2.5.7.(1) is that an adequate water supply for firefighting be readily available and of sufficient volume and pressure to enable emergency response personnel to control fire growth so as to **enable the safe evacuation of occupants and the conduct of search and rescue operations**, prevent the fire from spreading to adjacent buildings, and provide a limited measure of property protection.

The water supply requirements for buildings containing internal fire suppression systems, including sprinkler systems and standpipe systems, are contained in specific standards referenced in the Code. Compliance with the referenced standard, including any variations made by this Code, is deemed to satisfy the intent of Sentence3.2.5.7.(1). However, it will be necessary to verify that an adequate source of water is available at the building site to meet the required quantities and pressures.

For a building with no internal fire suppression system, the determination of the minimum requirements applicable to the water supply for firefighting is relevant mainly to building sites not serviced by municipal water supply systems. For building sites serviced by municipal water supply systems, where the water supply duration is not a concern, water supply flow rates at minimum pressures is the main focus of this provision. **However, where municipal water supply capacities are limited, it may be necessary for buildings to have supplemental water supplies readily available on site**.

The sources of water supply for firefighting purposes may be natural or developed. Natural sources may include ponds, lakes, rivers, streams, bays, creeks, and springs. Developed sources may include aboveground tanks, elevated gravity tanks, cisterns, swimming pools, wells, reservoirs, aqueducts, artesian wells, tankers, hydrants served by a public or private water system, dry hydrants, or wall hydrants that are connected to water storage tanks that serve a sprinkler or standpipe system and canals. Consideration should be given to ensuring that water sources will be accessible to fire department equipment under all climatic conditions in all seasons.

District of Sooke

Building Safety – Advisory #8

January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

The volume of on-site water supply is dependent on the building size, construction, occupancy, exposure and environmental impact potential, and should be sufficient to allow at least 30 minutes of fire department hose stream use.

For the purposes of calculating adequate water supply requirements for firefighting, the following documents may be useful:
- Insurance Services Office (ISO), "Needed Fire Flow Guide,"
- NFPA 1142, "Standard on Water Supplies for Suburban and Rural Fire Fighting," and
- American Water Works Association, "Distribution Requirements for Fire Protection."

2) Buildings that are sprinklered throughout with a sprinkler system conforming to Article 3.2.5.12. or have a standpipe system conforming to Article 3.2.5.8. to 3.2.5.10. are deemed to comply with Sentence (1).

The Intent of this Article is: To limit the probability that firefighting operations will be ineffective, which could lead to a fire not being suppressed or controlled, which could lead to the spread of fire, which could lead to harm to persons.

A Functional Statement of this Article: The objectives of the BCBC are achieved by measures, such as those described in the acceptable solutions in Division B, that are intended to allow the building or its elements to perform the following functions. **F02** To limit the severity and effects of fire or explosions.

An Objective of this Article: OS1 Fire Safety: An objective of this Code is to limit the probability that, as a result of the design or construction of the building, a person in or adjacent to the building will be exposed to an unacceptable risk of injury due to fire.

Firefighting Assumptions The requirements of this Part are based on the assumption that firefighting capabilities are available in the event of a fire emergency. These firefighting capabilities may take the form of a paid or volunteer public fire department or in some cases a private fire brigade. If these firefighting capabilities are not available, **additional fire safety measures may be required**.

Firefighting capability can vary from municipality to municipality. Generally, larger municipalities have greater firefighting capability than smaller ones. Similarly, older, well established municipalities may have better firefighting facilities than newly formed or rapidly growing ones. The level of municipal fire protection considered to be adequate will normally depend on both the size of the municipality (i.e., the number of buildings to be protected) and the size of buildings within that municipality. Since larger buildings tend to be located in larger municipalities, they are generally, but not always, favoured with a higher level of municipal protection.

Although it is reasonable to consider that some level of municipal firefighting capability was assumed in developing the fire safety provisions in Part 3, this was not done on a consistent or defined basis. The requirements in the Code, while developed in the light of commonly prevailing municipal fire protection levels, do not attempt to relate the size of building to the level of municipal protection. **The responsibility for controlling the maximum size of building to be permitted in a municipality in relation to local firefighting capability rests with the municipality**.

If a proposed building is too large, either in terms of floor area or building height, to receive reasonable protection from the municipal fire department, fire protection requirements in addition to those prescribed in this Code, **may be necessary to compensate for this deficiency. Automatic sprinkler protection may be one option to be considered**.

