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Commissioning Active and Passive Fire Protection Systems

[Owner Responsibilities](#)

BCBC 2.2.7.2

The owner shall retain a coordinating registered professional to coordinate all design work and field reviews of the project in order to ascertain that the design and construction of the project substantially complies with the British Columbia Building Code and other applicable enactments respecting safety.

If a building permit is required, deliver to the authority having jurisdiction letters in the forms set out in Schedules A and B.

If an occupancy permit or final inspection from an authority having jurisdiction is required before occupancy, the owner or coordinating registered professional shall deliver to that authority letters in the forms set out in Schedules C-A and C-B.

[Registered Professionals Responsibility](#)

BCBC 2.2.7.3. Registered Professional Responsibilities

A registered professional of record or coordinating registered professional who is responsible for a field review shall keep a record of the field review and of any corrective action taken. The record must be available to the authority having jurisdiction on request.

A registered professional of record must also provide to the authority having jurisdiction a letter in the form of Schedule C-B that the components of the project substantially comply with the plans and supporting documents and the requirements of the British Columbia Building Code.

FireWise has developed this document for the commissioning of active and passive fire protection and life safety systems and their interconnections with other building systems. It outlines a systematic approach to confirmation that fire protection and life safety systems function as intended for the commissioning of a BC Building Code Part 3 building.

The commissioning document for fire protection systems is part of a conglomeration of commissioning documents that could be used to create a total building commissioning program.

The document is designed to identify the commissioning team members, their qualifications, and their roles and responsibilities throughout the commissioning process.

For purposes of this document Commissioning means a process that provides documented confirmation that building systems function according to the intended design and satisfy the owner's operational needs, including compliance with applicable laws, regulations, codes, and standards.

Commissioning documents and forms must be used to record commissioning and testing of fire protection and life safety systems and be made available to the fire authority upon request. The commissioning records shall be given to and kept by the owner.

The owner or owner's designated representative shall designate the fire commissioning agent. For this project the commissioning agent is:

The commissioning agent is the person or entity identified by the owner who leads, plans, schedules, documents, and coordinates the fire protection and life safety systems commissioning team and implements the fire protection and life safety systems commissioning process.

Demonstration of the proper, integrated operation of the Fire and Life Safety Systems must be conducted prior to occupancy.

[Alternative Solutions](#)

The BC Building Code allows alternative solutions which are alternative ways to meet Building Code requirements. Documentation to demonstrate that the alternative solution achieves the level of performance required by the BCBC must be provided.

Inspection Requirements for the Verification of Fire Protection Systems.

Fire Protection System		Applicable Code	Verification Documents or Letter of Assurance (LoA)	Type	Visual Inspection Required	Notes
Integrated Life Safety Systems		BCBC 2.2.7.3	LoA			Demonstration of the proper, integrated operation of the Fire and Life Safety Systems must be conducted prior to occupancy.
Passive Fire Protection Systems						
Passive fire protection systems		BCBC NFPA 3	LoA		Y	Passive fire protection systems shall be inspected or tested for proper installation, including the following: (1) Conformance to approved drawings and specifications (2) Installation in accordance with manufacturers' published instructions (3) Compliance with applicable codes and standards
Fire Safety Plan		BCFC 2.8			Y Y Y Y	2.8.2.5 Fire safety plan must be kept in the building 2.8.2.6 Distribution - Fire safety plan given to all supervisory staff – training records available? 2.8.2.7. Emergency procedures posted in each floor area In case of fire Do Not Use Elevator, signs posted on each floor level
Fire Separation		BCBC 3.1.8.	LoA	Openings	Y Y Y Note	BCBC 3.1.8.1 <ul style="list-style-type: none"> • Openings in a fire separation shall be protected with closures • Concealed space located above a vertical fire separation, shall be fire separated • Smoke-tight joints required Visible area only

