**RICHMOND FIRE-RESCUE**
6960 Gilbert Road
Richmond, B.C. V7C 3V4
Tel: 604-278-5131

**TO:** Construction Project Managers
Developers, and Contractors

**DATE:** September 20, 2016

**FROM:** Sandra Jansen
Chief Fire Prevention Officer

**FILE:** CFSP

**RE:** **Fire Safety Plans during Construction**

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## FORMAT AND GUIDELINES FOR FIRE SAFETY PLANS AT CONSTRUCTION SITES

A Construction Fire Safety Plan is required for all buildings or portions of buildings under construction or alteration. The Construction Fire Safety Plan is required in accordance with the B.C. Building Code Regulations & the B.C. Fire Code Regulations. The protection of life and property is the primary objective of any Construction Fire Safety Plan. Interpretations of Plan content or application shall at all times, promote safety to life and property.

Prior to construction or alteration, the Construction Fire Safety Plan shall be prepared by the owner, registered co-ordinating professional or designate and only be submitted electronically to Richmond Fire-Rescue for review and approval. The Fire Safety Plan may be submitted in WORD or PDF format either by email (firesafetyplan@richmond.ca), or sending a USB drive, or compact disk (CD), to Richmond Fire-Rescue Department Fire Prevention Office – 6960 Gilbert Road, Richmond, BC V7C 3V4.

***It is strongly recommended that the Construction Fire Safety Plan be designed, developed and submitted by a qualified and experienced fire safety planning contractor***. A Fire Safety Planner can save a considerable amount of time needed to generate a Construction Fire Safety Plan. In most cases a single review fee will be charged. An additional review fee may be charged where considerable revision is required. Once approved and registered with the Fire Department, an electronic copy of the Fire Safety Plan will be kept by the Fire and Building Inspectors. At least one hard-copy of the registered Fire Safety Plan needs to be kept and posted in the site construction office.

**IMPORTANT NOTE:**

Failing to have a Construction Fire Safety Plan approved and registered with Richmond Fire-Rescue Department is a violation of BC Fire Code Regulations and the City of Richmond Fire Protection and Life Safety Bylaw No. 8306. Cost recovery fees for fire or other emergency services or inspections may be applied to those construction/demolition sites where an approved and registered Construction Fire Safety Plan is not in place or implemented.

## CONSTRUCTION FIRE SAFETY PLAN CONTENT

All Construction Fire Safety Plans shall include written procedures and descriptions of:

(a) the designation and organization of site personnel who will carry out the fire safety duties. Names and telephone/pager/cell numbers or 24-hour emergency contact persons shall be listed.
(b) the emergency procedures to be used in the case of fire, including the sounding of the alarm, notification of the fire department, instruction of site personnel on procedures to be followed when the alarm sounds and instruction on basic fire fighting procedures.
(c) the posting of site address numbers which are visible from the street.
(d) the control of fire hazards in and around the building including, but not limited to, cutting and welding operations, grinding, brazing, soldering, smoking, safe storage of combustible refuse, safe storage of flammable and combustible liquids or other hazardous materials, safe use and storage of propane or other fuelled heating systems.
(e) the installation, inspection, testing and maintenance of fire fighting and life safety equipment, such as, but not limited to, fire alarm or acceptable equivalent, sprinkler or standpipe systems, suitable portable fire extinguishers, acceptable levels of emergency lighting, acceptable fire-rated separations and routes of emergency access, etc. Records of all inspections, tests and maintenance of these systems and components shall be kept on site for review by the Fire Department.
(f) the maintenance or modifications of exit facilities to ensure rapid egress of building occupants.
(g) the progressive installation or removal of an acceptable working standpipe system in buildings requiring a standpipe system. The standpipe system may be provided temporarily as dry, with the sole source of water being provided by an intact and accessible temporary or permanent fire department connection located in consultation with the Fire Department.
(h) amendments to the Construction Fire Safety Plan so as to be current with the progress of construction,
(i) acceptable levels of protection for portions of the building under construction, which are proposed to be opened or used. The Fire Safety Plan shall also indicate the temporary and/or permanent equipment provided to maintain the acceptable equivalent level of life and property safety intended for occupancy.
(j) the training of supervisory staff and other occupants in their responsibilities for fire safety.
(k) procedures to ensure unobstructed access to fire protection equipment, such as fire hydrants, fire department connections, fire hose stations & portable fire extinguishers, and
(l) procedures to ensure clear access routes onto the building site for fire department vehicles.