Alternatively, the municipality may, in light of its firefighting capability, elect to introduce zoning restrictions to ensure that the maximum building size is related to available municipal fire protection facilities. This is, by necessity, a somewhat arbitrary decision and should be made in consultation with the local firefighting service, who should have an appreciation of their capability to fight fires.

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

The requirements of Subsection 3.2.3. are intended to prevent fire spread from thermal radiation assuming there is adequate firefighting available. It has been found that periods of from 10 to 30 minutes usually elapse between the outbreak of fire in a building that is not protected with an automatic sprinkler system and the attainment of high radiation levels. During this period, the specified spatial separations should prove adequate to inhibit ignition of an exposed building face or the interior of an adjacent building by radiation. Subsequently, however, reduction of the fire intensity by firefighting and the protective wetting of the exposed building face will often be necessary as supplementary measures to inhibit fire spread.

In the case of a building that is sprinklered throughout, the automatic sprinkler system should control the fire to an extent that radiation to neighbouring buildings should be minimal. Although there will be some radiation effect on a sprinklered building from a fire in a neighbouring building, the internal sprinkler system should control any **fires that might be ignited in the building and thereby minimize the possibility of the fire spreading into the exposed building. NFPA 80A, "Protection of Buildings from Exterior Fire Exposures," provides additional information on the possibility of fire spread at building exteriors**.

The water supply requirements for fire protection installations depend on the requirements of any automatic sprinkler installations and also on the number of fire streams that may be needed at any fire, having regard to the length of time the streams will have to be used. Both these factors are largely influenced by the conditions at the building to be equipped, and the quantity and pressure of water needed for the protection of both the interior and exterior of the building must be ascertained before the water supply is decided upon. **Acceptable water supplies may be a public waterworks system that has adequate pressure and discharge capacity, automatic fire pumps, pressure tanks, manually controlled fire pumps in combination with pressure tanks, gravity tanks, and manually controlled fire pumps operated by remote control devices at each hose station.**

9.10.21.9. Hose Stations

1) Every construction camp building providing sleeping accommodation for more than 30 persons shall be provided with a hose station that is protected from freezing and is equipped with a hose of sufficient length so that every portion of the building is within reach of a hose stream.

2) Hose stations required in Sentence (1) shall be located near an exit.

3) Hoses referred to in Sentence (1) shall be not less than 19 mm (**38 mm required by CAN/UL-2600 Standard for Safety of Relocatable Buildings, inserted below**) inside diam and shall be connected to a central water supply or to a storage tank having a capacity of not less than 4 500 L with a pumping system capable of supplying a flow of not less than 5 L/s at a gauge pressure of 300 kPa.

CAN/UL-2600 Standard for Safety of Relocatable Buildings

14.1.1 Required Hose Stations

14.1.1.1 For the purpose of 14.1, an aggregate of relocatable buildings shall be considered as being a group of buildings that:

a) function as one unit and are not more than 10 m from each other, or

b) are physically connected to each other by corridors, walkways or other facilities through which fire or smoke could spread.

14.1.1.2 If a relocatable building or aggregate of buildings contains sleeping rooms designed to serve 30 or more persons, each building that is not sprinklered shall be provided with hose stations conforming to 14.1.2 and 14.1.3.

14.1.2 Location and Number of Hose Stations

14.1.2.1 Hose stations shall be located where they are protected from freezing.

14.1.2.2 Not less than one hose station shall be installed not more than 5 m from an exit.

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

14.1.2.3 A sufficient number of additional hose stations shall be provided so that all parts of the relocatable building can be reached by a water stream from a hose described in 14.1.3.2.

14.1.2.4 In determining the location of a hose cabinet, allowance for spray shall be made only from the door of a sleeping room to the back corner of the sleeping room.

14.1.3 Hoses and Nozzles
14.1.3.1 A hose shall be equipped with a nozzle that is adjustable from fog to a straight stream.

14.1.3.2 Hoses shall be not less than 38 mm diam. and not more than 30 m in length.

14.1.4 Water Supply
14.1.4.1 Where hose stations are installed:
a) the minimum residual pressure at the hydraulically most remote hose station shall be 300 kPa, with a flow rate not less than 5 L/s;
b) a firefighting water supply of not less than 13.5 m^3 for each relocatable building shall be supplied, but the total water supply at one site need not be more than 27 m^3;

c) the firefighting water system is permitted to be combined with the domestic system, however the water storage required for firefighting shall not be depleted by the domestic system; and

d) where the firefighting water system is combined with the domestic water system, it shall be separated as required by the NPC.

