Temporary Heat for Construction Sites

PURPOSE

This bulletin has been jointly developed by Alberta Municipal Affairs and the Gas Sub-Council to inform the construction industry of the installation requirements for gas-fired construction heaters and torches utilized in Alberta.

DISCUSSION

Designers, Builders, Rental Companies, Installers, Canadian Propane Association (CPA) Members, Natural Gas/Propane Suppliers and Safety Codes Officers are reminded that construction sites utilizing gas-fired heaters for temporary heating shall comply with the ***Safety Codes Act*** and Regulations.

The ***Safety Codes Act*** under the ***Permit Regulation*** (AR 204/2007) states a permit in the gas discipline is required to install, alter or add to a gas system and includes the following:

- Installation of natural gas and propane construction heaters;
- Gas piping and tubing, hose and fittings from the gas supply;
- All propane containers with a capacity of greater than 454 litres water capacity or when containers are manifolded together, the aggregate capacity of the containers exceed 454 litres water capacity; and
- Propane vaporizers when required.

The permit issuer may issue a permit in the gas discipline to a gasfitter for the installation of gas-fired equipment at a construction site. However, a propane tank set permit may be issued to a person who has satisfactorily completed a course of training acceptable to the Administrator for the installation of propane tanks only.

Note: A supplier of gas shall not connect or supply gas, to any new gas installation until the permit issued in respect of that gas installation is presented to the supplier by the person applying for the service.

CODE REFERENCES

The CSA-B149.1 *Natural gas and propane installation code* applies to the installation of appliances, equipment, components, and accessories where gas is used for fuel purposes and includes the piping and tubing system. Clause 7.18 contains the minimum requirements for construction heaters and torches as follows:

7.18.1
A construction heater shall be located to minimize the danger of damage and upset.

7.18.2
A construction heater shall be installed on a solid, level, noncombustible base or, where so designed, suspended in accordance with the manufacturer's certified installation instructions.

7.18.3
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.

7.18.4
When a construction heater is operating, an adequate air supply shall be provided.

7.18.5
Piping, tubing, hose, and fittings shall be supported, secured, and protected from damage and strain.

7.18.6
When a construction heater is connected to temporary piping, the piping and connections shall be in accordance with the requirements of Clause 6. In addition, a shut-off valve shall be provided with a lever or hand wheel when a branch line is in service. Hose may be used as a connector to a heater if the shut-off valve is installed immediately upstream from the hose.

7.18.7
It shall be the responsibility of the lessor of a construction heater, at the time of delivery to the lessee, to ensure that

(a) the construction heater is approved and in safe operating condition; and
(b) the lessee is instructed in the safe installation and use of the construction heater and components in accordance with the requirements of Clause 7.18

7.18.8
It shall be the responsibility of the user of a construction heater and its components to ensure that

(a) the construction heater and its components are installed and used in accordance with the requirements of Clause 7.18;
(b) the maintenance of the construction heater and its components is performed by a qualified installer;
(c) the handling and operation of the construction heater and its components are done by persons who have been instructed in such handling and operation; and
(d) a malfunctioning or damaged construction heater is removed from service.

7.18.9
A construction heater shall

(a) only be installed in a building under construction, repair, or improvement; and
(b) not be installed in any inhabited dwelling unit or inhabited sections of a building.

7.18.10
A torch intended for manual operation shall not be left unattended while in operation.

The CSA-B149.2 *Propane storage and handling code* applies to the storage, handling, transfer of propane and includes the installation of containers and equipment. Clause 5 includes general requirements for propane and propane equipment, Clauses 6 and 7 covers the minimum requirements for cylinder installations and tanks, Clause 9 covers vaporizers, such as:

5.3.2
When containers are installed or stored in locations that do not afford protection from damage from motor vehicles on a street, highway, avenue, alley, or parking lot, they shall be protected by posts or guardrails in compliance with Clause 7.19.4 unless otherwise approved by the authority having jurisdiction.

6.4.4
A cylinder that is damaged, leaking, or corroded beyond TC limits, or is due for a prescribed re-examination, shall not be filled but shall be removed from service.

6.5.3 Cylinders at construction sites

6.5.3.1
A cylinder not connected for use shall be stored. A cylinder properly connected for use in an approved manner is not considered in storage.

6.5.3.1.2
A stored cylinder shall be located in an area that complies with the requirements of Clause 6.5.3.2, and the storage area shall be outdoors. The following requirements shall apply:

(a) When the following conditions are met, a storage area utilizing a structure with overhead protection, walls, or both, meets the intent of outdoor storage:
  (i) The structure is designed to be enclosed by no more than two solid walls on the level the cylinder(s) are stored.
  (ii) The cylinders are located within 25 ft (7.6 m) of an open area of the perimeter opening.
  (iii) When a wall or the structure is a part of a building, that building must be under construction, repair, improvement, and there shall be no inhabited dwelling units or inhabited section of that building.
  (iv) There shall be no openings through which gas may travel to a lower elevation, such as open stairway on the floor on which the cylinders are located.
  (v) There shall be no wall openings through with gases could travel into another structure or building.

