

TSSA
MOBILE FOOD SERVICE EQUIPMENT
CODE
TSSA-MFSE-2020
October 2020



Technical Standards and Safety Authority Fuels Safety Program
345 Carlingview Drive
Toronto, Ontario M9W 6N9
Tel: (416) 734-3300
Fax: (416) 231-7525
www.tssa.org

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TECHNICAL STANDARDS AND SAFETY AUTHORITY

FOREWORD

This is the second edition of the Mobile Food Service Equipment Code. It supersedes the TSSA-MFSE-2014. The Gaseous Fuels and Propane Regulations made under the *Technical Standards and Safety Act* adopt this Code for the Province of Ontario.

This document was developed in consultation with the TSSA Gaseous Fuels Advisory Council and the TSSA Mobile Food Service Equipment Risk Reduction Group.

The above regulations require all Mobile Food Service Equipment (MFSE) built after February 13, 2006 to have a Field Approval by TSSA or alternatively to be certified and labeled by a Certification Organization accredited by Standards Council of Canada.

This code sets out minimum requirements for a TSSA Field Approval. TSSA reserves the right to impose additional requirements for the issuance of a Field Approval for MFSE.

Definitions in this Code have the same meaning as those contained in the relevant regulations made under the *Technical Standards and Safety Act, 2000*.

Inquiries regarding this document may be addressed to:

Technical Standards and Safety Authority
Fuels Safety Program
345 Carlingview Dr.
Toronto, ON M9W 6N9
Tel: (416) 734-3300
Fax: (416) 234-9169
Customer Service: 1-887-682-8772

1. Purpose

This Code sets out the minimum requirements that TSSA engineering staff will assess when performing an Engineering Review for the issuance of a Field Approval for Mobile Food Service Equipment (MFSE). It is intended to assist manufacturers and owners of MFSE in meeting the minimum requirements for MFSE.

Where a deviation from this Code is required, the manufacturer or owner shall make a separate application for a variance. The approval of the variance must be obtained before TSSA will assess the MFSE field approval application.

This Code takes into consideration the unique nature of MFSE, which is not addressed in the CSA-B149.3-10 standard.

2. Scope

These requirements apply to approval process for MFSE utilizing propane or other hydrocarbon fuel fired cooking equipment. The review includes evaluation of the storage of fuel, supply of fuel, acceptability of the individual appliances, and components and the exhaust system.

3. Definitions

The following definition(s) apply to this code:

Mobile Food Service Equipment (MFSE): is mobile equipment containing propane or other hydrocarbon fuel fired cooking appliances, a means of water heating or power generation, and, if applicable, associated fuel storage.

4. Types of MFSE

4.1. For the purposes of this document MFSE includes the following types of equipment (except as noted under Exemptions):

- (a) a self-propelled vehicle such as a truck or van fitted with food service equipment and either equipped with propane supply cylinders or intended for connection to propane supply cylinders at the operation site.
- (b) a trailer or cart fitted with food service equipment intended to be towed to the operation site and either equipped with propane supply cylinders or intended for connection to a propane supply cylinder at the operation site.
- (c) a portable cart fitted with food service equipment that is not towed but may be transported to an operation site and provided with a propane supply cylinder that may be enclosed in the cart.

Exemptions:

In some cases, a self-propelled vehicle or a trailer may be located at a fixed site and is not

intended to be relocated. Such units are not considered MFSE if they meet the following criteria:

1. *Some form of municipal licence has been issued to permit operation in a permanent location only; or,*
2. *If there is no such licence in place, but the unit has been installed as follows:*
 - (a) *the vehicle has been fitted to a foundation or has been raised on concrete blocks, jack stands or equivalent;*
 - (b) *all wheels have been removed;*
 - (c) *tongues or tow bars have been removed; and,*
 - (d) *the vehicle is connected to one or more utility services:*
 - (i) *electricity - no plugs or generators and approved by the authority having jurisdiction;*
 - (ii) *water,*
 - (iii) *sewers or septic systems;*
 - (iv) *natural gas or propane if it is hard piped to a 420 lb cylinder or larger);*

Notes:

1. *If the vehicle attends various events at different locations such as fairs, rib festivals, etc. it will be considered a MFSE.*
2. *Units deemed to qualify under the exemptions above are nevertheless required to meet the applicable provisions of the CSA B149.1 Natural Gas and Propane Installation Code and CSA B149.2 Propane Storage and Handling Code.*

5. General Requirements for MFSE

- 5.1 Appliances used with an MFSE shall be of a certified type or shall be subjected to a Field Approval where permitted by the CSAB149.3. Custom designed appliances that are not certified, and are outside the scope of CSA B149.3, may be evaluated for their suitability and safety in their intended application at the discretion of TSSA.
- 5.2 The use of an appliance, an accessory, a component, equipment, or material shall be prohibited where a hazard is created.
- 5.3 When an exhaust system protected by an automatic fire-extinguishing system is installed over an appliance not provided with a flame safeguard, the operation of the fire-extinguishing system shall be interlocked with the gas supply to the appliance so as to automatically shut off the gas, including the pilot, to the appliance to be protected by the system and also to any other appliance that can be affected by the extinguishing system.
Applicants should contact fire safety officials to determine if their particular MFSE requires a fire extinguishing system.