14.2 Sprinkler System
14.2.1 If a sprinkler system is installed, it shall be designed in conformance with NFPA 13, Installation of Sprinkler Systems, or NFPA 13R, Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, as applicable.

The requirements of the BCBC regarding the Intent of Sentence 3.2.5.7.(1) of Division "B" of what is required and how an adequate water supply for firefighting is to be provided for those buildings described in Sentence 1.3.3.2. of Division "A" of the BCBC regulated by Part 3 of Division "B" by the Authority Having Jurisdiction are as follows:

1) Every *building* shall be provided with an adequate water supply for firefighting.

2) Buildings that are sprinklered throughout with a sprinkler system conforming to Article 3.2.5.12. or have a standpipe system conforming to Article 3.2.5.8. to 3.2.5.11. and **where there is no municipal water supply system, and also has an exterior wall hydrant installed in compliance with NFPA 22 - "Water Tanks for Private Fire Protection", that are connected to the water storage tank(s)**, are deemed to comply with Sentence (1)

3) **Where there is a municipal water supply system** a hydrant shall be located within 90 m horizontally of any portion of a *building* perimeter that is required to face a street in Subsection 3.2.2.

4) Except as provided in Sentences (7) to (9), and except for a *building* that is:
a) not more than 3 *storeys* in *building height,*
b) not more than 600 m2 in total *building area,*
c) no portion of the access route shall be more than 9 m below the uppermost floor level,

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

d) the *building* does not contain a school, or a Group "B" *Occupancy*
e) the limiting distance from the property line is at least 15 m if the *building* contains a high hazard industrial *occupancy,*
f) the *building* constitutes no significant environmental contamination potential due to fire, and
g) the building is not within the Interface Zone.

5) A *building* shall have water available for firefighting purposes that is provided by a:
a) piped municipal water supply capable of being delivered at a
ii) rate of not less than 3 800 L/min, and
iii) residual pressure of not less than 140 kPa, or
b) an onsite private water supply that is not less than the quantity derived from the following formula:

$$Q=V \times O \times S$$

Where:
Q = minimum water supply (litres),
V = total *building* volume (cubic metres),
0 = water supply coefficient (from Water Supply Coefficient Table),
S = spatial coefficient whose value is 1.5 for a *building* that has a limiting distance less than 7.5 m, otherwise whose value is 1.0.

Water Supply Coefficient Table

Type of Construction	Classification by Group and Division in Accordance with Table 3.1.2.1.				
	A-1, A-3, F-3	A-2, B-1, B-2, B-3, C, D	A-4	E, F-2	F-1
	Applicable Water Supply Coefficient				
A *building* of *noncombustible construction* with all *loadbearing* walls, columns and arches, having a *fire-resistance rating* at least equivalent to that required for the supported assembly, but not less than 45 min.	11	10	14	17	23
A *building* of noncombustible *construction* in accordance with Article 3.1.5.1.	17	15	20	25	34
A *building* having all structural members of *noncombustible* material, or if of *combustible* material, a *fire-resistance rating* of at least 45 min, or of heavy timber construction	22	19	27	34	45
A *building* of combustible construction.	34	27	40	50	67

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

6) The private water supply referred to in Clause 5 (b) shall be:
a) capable of being delivered at a rate of not less than
- i) 2 700 L/min for a *building* required to have a quantity less than 75 000 L,
- ii) 3 800 L/min for a *building* requiring a quantity of 75 000 L and greater, and

b) provided with a
- i) dry hydrant conforming to Chapter 8 of NFPA 1142, "Water Supplies for Suburban Rural Fire Fighting," or
- ii) pressurized hydrant conforming to the requirements of NFPA 24, "Installation of Private Fire Service Mains and their Appurtenances".