## SITE AND FLOOR PLANS:

Site and floor plans shall be provided, indicating:

(a) emergency access points to the construction site and building(s).
(b) the location of special keys or devices required to access the site or building, and
(c) the location of functioning fire department connection(s), fire alarm panel(s) or annunciator(s) and approved areas used for the storage of hazardous materials, portable fire extinguishers.
(d) the location, area or phase of the construction or alterations in relation to the existing building.
(e) general floor plans, showing layout, stairs, elevators, shafts, roof access points, walls, fire protection equipment, etc.

Floor and site plans shall be in a manner acceptable to the Fire Department, including:

- a proportional representation of the site and floor areas,
- an acceptable legend
- an indicated scale, and
- be clear and free of non-relevant information and clutter.

## ADDITIONAL REQUIRED INFORMATION

During any phase of construction where the effectiveness of an exit or access to an exit facility, fire alarm, sprinkler or standpipe system, fire fighting water supply or emergency access route is affected, the Construction Fire Safety Plan shall identify written procedures, practices or changes to the level of protection taken to offset the limitations. This shall include narrative details and schematic floor plans of the of the proposed egress route(s), existing and temporary illuminated exit signs, existing and temporary emergency lighting, temporary hoarding, existing and additional supplementary fire detection devices, limits of occupant loads or activities to suit available exit facilities, etc. Any limitations imposed on existing life or property safety systems shall receive prior written approval from the Fire Prevention Office before implementation. The Construction Fire Safety Plan will require periodic and specific revision to offset various phases in the construction process.

Where an existing building is undergoing addition, alteration or renovation and the existing fire department emergency access, sprinkler, standpipe, fire pump or fire fighting water supply, fire alarm system, emergency power supply, exiting system or firewalls are reduced in any way, **written authorization** of the Fire Department is required. Such permission will be contingent upon:

aa) acceptable completion of the *"Authorization for Shut Down of Life/Property Safety Systems*" form (attached),

bb) acceptable completion of a new or revised Construction Fire Safety Plan or portion thereof for the affected area(s),

cc) a site inspection by the Fire and Building Inspector will be required in each individual case, before final approval or authorization is given, and

dd) the *"Authorization for Shut Down of Life/Property Safety Systems*" forms shall be posted in the affected work area site or a location acceptable to the Fire and Building Inspector.

The Project *"Co-ordinating Registered Professional*" is responsible for proposing and co-ordinating acceptable temporary equivalents, equipment or responsible behaviour where a hazard to life and property may exist during the course of construction.

Implementing the provisions of the Construction Fire Safety Plan will be the responsibility of the owner or designate and the supervising contractor(s). For further information or discussion of acceptable equivalent levels of safety please contact the Richmond Fire-Rescue Department Fire Prevention Office at 604-278-5131, Monday to Friday.

The primary purpose of the Construction Fire Safety Plan is to protect life and property. The guideline cannot possibly foresee all possible conditions or circumstances which may occur or be present in a building under construction or alteration. Measures or means not specifically identified in this guideline will need to be developed on as as-needed basis, in conjunction with both the Fire and Building Inspectors.

Plan Review Fee: As per Fire Protection and Life Safety Bylaw No. 8306:

15.1. (b) Review – Fire Safety Plan any building

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|---|---|
| Any building <600 $m^2$ area | $128.00 |
| Any building >600 $m^2$ area | $187.00 |
| High building, institutional | $248.00 |
| Revisions (per occurrence) | $62.00 |

Contact:

Sandra Jansen
Chief Fire Prevention Officer
604-303-2758
sjansen@richmond.ca

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|---|---|
| General Telephone Number | 604-278-5131 |
| Fire Prevention Fax Number | 604-303-2755 |

** This guide subject to periodic revision. Ensure that you have the most current issue.

**** Post this Authorization at Work Area Site ****

## Authorization for Shut Down of Life/Property Safety System

***This authorizes the Tenant or Contractor to shut down an affected life or property safety system, subject to the requirements of a Fire Safety Plan acceptable to the Fire and Building Inspector*.**

Complete the following form and forward to the City of Richmond Fire-Rescue Department, Fire Prevention Office (fax: 604-303-2755). Provide a floor plan or sketch to assist in identifying the affected area.