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Fire Separation			LoA		Y	BCBC 3.1.8.4 <ul style="list-style-type: none"> • Fire-protection rating of a closure shall be in accordance with CAN/ULC standards listed • Closure in a required fire separation shall be installed in conformance with NFPA 80, "Fire Doors and Other Opening Protectives."
			LoA		Y	BCFC 2.2.2.5 Every fire door in a required fire separation shall have a sign clearly displaying the words "FIRE DOOR KEEP CLOSED", posted on the visible side of the door when it is in the open. Exception: doors located between a corridor and an adjacent sleeping room in a hospital or a nursing home, a corridor and an adjacent classroom, a public corridor and a suite of Group C or D or fitted with an approved hold-open device.
			LoA		Y	BCBC 3.1.8.5 <ul style="list-style-type: none"> • smoke/fire damper used a required fire separation shall be installed in conformance with NFPA 105, • fire damper shall be installed in ducts or air-transfer openings that penetrate a fire separation in an A,B, or C occupancy (see fire dampers waved BCBC 3.1.8.8 & 9)
					Y	BCBC 3.1.8.10 <ul style="list-style-type: none"> • A fire damper shall close automatically upon the operation of a fusible link or other heat-actuated or smoke-actuated device.

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Fire Separation				Self closing device	Y	<p>BCBC 3.1.8.13</p> <ul style="list-style-type: none"> Every door in a fire separation, other than doors to freight elevators and dumbwaiters, shall be equipped with a self-closing device (Not required for classrooms, Group D, or patients sleeping rooms)
				Hold Open Device	Y	<p>BCBC 3.1.8.14 Hold open Device</p> <ul style="list-style-type: none"> hold-open device is permitted on a closure in a required fire separation other than in exit stairs and vestibules buildings more than 3 storeys Must release on activation of FAS
				Door latch	Y	<p>BCBC 3.1.8.15 Door Latches</p> <ul style="list-style-type: none"> Swing-type door in a fire separation shall be equipped with a positive latching mechanism
			LoA	Fire Stop	Y	<p>BCBC 3.1.9.1 Fire Stop</p> <ul style="list-style-type: none"> penetrations in a fire separation must be sealed by a fire stop that, meets CAN/ULC-S115, having an F rating
					Y	<p>BCBC 3.1.9.5</p> <p>Combustible sprinkler piping is permitted to penetrate a fire separation provided the fire compartments on each side of the fire separation are sprinklered. Combustible drain, waste, vacuum and vent piping is permitted to penetrate a fire separation</p>

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Fire Separation			LoA	Crawl Space	Y	BCBC 3.1.11.6 <ul style="list-style-type: none"> A crawl space without sprinklers shall be separated into compartments not more than 600 m² with no dimension more than 30 m. A crawl space shall have at least one access opening not less than 550 mm by 900 mm.
			LoA	Service Rooms	Y	BCBC 3.6.2 Service Rooms <ul style="list-style-type: none"> Fuel-fired appliances shall be installed in service room require a 1 hr fire separation except an appliance that serves only one room or suite is not required to be separated. A solid-fuel-burning appliance shall not be located in a repair or storage garage where it could be exposed to flammable vapours or gases unless by 1 h separation with combustion air directly from outside.
			LoA	Building Area Limits		BCBC 3.2.2.54 Group C, up to 3 Storeys, Sprinklered <ul style="list-style-type: none"> has a building area not more than 5 400 m² if 1 storey in building height permitted to be of combustible or non-combustible construction 45-minute rate floor assembly if more than 1 storey loadbearing walls, columns and arches shall have a fire-resistance rating not less than 45
Fire Department Access			LoA		Y	Confirm acceptable FD access

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Active Fire Protection Systems						
Active fire protection systems		BCBC and other related documents	LoA		Y	Active fire protection systems shall be inspected and tested for proper installation and operation including completion of acceptance testing and integrated systems testing in compliance with NFPA 4.
			LoA		Y	Documentation must be provided
Carbon Monoxide		BCBC	LoA			6.9.3 Applies to residential occupancy and care occupancies that have individual suites that have a fuel-burning appliance, or a storage garage
					Y	Carbon monoxide (CO) alarms shall: <ul style="list-style-type: none"> conform to CAN/CSA-6.19, be equipped with an integral alarm have no disconnect switch be fixed at the height above the floor recommended by the manufacturer inside each bedroom, or outside each bedroom, within 5 m
					Y	Where a fuel-burning appliance is installed in a service room that is not in a suite of residential or care occupancy it shall be installed <ul style="list-style-type: none"> either inside each bedroom, or in the service room outside each bedroom, within 5 m of each bedroom door, <p style="text-align: center;">May be combination Smoke & CO Alarms</p>