(b) Cylinders may be stored in a cabinet in the storage area that meets the requirements of Clause 6.5.1.14.

(c) A storage area may be on a roof of a structure of building, provided the conditions of Clause 6.5.3.8 are met.

6.5.3.2
Cylinders in storage shall

(a) be stored in an area that
  (i) provides protection from tampering;
  (ii) is free of vehicular or mobile equipment travel, or protected by barriers or equivalent;
  (iii) has "**NO SMOKING**"* signs are prominently displayed. These signs shall be in accordance with Clause 7.12.3;
  **The equivalent French wording is* "*D'EFENSE DE FUMER*".
  (iv) meets the requirements of Table 6.3;

(b) be placed such that the relief valve on any cylinder is not less than 3 ft (.9 m)

horizontally from any building opening that is below the level of the relief valve discharge;
(c) be placed such that the relief valve discharge is not less than 10 ft (3 m) on the horizontal plane from the air intake of any appliance or air-moving equipment;
(d) be stored in an area that meets Clauses 6.5.1 and 6.5.3.8.

6.5.3.3
Each cylinder on a construction site shall be equipped with a collar designed to protect the cylinder valve when in use.

6.5.3.4
A cylinder shall not be filled on a construction site unless it is
(a) installed in accordance with the requirements of Clause 6.7; or
(b) filled at a location that meets the clearance requirements of Clause 7.17.1.

6.5.3.5
A cylinder may be used indoors in the construction, repair, or improvement of a building or structure, including its fixtures and equipment, provided that
(a) a pressure regulator is employed and directly connected to the appliance or cylinder valve, or located on a manifold that is connected to the cylinder valve;
(b) the total capacity of cylinders connected together does not exceed 300 lb (136 kg) of propane, and not more than one such manifold of cylinders is located in the same floor area unless separated by a distance of at least 50 ft (15.2 m);
(c) any cylinder with a capacity greater than 1 lb (0.5 kg) of propane is equipped with an excess-flow valve. The excess-flow valve shall be either integral to the cylinder valve or in the connection with 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;
(d) the cylinder-regulating equipment and manifold are not located where they are subject to damage;
(e) 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;
(f) each cylinder is provided with a protective collar;
(g) a cylinder with a capacity up to and including 100 lb (45 kg) of propane that is connected for use to a construction heater is secured in an upright position; and
(h) any construction heater connected to the cylinder is installed and used in accordance with clause 7.18 of CSA B149.1.

6.5.3.6
A cylinder in use inside a building shall not be located near an exit, stairway, or area intended for the safe evacuation of people.

6.5.1.15
Connection and disconnection of cylinders shall be done in a well-ventilated area with no source of ignition within 10 ft (3 m) of the point of connection.

6.5.3.7
Moving a propane cylinder from one level to another level or the roof of a building may be done using

(a) a freight, service elevator, or construction hoist; or
(b) a public passenger elevator, provided only the person(s) involved with the cylinder are in the elevator.

When moving a propane cylinder to or from the roof or one level to another of a building, each cylinder valve outlet shall be closed and plugged, and the valve proactive cap or collar shall be in place. (see also clause 6.1)

6.5.3.8
Cylinders on building rooftops
Cylinders on building rooftops shall comply with the following requirements:

(a) A propane cylinder shall not be on the roof of a building unless the cylinder is to be connected for work undertaken on the roof during the current or the immediate following work shift.

(b) Cylinders not in use shall be stored in accordance with provisions of Clause 6.5.3.2, and the following requirements shall also apply:
  (i) The weight of the cylinder(s) shall not exceed the net load capacity of the roofing structure as specified by the building owner/management.
  (ii) The storage area shall be at least 10 ft (3 m) from the building edge or a change in elevation of more than 3 ft (.9 m)
  (iii) Cylinders shall be secured to maintain the cylinders in the proper storage position during inclement weather.
  (iv) All cylinders shall be removed upon completion of the work.
(c) Cylinders properly connected in an approved manner to the appliance they serves shall be adequately secured from inclement weather.
(d) No more than 1000 lb (450 kg) of propane in total capacity shall be on the roof.

6.7.1
Each cylinder shall be set upon a firm, level, weatherproof base, located on consolidated ground at grade level, and shall be equipped with flexible connectors to offset any movement affecting the piping or tubing.

Propane Tank Systems

7.7.6
A tank and its supports that show evidence of damage, deterioration, or incorrect installation shall not be filled.

7.10.1
Except as provided in Clause 5.11 of this Code and Clause 5.4.1 of CSA B149.5, every tank shall be located outside of a building.