Name of Project: _____ Start Date: _____

Room # / Location: _____

Principal Contractor: _____ Phone #: _____

Project Superintendent: _____ Phone #: _____

*Return Fax Number: _____ _____

Tenant Project Manager: _____ Phone #: _____

Indicate which of the following needs to be temporarily shut down.

Fire Department Access ☐ Effective date: _____ Duration: _____

Sprinkler System ☐ Effective date: _____ Duration: _____

Standpipe System ☐ Effective date: _____ Duration: _____

Water Supply for Fire Fighting ☐ Effective date: _____ Duration: _____
(water main(s), fire hydrant(s), fire pump(s), etc.)

Fire Alarm System ☐ Effective date: _____ Duration: _____

Fire Suppression System(s) ☐ Effective date: _____ Duration: _____

Electrical System(s) ☐ Effective date: _____ Duration: _____
(affecting fire alarm system(s), exit signs, lighting to fire exit locations, etc.)

Exit(s) ☐ Effective date: _____ Duration: _____

Fire Wall(s) ☐ Effective date: _____ Duration: _____

**For Fire Inspector and Building Inspector Use Only**

Authorized by: _____ Date: _____

**ADDITIONAL CONSIDERATIONS WITHIN CONSTRUCTION FIRE SAFETY PLAN**

Department: _____ Phone #:

REFUSE CONTAINERS

- Outdoor refuse containers shall be kept at least 3 meters from a combustible building, any building overhang and building openings.
- Combustible waste materials in and around buildings shall not be permitted to accumulate in quantities or locations that will constitute an **undue** fire hazard.
- Combustible materials, other than those for which the location, room or space is designed, shall not be permitted to accumulate in any part of an elevator shaft, ventilation shaft, means of egress, service room or service space.
- Horizontal concealed spaces, such as crawl spaces and ceiling spaces shall not be used for the storage of combustible materials.
- Combustible materials shall not be stored on a roof or adjacent to any building so as to create a fire hazard to the building or its occupants.

SMOKING

- Smoking shall not be permitted in areas where conditions are such as to make smoking a fire or explosion hazard.
- An area where smoking is not permitted shall be readily identified by signs.
- Where smoking is permitted, an adequate number of ash trays shall be provided.

EXITS

- Maintain access to exits
- Maintain egress to a safe area away from the building
- Maintain the integrity of exits for rapid emergency escape.
- Additional exit signs and emergency lighting may be required.

**HOT WORKS**

- Hot works shall be performed only by personnel trained in the safe use of equipment of hot work equipment.
- Hot work equipment shall be maintained in good operating condition.
- Hot work equipment shall be examined for leakage or defects prior to each use.
- Leaks or defects found in hot work equipment shall be repaired prior to use.
- All valves shall be closed and gas lines bled when Class 2 gas hot work equipment is not in use.
- Electric hot work equipment shall be de-energized when not in use.
- Hot work shall be carried out in an area free of combustible and flammable contents, with walls, ceilings and floors of non-combustible construction or lined with non-combustible materials.
- When it is not practicable to undertake hot work in an area free of combustible and flammable contents, with walls, ceilings and floors of non-combustible construction or lined with non-combustible materials.

- Combustible and flammable materials within a 15 m distance from the hot work shall be protected against ignition,
- A fire watch shall be provided during the hot work and for a period of not less than 60 min after its completion, **AND**

- A final inspection of the hot work area shall be conducted 4 h after completion of work.