Fire Protection System		Applicable Code	Verification Documents or Letter of Assurance (LoA)	Type	Visual Inspection Required	Notes
Emergency lighting		Self contained CSA C22.2 No. 141, "Emergency Lighting Equipment."	LoA		Y Y Y Y Y	BCBC 3.2.7.3 Illumination not less than 10 lx at floor or tread level in: <ul style="list-style-type: none"> • exits and public corridors, • service rooms, • Group A Div 2 OL > 60, • kitchens, • washrooms
Emergency Power Supply Installation BCBC 3.2.7.5		CSA C282, "Emergency Electrical Power Supply for Buildings."	LoA LoA	Emergency power	Y	3.2.7.9. Emergency Power for Building Services An emergency power supply capable of operating under a full load for not less than 2 h shall be provided by an emergency generator for water supply for firefighting if the supply is dependent on electrical power supplied to the building, 3.2.6.8 Where a generator for emergency power for lighting, fire safety and life safety systems is located in a building, except where such building is used solely for the purpose of housing the generator it shall be located in a room that has 2 h separation and contains only the generating set and equipment related to the emergency power supply system.
Exit signs		BCBC 3.4.5	LoA	Exit signs	Y	3.4.5. Exit Signs Every exit door shall have an exit sign if the exit serves a) a building more than 2 storeys in building height, b) a building having an occupant load of more than 150, or c) has a fire escape Exit sign shall:

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Exit signs					Y Y Y Y Y	<ul style="list-style-type: none"> be visible on approach (requires reasonable judgement as to the number of directional signs because occupants know where they came in) consist of an approved green and white or lightly tinted graphical symbol Internally illuminated exit signs shall be continuously illuminated and CSA C22.2 No. 141, where illumination of the sign is not electrical circuit, conform to CAN/ULC-S572, "Photoluminescent and Self-Luminous Exit Signs The circuitry serving lighting for externally and internally illuminated exit signs shall serve no equipment other than emergency equipment
FDC		BCBC 3.2.5.15	LoA	FDC	Y Y Y	<p>Max distance from the hydrant or 45 metres unobstructed for standpipe or sprinkler systems</p> <ul style="list-style-type: none"> Accessible Signed Capped
Fire Alarm System BCBC 3.2.4.5		CAN/ULC-S524, "Installation of Fire Alarm Systems."	LoA LoA			<p>Verification LoA required for:</p> <ul style="list-style-type: none"> Central alarm reporting Audibility Voice communication Signal silence Emergency phone

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Electrical letter of assurance Division C BCBC		CAN/ULC-S537, "Verification of Fire Alarm Systems," CAN/ULC S-561	LoA		Y Y Y Y Y Y	<ul style="list-style-type: none"> Mag lock devices LoA and Visual inspection required for: <ul style="list-style-type: none"> FACP Annunciator panel(s) Pull station locations at exits including horizontal BCBC 3.2.4.11 Smoke detectors in public corridors, exit stair shaft, elevator room, Fire detector - Heat detectors in storage rooms, service rooms, janitor room, laundry rooms, not required if there are sprinkler heads Mag lock devices
Fire Alarm System			LoA	Signal to FD		Where required notification of the fire dept. shall be provided in conformance with CAN/ULC-S561, "Installation and Services for Fire Signal Receiving Centres and Systems"
Voice communication system if required.		BCBC 3.2.6.8	LoA			
Emergency Power for FAS		BCBC 3.2.7.8	LoA	Emergency Power for FAS	Y	The emergency power supply required shall be supplied from a) a generator, b) batteries, or c) a combination thereof

Fire Protection System		Applicable Code	Verification Documents or Letter of Assurance (LoA)	Type	Visual Inspection Required	Notes
			LoA			Must be capable of providing a) supervisory power for not less than 24 h, and b) immediately following that period, emergency power under full load for not less than 30 min
Hydrant			LoA		Y	Visual inspection of hydrants
O &M Manuals provided		NFPA 3 5.5.	LoA	Maintenance Manuals	Y Y Y	Operation and maintenance manuals have been turned over to the owner or authorized agent including: <ul style="list-style-type: none"> Recommended maintenance plan Inspection, test and maintenance frequency list.
Portable Fire Extinguishers		BCBC 3.2.5.16 BCFC 2.1.5 NFPA 10 (2013)	LoA LoA		Y Y Y Y	BCBC 3.2.5.17 Protection from freezing BCFC 2.1.5.1 <ul style="list-style-type: none"> Portable extinguishers shall be installed in all buildings except dwelling units selected and installed in accordance with NFPA 10 rated and identified in conformance with CAN/ULC-S508, "Rating and Fire Testing of Fire Extinguishers." accessible without exposing the operator to undue risk NFPA 10 <ul style="list-style-type: none"> Readily accessible Conspicuously located or appropriate signs installed

