

SURREY FIRE SERVICE

Construction Fire Safety Plan Bulletin



**The B.C. Fire Code
requires building
owners/contractors to
comply with the
requirements of the BC
Fire Code 5.6
Construction and
Demolition Sites**



CITY OF SURREY FIRE SERVICE

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This bulletin is provided by the Surrey Fire Service to assist owners, contractors, and workers on the requirements of a Construction Fire Safety Plan (CFSP). The document is intended to provide a brief overview of existing information that has previously been developed. Each site and construction project will have site specific issues that will need to be addressed in the CFSP.

During the construction phase, a building is at its most vulnerable state. A CFSP is a part of a system that is intended to protect the building during this vulnerable stage. Once a building is completed, there are a number of life safety systems in place to protect the building and its occupants. These include fire alarm systems, sprinklers, and fire compartmentalization. During construction these fire safety measures may or may not be installed or fully operational. Therefore, the CFSP must address hazards that could be present during construction.

The leading causes of fire in buildings under construction or demolition are:

- Incendiary/suspicious events.
- Smoking on site.
- Open flames/embers.
- Heating equipment.

While minimizing the fire hazards at a construction site, the CFSP must also take into account the impact a fire would have on the neighboring building(s).

It is the owner's responsibility to develop a Construction Fire Safety Plan that meets the requirements of the BC Building and

Fire Codes and the referenced standards and publications listed within this bulletin. It may be beneficial for owners or contractors to obtain the services of a Fire Safety Planning specialist to assist in ensuring an adequate plan is developed for their site.

In order to reduce hazards and the spread of fire, the following minimum requirements need to be reviewed and incorporated in your construction fire safety plan.

Fire Safety Plan Minimum Requirements

Section 5.6, Division B of the BC Fire Code requires that for any building or parts of buildings undergoing construction, renovation, or demolition operation, a fire safety plan be prepared for the site prior to any work commencing. Part 8, Division B of the BC Building Code provides requirements for safety measures at construction and demolition sites. The fire safety plan shall be prepared by the owner or owner's authorized agent in cooperation with the Surrey Fire Service and shall be reviewed after any significant changes to the project. The minimum requirements for a fire safety plan shall include the following (BCFC, Div B, 5.6.1.3/2.8.2.1):

- 1) The designation and organization of site personnel to carry out fire safety duties.
- 2) The emergency procedures to be followed in the event of a fire, including:
 - a) sounding the alarm,
 - b) notifying the Fire Department,
 - c) instructing site personnel on the procedures to be followed when the alarm sounds,
 - d) firefighting procedures
- 3) Measures for controlling fire hazards in and around the building.
- 4) A maintenance procedure for firefighting facilities.
- 5) Documents, including diagrams, showing the type, location and operation of the building fire emergency systems.
- 6) List of all emergency response numbers and list of names, addresses, and telephone numbers of persons to be contacted during and after normal operating hours in the event of an emergency.

Summary of Part 8, Division B, BC Building Code - Safety Measures at Construction and Demolition Sites

Part 8, Division B of the BC Building Code provides details for protection of the public and adjacent properties. Prescriptive requirements related to construction sites are addressed in the following Subsections:

- 8.2.1. Fencing and Barricades
- 8.2.2. Excavation
- 8.2.3. Use of Streets or Public Property
- 8.2.4. Direction of Vehicular Traffic
- 8.2.5. Waste Material

Unique Details for Construction Fire Safety Plans

Since projects vary in size and complexity, it is unreasonable to expect that a single template can serve to develop a CFSP for all projects. A more detailed CFSP may be necessary to meet the minimum fire safety requirements. A project specific CFSP will address items such as phases of

construction (excavation, structure, etc...) or phased occupancies. The degree to which additional mitigating risk reduction measures are applicable will depend on the project size, scope, proximity to other buildings, and unique site conditions.