- When there is a possibility of sparks leaking onto combustible materials in areas adjacent to the area where hot work is carried out, openings in walls, floors or ceilings shall be covered or closed to prevent the passage of sparks to such adjacent areas, or combustible and flammable materials within a 15 m distance from the hot work, a fire watch shall be provided during the hot work and for a period of not less than 60 min after its completion, and a final inspection of the hot work area shall be conducted 4 h after completion of work.

- Any combustible and flammable material, dust or residue shall be removed from the area where hot work is carried out, or protected against ignition by the use of noncombustible materials.

- Combustible materials or building surfaces that cannot be removed or protected against ignition as required in Sentence (1) shall be thoroughly wetted where hot work is carried out.

- Any process or activity creating flammable gases or vapours, combustible dusts or combustible fibres in quantities sufficient to create a fire or explosion hazard shall be interrupted where hot work is carried out.

- The exposed areas shall be examined for ignition of combustible materials by personnel equipped with and trained in the use of fire extinguishing equipment.

- Hot work shall not be performed on containers, equipment, or piping containing flammable liquids or combustible liquids or Class 2.1 flammable gases unless they have been cleaned and tested with a gas detector to ascertain that they are free of explosive vapours.

- Hot work shall not be performed on a totally enclosed container.

- Hot work shall not be performed on metal objects that are in contact with combustible materials unless safety precautions are taken to prevent their ignition by conduction.

- When hot work is to be carried out near piping containing Class 2.1 flammable gas, the piping shall be cleaned and tested with a gas detector to ascertain that they are free of explosive vapours, AND protected by a thermal barrier against the passage of heat.

- At least one 10 pound ABC dry chemical fire extinguisher and a pail of water shall be provided in the hot work area.

**OTHER**

- Where construction practices are conducted adjacent to areas occupied by non-construction staff, acceptable partitions/hoarding may be required to provide physical barrier between. The partitions/hoarding shall be constructed of materials not exceeding the maximum flame spread ratings for the area so occupied.

**PROPANE CYLINDERS CONSTRUCTION SITES**
**CAN/CGA-B149.2**

*Appliance*: a device to convert gas into energy and includes any component control, wiring, piping or tubing required to be part of the device.

- A cylinder not connected for use, shall be stored outdoors.

A cylinder storage area shall meet the requirements stated below except that fencing is not mandatory provided:

- The cylinder is stored in a secure area free from tampering, AND
- The cylinder is stored in a secure area free from vehicular or mobile equipment travel, or protected by barriers or equivalent.

CYLINDER STORAGE AREA

- All cylinders are 25 feet (7.5m) from any other building, property line or point of assembly,
- The total quantity of propane stored does not exceed 1000 pounds (450kg),
- The relief valve on any cylinder is not less than 3 feet (1m) horizontally from any building opening that is below the level of the relief valve discharge, AND
- The relief valve discharge is not less than 10 feet (3m) on a horizontal plane from the air intake of any *appliance* or air moving equipment.
- Each cylinder on a construction site shall be equipped with a collar designed to protect the cylinder valve when not in use

**CYLINDER FILLING**

A cylinder shall not be filled on a construction site unless either:
- It is installed, OR
- Filled at a location that meets the installation and clearance requirements of the Gas Safety Code

**INDOOR USE OF CYLINDERS**

A cylinder may be used **indoors** in the construction, repair, or improvements of a building or structure, including its fixtures and equipment provided:
- A pressure regulator is employed and directly connected to the appliance or cylinder valve, or located on a manifold which is connected to the cylinder valve,
- The total capacity of cylinders connected together shall not exceed 300 pounds (135Kg) of propane and not more than one such manifold of cylinders may be located in the same floor area unless separated by a distance of at least 50 feet (15m)
- Any cylinder having a capacity greater than 1 pound (0.5 kg) of propane is equipped with an excess flow valve. The excess flow valve shall be either integral with the cylinder valve or in the connection to the cylinder valve outlet. In either case, it shall be installed in such a manner that undue strain beyond the excess flow valve will not cause breakage between the cylinder and the valve
- The cylinder regulating equipment and manifold are not located where they are subject to damage or to temperatures in excess of 125 degrees F.
- When repair work is being carried out in a building not under construction and occupied, any cylinder used in the repair work is under the supervision of the operator at all times, AND
- Each cylinder is provided with a protective collar.