7) Capacity requirements under Sentence (5) do not apply to a *building* having a standpipe system conforming to the requirements of NFPA 14, "Installation of Standpipe and Hose Systems" and **where there is no municipal water supply system they shall have an exterior wall hydrant installed in compliance with NFPA 22 - "Water Tanks for Private Fire Protection", that is connected to the water storage tank(s).**

8) Capacity requirements under Sentence (5) do not apply to a *building* that is *sprinklered* in conformance with:
a) NFPA 13, "Installation of Sprinkler Systems," or
b) NFPA 13R, "Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height" and,
c) **where there is no municipal water supply system, they have an exterior wall hydrant installed in compliance with NFPA 22- "Water Tanks for Private Fire Protection", that is connected to the water storage tank(s).**

9) Sentence (5) does not apply to a *building* classified as a *medium-hazard industrial occupancy* or *low hazard industrial occupancy,* provided:
a) the *building* is
- i) not more than 1 *storey* in *building height*
- ii) not more than 900 m2 in total *building area* for a *medium-hazard occupancy building,*
- iii) not more than 1200 m2 in total *building area* for a *low-hazard industrial occupancy building,*
- iv) of noncombustible construction,
- v) not intended for the manufacture or storage of *combustible* materials and does not contain a *mercantile occupancy,* and
- vi) the building is not within the Interface Zone.

b) any *business and personal services* occupancy contained within the *building* occupies not more than 10% of the *building area,*
c) a single stage fire alarm system is installed in the *building* in accordance with Subsection 3.2.4., and additionally,
- i) the fire alarm system is provided with an alarm bell on the exterior of the *building*, and
- ii) the fire alarm system is designed to notify the fire department, in conformance with Sentence 3.2.4.7.(4), that an *alarm signal* has been initiated, or

Advisory #8 - Adequate Water Supply for Firefighting Purposes

iii) in a remote area (i.e. mining camp, oil camp, gas camp, etc. and the camp is in compliance with the Standard CAN/UL 2600 - "For Safety of Relocatable Buildings") the fire alarm system is designed to notify the onsite fire brigade, that an *alarm signal* has been initiated, and

iv) the owner provides evidence of compliance to the above notification requirements to the *authority having jurisdiction,*

d) the *floor area* of the *building* is "*primarily open space"* with minimal subdivision into smaller rooms or spaces,

Definition: ***primarily open space***; means that the percentage of open space is not less than 90% of the floor area.

e) the Group "D" *occupancy* is permitted to exceed 10% of the *building area* and the "*primarily open space*" is permitted to be less than 90% of the floor area if these subdivided rooms or spaces are *fire-separated* with *noncombustible construction*, a 2-hour *fire-resistance rated* wall and at least one exterior *exit* door is provided from each of these rooms or spaces,

f) the travel distance to an *exit* does not exceed 25 m,

g) portable fire extinguishers are installed in accordance with NFPA 10, "Portable Fire Extinguishers,"

i) the permitted area for each extinguisher is one half that permitted in the standard,

ii) the capacity of each extinguisher is double that required by the standard, or

iii) an equivalent combination of Subclauses (f)(i) and (f)(ii) is used, and

h) the highest point of the *building* is not more than 10 m above grade.

10) The volume of on-site water supply is dependent on; the *building* size, construction, *occupancy,* exposure, whether the building is located within the Interface Zone and environmental impact potential and should be sufficient to allow at least 30 minutes of fire department hose stream use.

11) For the purposes of calculating adequate water supply requirements for firefighting, the following documents may also be useful:

a) Insurance Services Office (ISO), "Needed Fire Flow Guide",

b) NFPA 1142, "Standard on Water Supplies for Suburban and Rural Fire Fighting",

c) American Water Works Association, "Distribution Requirements for Fire Protection", and

d) Fire Underwriters Survey, "Water Supply for Public Fire Protection – 1999 Edition".

Adequate W ater Supply for Firefighting Purposes for Buildings within the Interface Zone

Fire resilient community planning, building design, and materials in the wildland urban interface (WUI) zones that are not served by the Capital Regional Districts (CRD) water distribution system, are of critical importance. These WUI areas may experience slower fire protection response times and the fire department may be called upon to respond in extreme weather conditions.

Accidental wildfires are a significant threat that is compounded by climate change. Over the past 40 years, fire suppression practices, increasing annual temperatures, dry conditions, and the expansion of communities that interface or intermix with vegetated or wooded areas have created heightened circumstances of wildfire activity.

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

Other weather events and natural disasters, such as severe lightning, ice storms or high winds can also increase the risk of fire activity by adding to fuel sources, encouraging the spread of fire, or creating power outages.

The impacts of wildfire events on critical infrastructure, services, and supplies can be profound, dangerous, and costly.