7.10.2
A tank used in a consumer application shall be located in accordance with Table 7.4, except that

(a) a maximum of four tanks, each less than 125 USWG (475 L), that are manifolded together to form a system may be located against a common wall of a building. Not more than one such manifold system may be located against a common wall of a building unless separated by a clearance of 10 ft (3 m); and

(b) when the single largest tank in a manifolded system is allowed in Clause 7.10.2a), then the aggregate capacity is not used when determining clearance to an important building, group of buildings, or line of adjoining property that can be built upon. The largest single tank in the manifolded system shall be used to determine the clearances required in Table 7.4

7.10.3

A tank used in a consumer application shall be located in accordance with Table 7.4, except that

(a) for capacities over 125 USWG (475 L) and up to and including 500 USWG (1900 L), the clearance from building walls may be reduced to 3 ft (1 m) for a single tank, provided that
   (i) the building wall is of concrete or masonry construction;
   (ii) there is a minimum of 10 ft (3 m) to the nearest building opening; and
   (iii) the tank is used only for vapour service; and

(b) for capacities over 125 USWG (475 L) and up to and including 5000 USWG (19 000 L), the clearances from building walls of other than concrete or masonry construction may be reduced to the clearances specified for concrete or masonry wall construction if protection acceptable to the authority having jurisdiction is provided.

Table 7.4
Location of above-ground tanks for consumer applications
(See Clauses 7.10.2, 7.10.3 and 9.3.2 and Annex M.)

Total aggregate water capacity, USWG (L)	Minimum distance, ft (m), between tank and property line; adjacent concrete or masonry building wall with no building openings within the specified clearance; source of ignition*	Minimum distance, ft (m), between tank and building wall of other than concrete or masonry construction	Minimum distance, ft (m), between tank and building opening	Minimum distance, ft (m), between tank and adjacent tank†
Up to and including 125 (475)	**None‡**	**None**	3 (0.9)	None
Over 125 (475) up to & including 1000 (3800)	**10 (3)**	**10 (3)**	10 (3)	3 (0.9)
Over 1000 (3800) up to & including 2000 (7800)	**10 (3)**	**25 (7.6)**	25 (7.6)	3 (0.9)
Over 2000 (7800)up to & including 5000 (19 000)	**15 (5)**	**25 (7.6)**	25 (7.6)	3 (0.9)
Over 5000 (19 000) up to & including 10 000 (38 000)	**25 (7.5)**	**25 (7.6)**	**25 (7.6)**	3 (0.9)
Over 10 000 (38 000) up to and including 30 000 (113 500)	**50 (15.2)**	**50 (15.2)**	**50 (15.2)**	**5 (1.5)**
Over 30 000 (113 500)	**§**	**§**	**§**	**§**

** Distances to property lines may be amended by the authority having jurisdiction.*
† If tanks of a multiple tank installation are installed on a common base or pier, the clearances may be reduced at the discretion of the authority having jurisdiction.
‡ 10 ft (3 m) *from any source of ignition.*
§ At the discretion of the authority having jurisdiction.

9.3 Direct-fired vaporizers

9.3.1
Subject to clause 9.3.4, a direct-fired vaporizer shall not be permitted in a pumphouse, a container filling or storage room, or in any other building or room.

9.3.2
A direct-fired vaporizer is considered a source of ignition and shall be located at a distance in accordance with the requirements of Table 7.4 from any tank or from the fill points of any tank, and at least 25 ft (7.6 m) from a building or property line. See Annex M

9.3.4
A direct-fired vaporizer may be installed in a building used exclusively to house it and its related equipment, provided that the building is constructed in accordance with Clause 7.17.3, and a sign is prominently displayed on the exterior of the building at all entrances with the wording "WARNING: STORAGE OF ANY MATERIALS AND EQUIPMENT IS PROHIBITED"* in lettering that is a minimum of 2 in (50 mm) high".
** The equivalent French wording is "AVERTISSEMENT : L'ENTREPOSAGE DE MATÉRIAUX OU D'APPAREILLAGES EST INTERDIT".*

APPLICATION
Personnel performing installation, operation, and maintenance work shall be properly trained in such functions. Therefore, it is highly recommended that vendors, construction workers and gasfitters obtain training specifically related to the use and installation of construction heaters.

Under the ***Safety Codes Act*** it is the responsibility of the owner, vendor, contractor, and user to ensure that the installation and operation of construction heaters and torches complies with the *Act* and are in accordance with the regulations

INTERPRETATION
Designers, builders, rental companies, installers and **gas suppliers** are responsible to ensure the provisions for construction heat are compliant, and that when deviation from the requirements may be necessary, permission shall be obtained from the **authority having jurisdiction** before work proceeds. Such permission will apply only to the specific site and installation for which it is given.