Fire Safety Training

The assignment of a WorkSafe BC qualified coordinator as required by the WorkSafe General Conditions Occupational Health & Safety (OHS) regulation should be complete prior to construction. The qualified coordinator should also address construction fire safety concerns and maintain a site copy of the accepted CFSP. Workers should be kept up to date with emergency procedures as per WorkSafe General Conditions OHS Part 4:

4.16 Training

- 1) All workers must be given adequate instruction in the fire prevention and emergency evacuation procedures applicable to their workplace.
- 2) Workers assigned to firefighting duties in their workplace must be given adequate training, by a qualified instructor, in fire suppression methods, fire prevention, emergency procedures, organization and chain of command, firefighting crew safety and communications applicable to their workplace.
- 3) Retraining for firefighting duties must be provided periodically, but not less than once a year.
- 4) A worker not covered by Part 31 (Firefighting), who is assigned to firefighting duties, must be physically capable of performing the assigned duties safely and effectively before being permitted to do them.

Enforcement

Course of construction fire safety falls under numerous jurisdictions. Therefore, violations may result in enforcement from a number of different regulatory bodies or authorities, including insurance providers. Enforcement for violations may include:

- Issuance of order by Surrey Fire Service under the Fire Code,
- Issuance of a Stop Work Order or removal of Building Permit by the Building Division,
- Removal of Business License,
- Action by WorkSafe BC

Features for Coordination

1. Passive Protection:
 - 1.1 Provision at each floor level of an unobstructed stair discharging to grade level.
 - 1.2 Coordination during construction of fire compartments and fire walls.
 - 1.3 Management of fuel fired equipment.
 - 1.4 Management of temporary heating equipment. All temporary heating equipment shall be listed and used in accordance with manufacturer's instructions.
 - 1.5 Management of roofing operations involving heat sources and hot processes. These

operations must be conducted by a qualified agency.

- 1.6 Maintaining a high standard of Housekeeping on site.
 - 1.7 Providing and maintaining a Fire Department access to site complying with BC Building Code Division B Subsection 3.2.5. (BC Fire Code Division B, Article 5.6.1.4)
 - 1.8 Providing 1 h fire separation between occupied areas and areas under construction/demolition (BC Fire Code Division B, Article 5.6.1.12).
2. Fire Protection:
- 2.1 Activated (charged) standpipe installed progressively with building construction.
 - 2.2 Activated (charged) sprinkler system upon installation of ceiling membrane. Where practical, the system should be activated when construction is not taking place but may be turned off during operating hours.
 - 2.3 Onsite fire protection stations that may include portable fire extinguishers possibly supplemented by garden hose for ease of use by all personnel.
 - 2.4 Early installation of fire pumps where required for fire protection water supply.
 - 2.5 Coordination such that the municipal water supply is available onsite when grade level construction begins (required by NFPA 1, Article 16.4.3.1.1 upon accumulation of combustible material).
 - 2.6 “Watch” during demolition or construction with partially occupied buildings (BC Fire Code Article 5.6.1.14).
 - 2.7 Fire alert warning system (Article 5.6.1.17).
 - 2.8 Temporary heating equipment to comply with Division B Articles 5.6.1.8 of the BC Fire Code.
 - 2.9 Fire watch during hot works operations and for a period not less than 60 minutes after, and a final watch 4 hours after completion (BC Fire Code Division B Articles 5.2.3.1 and 5.2.3.3).
3. Additional Items:
- 3.1 Install doors in firewalls, close the doors during non-operating hours, and put doors on fusible links during construction.
 - 3.2 Provide temporary water flow alarms on sprinklers.
 - 3.3 Timing for issuance of sprinkler permit (sprinkler drawings must be reviewed by numerous consultants and accepted by Municipal Authorities prior to issuance of permit and commencement of installation of sprinklers).
 - 3.4 Exposure protection sprinkler systems.
 - 3.5 Completion of a pre-construction meeting with the City of Surrey Fire Department prior to start of construction.

- 3.6 Development of a fire risk assessment for more complex sites. This will identify time frames and processes where risk may be greater and extra measures may be required (in accordance with the Society of Fire Protection Engineers guidelines).