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			Fire Safety Plan		Y Y Y Y Y Y Y	<ul style="list-style-type: none"> • Locate on path of exit travel • Secured on hangers or brackets or cabinets • Protected against damage • Height appropriate (btm 4" above floor top not more than 5' above floor) • Operating instruction visible • No signs of damage • Tags visible and up to date BCFC 5.2.3.6 At least one portable fire extinguisher shall be provided in the hot work area
Smoke Alarms		BCFC 2.1.3.3. BCBC 9.10 CAN/ULC-S552 & S553,	LoA	Part 9 Buildings	Y Y Y Y	Smoke alarms shall be installed in each dwelling unit and in sleeping room not in a dwelling unit. 9.10,19.3 <ul style="list-style-type: none"> • Smoke alarms shall be installed on or near the ceiling. • there is at least one smoke alarm installed on each storey, including basements • on any storey of a dwelling unit containing sleeping rooms, a smoke alarm is installed in each sleeping room • 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.

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Sprinkler System BCBC 3.2.2.18		NFPA 13 or NFPA 13R BCBC 3.2.5.12. 2) BCBC 3.2.5.12 NFPA 13 – 2013	LoA LoA LoA LoA LoA LoA	Sprinklers	 Y Y Y	2.2.3.2. Plans of Sprinkler Systems Before a sprinkler system is installed or altered, plans showing full details of the proposed sprinkler system and essential details of the building in which it is to be installed shall be drawn to an indicated scale. 3.2.5.12 automatic sprinkler system shall be designed, constructed, installed and tested in conformance with NFPA 13, "Installation of Sprinkler Systems." BCBC 3.2.5.12. 6) 7) sprinklers shall not be omitted in any room or closet in the storey immediately below a roof assembly. Fast response sprinklers shall be installed in residential occupancies, care occupancies, treatment occupancies and detention occupancies. BCBC 3.2.5.13 Combustible sprinkler piping shall meet the requirements of ULC/ORD-C199P, "Combustible Piping for Sprinkler Systems." NFPA 13 – 2013 Chapter 25

Fire Protection System		Applicable Code	Verification Documents or Letter of Assurance (LoA)	Type	Visual Inspection Required	Notes
		NFPA 13 – 2013 Chapter 25 System Acceptance			Y Y Y Y Y Y Y	<p>System Acceptance shall be documented in accordance with NFPA 13 and the Contractor’s Material and Test Certificate for Above Ground Piping shall be provided.</p> <p>Visual Verification</p> <ul style="list-style-type: none"> ● Sprinkler room control valves ● System pressures ● Valves & Connections leakage or physical damage ● Dry system components ● Compressor ● Heater ● Spare heads for system <ul style="list-style-type: none"> 300 heads - 6 heads 300 -1000 – 12 heads 1,000 plus – 24 heads ● Sprinkler wrench ● Pipe hangers (no external loads)
		NFPA 25 (2014)			Y Y	<p>Sprinkler heads</p> <ul style="list-style-type: none"> ● Type ● Corrosion free ● No sign of leakage ● Obstructions & clearances 18” ● No paint ● Glass bulb okay ● Protected from damage where required ● Clearance from storage ● Cover plates (if installed)
					Y Y Y Y Y Y Y Y Y	

Fire Protection System		Applicable Code	Verification Documents or Letter of Assurance (LoA)	Type	Visual Inspection Required	Notes
Water Supply for Firefighting		BCBC 3.2.5.7 NFPA 1142	LoL		Y	BCBC 3.2.5.7 Every building shall be provided with an adequate water supply for firefighting. NFPA 1142 Chapter 4 Minimum water supply requirement should be calculated and signed off by registered professional. Water storage tanks inspected, tested, and maintained in conformance with NFPA 25. Request records.

References:

BC Building Code

BC Fire Code

NFPA 3, 4, are best practices only and not referenced by BCBC or BCFC

NFPA 10 (2013), 13 (2013), 13R (2013), 25(2014) , 80 (2013), 1142 (2007),

CAN/ULC- S115, 508, 524, 537, 552, S553,561, 572

CAN/CSA 619