6. Mobile Food Service Trailers and Trucks

6.1 General

- 6.1.1. Mobile food service trailers and trucks shall be provided with a manual shut-

off valve located downstream of the pressure regulator and upstream of all appliances, on the exterior of the vehicle in a readily accessible location adjacent to the gas supply.

- 6.1.2. Each appliance shall be provided with a manual isolation valve.
- 6.1.3. All components shall be certified to the appropriate standard.
- 6.1.4. Appliances may be connected to the gas supply with black iron or steel piping, copper tubing, appliance connectors certified to CSA Standard 6.10 or Movable Appliance connectors certified to CSA Standard 6.16.
- 6.1.5. Connections within the vehicle are permitted for MFSE's.
- 6.1.6. MFSE that contain hydrocarbon fired equipment within an enclosed space shall have a mechanical exhaust system interlocked with the fuel supply line so that operation is permitted only when exhaust airflow is proven.
- 6.1.7. The valve used to shut off the gas supply referred to in clause 6.1.6 shall be an automatic electrically operated fast closing valve:
 - (i) of the manual reset type; or
 - (ii) provided with a remote manual reset function.

The valve or remote reset device shall be identified as to its function and have permanent legible relighting instructions posted adjacent to it.

Note: When all the appliances in an MFSE incorporate safety shut-off devices that require the user to manually relight the appliance following loss of flame, a separate manual reset feature is not required.

- 6.1.8. The label required by clause 6.1.7 shall as a minimum direct the user to turn off all burners prior to resetting the gas supply and to follow the appliance manufacturer's instructions for relighting.

For example:

<p>MANUAL RESET FOR EXHAUST FLOW INTERLOCK VALVE In the event of an exhaust flow failure the gas supply to the appliances will shut off automatically and will require a manual reset. Before resetting the gas supply –</p> <ul style="list-style-type: none">• Turn all burner valves to the “OFF” position.• Wait 5 minutes.• Reset the gas supply by manually opening the interlock valve or by activating the manual reset switch. <p>Relight the appliances following the appliance manufacturer's instructions.</p>

6.2 Fuel Supply for Self-Propelled, Trailer and Towed Cart Type MFSE (Containers, Cylinders, Tanks, Piping, Tubing)

- 6.2.1. Two-stage regulating equipment shall be used. Bleed vents on the equipment shall be in a downward position.
- 6.2.2. A regulator shall be installed on the vehicle in such a manner that its safe operation will not be impeded by weather conditions, and it shall be protected by a substantial metal or plastic hood of the enclosed style.
- 6.2.3. When provision is made for mounting a cylinder on the A-frame of a vehicle, a rigidly mounted support bracket for mounting the regulator shall be provided. The regulator shall be protected in accordance with Clause 6.2.2

6.3 Installation of containers

- 6.3.1. A container located on the exterior of a vehicle shall
 - (a) not project beyond the side of the vehicle;
 - (b) not be installed on the roof of the vehicle unless accepted by the authority having jurisdiction;
 - (c) if installed on the rear of the vehicle, be protected from damage by extending the bumper or frame rearward beyond the container, using material at least equivalent in strength;
 - (d) not be mounted ahead of the front axle of a self-propelled vehicle;
 - (e) when located on the A-frame of a vehicle designed to be towed, be mounted as close as possible to the body of the vehicle; and
 - (f) not be attached to any door.
- 6.3.2. Propane piping, tubing, or hose shall not interconnect separate vehicle units.
- 6.3.3. A container shall be located so that the discharge from the relief valve is
 - (a) into the open air;
 - (b) directed away from the vehicle; and
 - (c) not less than 3 ft (1 m) horizontally from an opening into a vehicle, including combustion air inlets or flue gas outlets, below the level of such discharge.
- 6.3.4. The maximum number of propane cylinders installed on a food service unit shall be three, and the total quantity of propane shall not exceed 300 lb (135 kg).

6.4 Installation of cylinders

- 6.4.1 A cylinder installed within a vehicle shall be
 - (a) in a recess that is of metal or metal-clad construction, that is vapour-tight to the inside of the vehicle, and that is accessible only from, and vented to, the outside;
 - (b) in a metal cabinet that is vapour-tight to the inside of the vehicle. The cabinet shall be vented downwards from the bottom of the cabinet by means of a tube not less than 1 in (25 mm) in diameter that terminates at a point outside the vehicle and is directed away from any source of ignition on the vehicle; or
 - (c) on a cylinder support bracket that extends below the level of the floor but not below the bottom of the vehicle frame. The cover for that part of the cylinder extending above the floor shall be of metal-clad construction that is vapour-

tight to the interior of the vehicle.