The requirements of CSA-S504 "Fire Resilient Planning for Northern Communities" applies to the fire resilient wildland urban interface (WUI) zones that are not served by the Capital Regional Districts (CRD) water distribution system. Where contradicting standards occur, the more fire resilient requirement should take precedence, as determined by the appropriate authority having jurisdiction.

Definition: **Wildland urban interface** (WUI) — any developed area where conditions affecting the combustibility of both wildland and built fuels create the potential for ignition and spread of fire through the combined fuel complex.

Interface zone — Structure ignition zone
Two of the four zones within the structure ignition zone are identified as follows:
a) Non-combustible zone: Area from the exposed building face extending to 1.5 m. This zone is typically the responsibility of the home/property owner.
b) Priority zone 1: Area from 1.5 m extending to 10 m. This zone is typically the responsibility of the home/property owner.

Note: *Both the non-combustible zone and zone 1 require adequate clearing of wildland and built fuel sources from the exposed face of the building extending to 10 m.*

As water is the primary source for suppressing wildfires, natural water bodies, hard piped water infrastructure, water reservoirs, wells, and water storage tank volumes and flow rates shall be assessed for their usefulness in suppression of fires in the interface zone.

Dedicated water tank supply for sprinklered buildings with no community hard pipe water supply: Where a dedicated water supply for sprinklered buildings is not otherwise required by the *National Building Code of Canada* (NBC), or cannot meet these standards due to the rural or remote nature of the structure, NFPA 1142 should be used to specify the fire water supply required for a building type and occupancy.

Where standpipe and hydrant specifics are not otherwise required by the *National Fire Code of Canada* (NFC), NFPA 1141 should be used to specify standpipe and hydrant requirements.

Where there is no municipal water supply system, buildings that are sprinklered throughout with a sprinkler system or have a standpipe system conforming to the requirements of the NBC shall have an exterior wall hydrant installed in compliance with NFPA 22 that is connected to the water storage tank(s).

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

Storage of flammables and combustibles – the following best practices from FireSmart® and all other applicable CSA Standards should apply:
Solid fuel stoves and furnaces — All firewood should be stored a minimum distance of 10 m from all occupied structures.

Fuel jugs and small storage tanks such as camp stove propane should be stored in certified containers away from existing structures. Any fuel stored within structures should be of minimal quantity and restricted to outbuildings and the type of fuels being stored should be clearly marked on its exterior for the safety of emergency personnel such as fire fighters or aid workers.

This Standard is more restrictive than the BCBC in some instances with regards to the construction of the structure's building envelope. As the built environment continues to encroach deeper into wildland areas, a more disciplined approach to methods and materials of construction should be followed.

Specific requirements for ignition resistant structure Class 1, 2, and 3 can be found in NFPA 1144, Sections 5.3 to 5.9. Roofing, fascia, gutters and downspouts, eaves and soffits, vents, overhanging projections, exterior walls and openings, chimneys and flues, and accessory structures are elements of a building addressed in NFPA 1144 for which requirements might be more stringent than the BCBC.

All exterior building materials shall be of non-combustible construction – which means:
a) Roof surfaces shall be metal, clay-tile or asphalt. No wooden shakes or shingles permitted;

b) Soffits, gutters and downspouts, the following shall be considered for materials and installation of soffits;

- i) use perforated metal or non-combustible ventilated panel products;
- ii) where strip ventilation is used, install as close to the fascia as possible to prevent smoke and fire at the exterior walls directly into the attic space;
- iii) where strip ventilation is used, material should be of 3 mm non-combustible screen;
- iv) use metal fascia trim and drip edge;
- v) consider the use of hot roof construction (unventilated roof assemblies) in lieu of cold roof construction (ventilated attics);
- vi) gutters and downspouts shall be non-combustible; and
- vii) use fire rated roof vents.

c) Exterior claddings and wall assemblies shall be stucco, sheet metal, brick, concrete or cementitious board. No wood or vinyl siding and no foam insulated panels.

d) Combustible patios, decks and outbuildings:

Decks or balconies constructed above grade on posts or platforms are considered high risk for ignition during fire events.

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

Decks are predominantly constructed of wood or combustible materials such as composites and allow access by flames to the undersides. Once the decks ignite, flame will travel to the interface of the structure and ignite the structure.
What also should be considered in above grade decks is the accumulation of combustible debris, such as leaves and branches, which can be wind driven into areas against the structure under decks. Maintenance shall be carried out.