Referenced Standards and additional North American Standards/Guides which relate to course of construction fire protection are listed below:

Existing Referenced Standards/Bulletins

- Section 2.8, 5.2 and 5.6, Division B of the 2012 BC Fire Code
- Part 8, Division B of the 2012 BC Building Code
- Office of the Fire Commissioner (OFC) of BC, OFC Bulletin- April 17, 2009
- Standata Fire Code Interpretation FCI-09-03 (AFC)

Further Resources and Additional Recognized North American Standards

- NFPA 1, Fire Code.
- NFPA 101, Life Safety Code
- NFPA 5000, Building Construction and Safety Code
- NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations
- SFPE Engineering Guide to Fire Risk Assessment

For complex sites where a more robust fire safety plan is required, review of further additional standards is recommended; see relevant items from NFPA 241 below.

Summary of NFPA 241, Standard for Safeguarding Construction, Alteration and Demolition Operations

NFPA 241 provides a comprehensive guide for construction, alteration, and demolition operations. This standard provides guidance on the construction of temporary offices and storage areas, typical processes and hazards such as temporary heating equipment, flammable and combustible liquids and flammable gas storage and handling, temporary electrical work and lighting, and requirements for fire protection. Some significant items to note from NFPA 241, Chapter 7:

- As noted in Article 7.5.6.1, in all buildings over one storey in height, at least one stairway shall be provided that is in usable condition at all times. This stairway is required to be extended upward as each floor is installed for new construction, and must be maintained for each floor remaining during demolition.
- As noted in Article 7.6, in all new buildings in which standpipes are required or where standpipes are existing in a building to be altered or demolished, such standpipes shall be maintained in conformity with the progress of the building construction in such a manner that they are ready for use.
- As noted in Article 7.7.4, at least one approved fire extinguisher shall be provided in plain sight on each floor at each usable stairway, as soon as combustible material accumulates.

Chapter 8 of NFPA 241 provides details on safeguarding construction and alteration operations, and provides comments on scaffolding, shoring and forms, construction material and equipment storage,

building separation walls such as fire cut-offs and temporary separation walls. Some significant items to note from NFPA 241, Chapter 8:

- As noted in Section 8.2.5, portable fire extinguishers or charged hose lines are required during forming/stripping operations using combustible forming material.
- As noted in Section 8.6.1, firewalls and exit stairways where required for the completed building, shall be given construction priority for installation. Fire doors with approved closing devices and hardware shall be installed as soon as practical, and preferably before combustible material is introduced. Fire doors shall not be obstructed from closing.
- As noted in Article 8.7.2.1/.2, a water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material accumulates on the site, and there shall be no delay in the installation of fire protection equipment.
- As noted by Article 8.7.2.3, where underground water mains and hydrants are to be provided, they shall be installed, completed, and in service prior to construction work.
- As noted by Article 8.7.3.1, if automatic sprinkler protection is to be provided, the installation shall be placed in service as soon as practicable.
- Section 8.7.4 discusses the standpipe requirements.

Conclusion

The protection of a construction site from fire is paramount to the owners, contractors, the community and the Surrey Fire Service. The implementation of this bulletin can assist in reducing the inherent risks associated with construction sites.

The CFSP should take into account any potential hazards that may be present during the building's construction period. The CFSP should have the potential to be developed into the final Fire Safety Plan for the building and the occupants of the building upon completion.

It is the owner's responsibility to ensure the construction fire safety plan is developed for each project. When important components of the approved construction fire safety plan need to be altered, the owner or owner's authorized agent must consult with the Surrey Fire Service.

Please review the information within this bulletin as well as the attached checklist when developing a fire safety plan.

Questions regarding Construction Fire Safety Plans can be directly addressed to the Surrey Fire Prevention Office at 604 543 6780.



Surrey Fire Service
Fire Prevention Division

Name:

Date:

Address:

Building Permit #:

Item #	Description	Acceptable	NA
0.0	General Requirement:		
0.1	Name and contact of fire safety director (Should be Onsite WCB Qualified Coordinator)		
0.2	Name and contact of owner, all consultants, and contractors		
0.3	Updated List of Site Personnel		
0.4	Site address, posted and visible from street		
0.5	Contact numbers for nearest hospital		
0.6	Contact numbers for emergency services - police/fire/ambulance (911)		
0.7	Site Schematic showing the following:		
	Existing and proposed buildings		
	Site office		
	First aid station and safety station		
	Location of fire extinguishers		
	Location of emergency air horn		
	Hazardous materials storage		
	Emergency vehicle routes in and out of site		
	Emergency exits from site		
	Location of fencing and barricades		
	Fire department connections and hydrants		
	Designated gathering location		
	Parking for vehicles and delivery trucks		
0.8	Emergency procedures in the event of a fire		
0.9	Training of Site Personnel on Excavation Procedures		
0.10	Access for Firefighters (BC Fire Code 5.6.1.4) Clear access to fire hydrants, portable extinguisher, and connections maintained at all times		
0.11	Portable Fire Extinguishers (BC Fire Code 5.6.1.5)		
0.12	Provision for Egress (BC Fire Code 5.6.1.16) At least one usable exit at all times		
0.13	Control and Removal of Waste Materials (BC Building Code 8.2.5)		
0.14	Water Supply (NFPA 241 8.7.2) No delay in installation of fire protection (standpipe or sprinklers)		
0.15	Completion of Site Fire Safety Meetings and Fire Drills (BC Fire Code 2.8.3)		
0.16	Prohibition of Smoking in Areas with Potential for Ignition (BC Fire Code 2.4.2)		



Surrey Fire Service
Fire Prevention Division

Item #	Description	Acceptable	NA
1.0	Excavation Phase:		
1.1	Building Services to be Shut - Off (BC Fire Code 5.6.2.1) Existing gas, electrical, water, steam and other services shall be shut off, capped, and labeled		
1.2	Building Services to be Maintained (BC Fire Code 5.6.2.2) For services remaining during excavation		

Item #	Description	Acceptable	NA
2.0	Structure to Grade:		
2.1	Scaffolding, Shoring, and Forms (NFPA 1 16.4.1) Combustible forms shall not accumulate		
2.2	Forming and Stripping (NFPA 241 8.2.5) Fire extinguishers or charged hose lines are required		

Item #	Description	Acceptable	NA
3.0	Superstructure:		
3.1	Standpipe System (BC Fire Code 5.6.1.6) In conformance with BC Building Code Subsection 3.2.5, installed progressively		
3.2	Fire Warning System (BC Fire Code 5.6.1.17) Automatic or Manual		
3.3	Exit Stairs (BC Fire Code 5.6.1.16 & NFPA 241 7.5.6.1) At least one stairway usable at all times		
3.4	Sprinkler System (NFPA 241 8.7.3) Installed as soon as practical		
3.5	Fire Cutoffs (NFPA 241 8.6.1) Firewalls and exits stairs given construction priority Fire doors with required closures, closing devices and hardware to be installed as soon as practical and kept closed or placed on fusible link		

Item #	Description	Acceptable	NA
4.0	Additional Requirement for Certain Applications:		
4.1	Phased Occupancy Adjacent to Area Under Construction (NFPA 241 8.6) Adding spatial separation, exit exposure etc. (BCBC)		
4.2	Fire Separation from Occupied Areas (BC Fire Code 5.6.1.12 & NFPA 241 8.6.2) Minimum 1 hour fire separation if building is partially occupied during construction		
4.3	Watch/Site Security (BC Fire Code 5.6.1.14) When a portion of the building is occupied during construction		
4.4	Temporary Heating Equipment (BC Fire Code 5.6.1.8 and .10) Part 6 of Div. B of B.C. Building Code or in conformance with the minimum clearances shown on certified heating equipment		
4.5	Combustible and flammable liquid storage and handling (BC Fire Code 5.6.1.18) In conformance with BC Fire Code Part 4		
4.6	Fencing and Barricades (BC Building Code 8. 2.1) To protect the public, maintain access		
4.7	Safety of Streets (BC Building Code 8.2.3 and .4) Also traffic directing		
4.8	Torch-Applied Roofing Systems (NFPA 1 16.6) Permits shall apply with Section 1.12		
4.9	Hot Surface Applications (Cutting and Welding Operations) (BC Fire Code 5.6.1.7) Shall conform to BC Fire Code section 5.2		
4.10	Hoists and Elevators Available to the fire department whenever necessary		
4.11	Pre-construction meeting		
4.12	Safe Conducting of Hot Works (BC Fire Code 5.2.3) Shall be included in the fire safety plan		