## CONSTRUCTION HEATERS

A construction heater shall:

- Be connected so as to minimize danger of mechanical damage and upset, AND
- Be installed on solid, level, non-combustible base.
- Combustible material, such as straw, canvas, wood, and debris shall be kept clear of a construction heater in accordance with the clearances specified on the heater's instruction plate
- When a construction heater is used in a confined or enclosed space, an adequate air supply shall be provided.
- Piping, tubing, hose and fittings shall be supported, secured and protected from damage and strain
- When a construction heater is directly connected to a permanent propane supply in a building under construction, the connections shall be of rigid piping
- When a construction heater is connected to temporary piping, the piping and connections shall be in accordance with the requirements of the Gas Safety Code. In addition, a shut-off valve shall be provided with a lever handle or hand-wheel when a branch line is in service. Hose may be used as a temporary connector to a heater of the shut-off valve is installed immediately upstream from the hose.

**B. C. Code Amendments, Gas Safety Act**
**May 1991 Directive #17A/91**

### Portable Heating Appliances (Construction Heaters)

Under the Gas Safety Regulations, operators of an establishment supplying portable heating appliances are required (since 1983) to be a holder of an annual permit. The fee for this permit is listed in the fee schedule. Section 74(3) of the regulations states:

> *"No Person shall use a portable heater for temporary heating unless the heater bears a decal valid for two (2) years applied by the gas fitter certifying to its safety and operation."*

In the CAN/CGA-B149.2-M91, under Section "Construction Heaters", it is the responsibility of the lessor to provide instructions to the lessee in the safe installation and use (operation) of the construction heaters and components.

**The instruction to the lessee by the lessor shall include, but not be restricted to the following:**

- Replacement of tanks and cylinders
- Operation of the appliance
- Specific tools to be used
- Clearances required to combustible materials
- Shutting off the unit
- Checking for leaks
- Moving from location to location

**Also:**

- Maintenance of the heating unit shall be performed by the lessor. This work will include the regulator, hose and fittings.
- A piping permit is required for laying of temporary gas piping for connecting construction heaters. This work shall be done by a qualified gas fitter.

## STANDPIPE SYSTEMS IN BUILDINGS UNDER CONSTRUCTION or DEMOLITION

Where the building under construction or demolition “requires” a standpipe system, a standpipe system, either temporary or permanent, shall be provided in accordance with the following:

**Fire Department Connections.**

- The standpipes shall be provided and maintained with conspicuously marked and readily accessible fire Department connections on the outside of the building at the street level.

**Other System Features.**

- Pipe sizes, hose connections, hose, water supply, and other details for new construction shall be in accordance with the design standard and permit copy plans.

**Support of Piping.**

- Standpipes shall be supported and restrained securely at each alternate floor.

**Hose Connections.**

- At least one hose connection shall be provided and maintained at each floor level. Hose valves shall be kept closed at all times and guarded against mechanical injury.
- There should be a substantial box, preferably of metal, located at the highest hose connection, in which a quantity of hose sufficient to reach all parts of the floor, a 11/8-in. (29- mm) nozzle, spanner wrenches, and hose straps should be kept.

**System Piping.**

- Standpipes shall be extended upward for each story under construction or removed downward for each storey under demolition and be securely capped at the top.
- Top hose connections should not be located more than one floor below the highest level of the building at any time.

**Temporary Installations.**

- Temporary standpipes shall remain in service until the permanent standpipe is complete.
- Where temporary standpipes normally contain water, the piping shall be protected against freezing.

**Timing of Water Supply Installation.**

- Where construction reaches a height at which public waterworks system pressure is no longer adequate, temporary or permanent fire pumps shall be installed to provide protection to the uppermost level or to the height required by the authority having jurisdiction.
  *Exception: Where local fire department pumping apparatus is deemed by the authority having jurisdiction as adequate for the standpipe pressure required.*

**Protection of Hose Connections and Fire Department Connections.**

- Threaded caps and plugs shall be installed on fire department connections and hose connections.
- Fire department connections and hose connections shall be protected against physical damage.