To reduce the ignition susceptibility of decks:
a) a non-combustible surface should be installed and maintained underneath the structure and extend 1.5 m beyond the perimeter of the structure. Additionally, the ingress of firebrands can be prevented by enclosing the space under the deck with 12 mm sheathing or alternatively 3 mm metal non-combustible mesh screen;
b) all decks that are on, or directly above slopes of 10% or greater shall be enclosed with 12 mm sheeting to prevent the incursion of radiant and convective heat from below;
c) decks with gaps or cracks in the deck surface shall have the deck joists capped with corrosion resistant, non-combustible material, or be constructed with non-combustible deck joists; and
d) the underside of decks and balconies are required to be sheathed as indicated above and no storage is permitted in these areas.

Attached or semi-detached storage, carport or garages:
Open carports allow fire direct access to the underside surface of a combustible structure. All combustible materials (such as firewood, liquid fuel containers, and combustible debris) shall be removed from the underside of carports to prevent the travel of fire.

Garages are typically used for storage more so than vehicle parking. It is not uncommon to find garages with materials stored inside, including combustible construction materials, varied liquid fuel containers (gas and diesel, propane), paints, and spirits. In many instances, garages can be considered extreme fire hazards, especially where a standalone heat source is used such as wood burning stoves or oil-fired or propane heaters.

Where garages are used for storage, the following should be considered:
a) Store combustible materials in tidy piles away from heat sources,
b) Remove excessive amounts of combustible debris,
c) Store liquid fuels in approved containers away from heat sources or in approved fireproof cabinets,
d) Store paints and spirits away from heat sources or in approved fireproof cabinets,
e) When liquid fuels are stored within the garage, exterior signage or safety notification should be used.

Building fire suppression systems:
Each building or structure may be required to be equipped with a fire sprinkler system designed, installed and certified by a qualified professional to the applicable Standard, NFPA 13, 13R or 13D, as per the National Fire Protection Association (NFPA) guidelines, depending on which Interface zone the building or structure is located within.

District of Sooke

Building Safety – Advisory #8 January 22, 2020

Advisory #8 - Adequate Water Supply for Firefighting Purposes

The following fire safety requirements shall be met prior to granting of an occupancy certificate for any building or structures on the land in an Interface Zone:

a) Each building envelope must be surrounded by a 10 metre fuel-free space;
- i) Combustible materials and debris (building materials or other stored items) shall be stored a minimum of 10 m from the structure on a regular basis to prevent excessive fuel load. Materials should be relocated to suitable waste containers or disposed of off-site,
- ii) Firewood shall not be stored directly adjacent to structures. Firewood shall be stored a minimum of 10 m from the structure or within an ember proof structure,
- iii) Propane and oil tanks should be clear of all vegetation to a minimum of 3 m and be located on a non-combustible surface that extends 1.5 m beyond the furthest extent of the tank,
- iv) Propane tanks should be located at least 10 m from structures.

b) If a fire sprinkler system was designed and installed it is required to be certified by a qualified professional to the applicable Standard, NFPA 13, 13R or 13D, as per the National Fire Protection Association guidelines;

c) Provisions of on-site water for firefighting purposes as per NFPA guidelines and the appropriate District of Sooke Subdivision and Development Servicing Bylaw requirements;

d) House numbering and access routes to all buildings and structures on the land shall meet the requirements of the BC Building and Fire Codes and all applicable District of Sooke requirements.

Below is a list of Standards Referenced in this Advisory #8:

CAN/UL 2600 – "For Safety of Relocatable Buildings",
CSA S504 – "Fire Resilient Planning for Northern Communities"
NFPA 10 – "Portable Fire Extinguishers",
NFPA 13 – "Standard for the Installation of Sprinkler Systems",
NFPA 13R – "Standard for the Installation of Sprinkler Systems in Residential Occupancies in up to and including Four Stories in Building Height",
NFPA 13D – "Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes"
NFPA 14 – "Standard for the Installation of Standpipe and Hose Systems",
NFPA 22 – "Water Tanks for Private Fire Protection",
NFPA 24 – "Installation of Private Fire Service Mains and their Appurtenances",
NFPA 80A – "Protection of Buildings from Exterior Fire Exposure",
NFPA 1141 – "Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas"
NFPA 1142 – "Water Supplies for Suburban and Rural Fire Fighting"
NFPA 1144 – "Standard for Reducing Structure Ignition Hazards from Wildland Fire"