- 6.4.2 When a cylinder is used on a commercial vehicle in a cabinet or recess, the cabinet or recess shall be vented at the top and bottom, and the combined vent area shall not be less than 5 in² (3000 mm²).
- 6.4.3 All cylinders shall be secured by brackets, straps, or carriers designed and fabricated to withstand calculated loading in any direction equal to at least four times the weight of the cylinder when filled with propane. Non-metal straps must bear a manufacturer's label stating the load rating of the strap. Straps must be UV resistant as declared by the manufacturer.
- 6.4.4 The cylinder cabinet on a vehicle shall be installed with a road clearance that is not less than the minimum road clearance of the vehicle under maximum spring deflection.
- 6.4.5 A cylinder system with a separate service and reserve supply of propane shall be equipped with an automatic changeover regulator, valve, or equivalent to permit the replacement of a cylinder without shutting off the flow of propane to the system.
- 6.4.6 Any hood, dome, or door of a cabinet that must be removed for the placement of a cylinder shall be provided with a latch or other means to prevent it from opening.
- 6.4.7 Permanently installed cylinders shall meet the requirements of Clause 6.5
- 6.4.8 A cylinder shall be installed on a vehicle with the discharge from the cylinder relief valve not less than
 - (a) 3 ft (1 m) on a horizontal plane from any building opening when the opening is below the level of the relief valve discharge;
 - (b) 10 ft (3 m) on a horizontal plane from the air intake of any appliance or air-moving equipment; and
 - (c) 10 ft (3 m) on a horizontal plane from any source of ignition.Items (b) and (c) shall not apply to an appliance when the cylinder retention means is incorporated and certified as part of the appliance.

6.5 Equipment on cylinders connected for use

- 6.5.1 On each cylinder, an excess-flow valve shall be provided and installed that is
 - (a) integral to the cylinder valve, provided that it has a separate relief valve port or the cylinder is equipped with a relief valve that is separate from the service valve; or
 - (b) in the connection with the cylinder valve outlet.
- 6.5.2 A cylinder valve shall be protected by
 - (a) being set into a recess of a cylinder; or
 - (b) a ventilated cap or collar that is a part of the cylinder.

6.6 Installation of tanks

- 6.6.1 A tank located in an enclosed space on any vehicle shall have a working pressure for the tank and the set pressure of its relief valve each equal to 312.5 psig (2150 kPa).

- 6.6.2 A tank located within an enclosed space of a vehicle shall be
- (a) provided with a rigid gas-tight assembly that seals all tank equipment, inlets, and outlets from the interior of the vehicle; and
 - (b) equipped with remote fill outside fittings and installed with a conduit to prevent leakage from the piping, tubing, and/or hose assembly from entering the interior of the vehicle. The remote fill outside fittings shall be located to provide easy access for refuelling without requiring a person to kneel or lie on the ground.
- 6.6.3 The enclosure referred to in Clauses 6.6.2(a) and 6.6.5(a) shall
- (a) be made of corrosion-resistant metal;
 - (b) provide for water drainage; and
 - (c) be sealed to prevent entry of propane through the gauging or filling connections into any interior vehicle space.
- 6.6.4 The sealant or gasket used for the purposes outlined in Clauses 6.4.1 (a) to (c), and 6.6.2(a) shall be
- (a) nonshrinking and nonswelling;
 - (b) resistant to damage by propane, road salt, and vehicle vibration; and
 - (c) effective for use from -40°F (-40°C) to 95°F (35°C).
- 6.6.5 Filling and gauging fittings located away from a tank (remote fill) shall be protected from physical damage by being located
- (a) in a metal enclosure that is permanently mounted to the vehicle and does not protrude outside the vehicle's body; or
 - (b) so that the rear bumper, or some other part of a vehicle, will provide protection.
- 6.6.6 A propane withdrawal connection on a fuel tank shall be equipped with a shut-off valve that incorporates an internal excess-flow valve.
- 6.6.7 A shut-off valve on a tank shall be accessible.
- 6.6.8 A tank shall be equipped with a stop-fill valve installed to ensure that the maximum permitted liquid volume at the time of filling does not exceed 80% of the tank volume.
- 6.6.9 A label made of durable material that is not adversely affected by water, employing an adhesive that is not water soluble, shall be affixed adjacent to the filling location. The label shall be worded as follows:
- “EQUIPPED WITH A STOP-FILL VALVE. USE OF FIXED-LIQUID-LEVEL GAUGE IS NOT REQUIRED”*
- 6.6.10 A tank on a vehicle shall be permanently installed, and proper anchorage shall be provided to prevent it from jarring loose, slipping, or rotating. This requirement shall be deemed met when the force necessary to detach the tank from the vehicle is not less than 20 times the weight of the full tank in a forward direction, and not less than 8 times the weight of the full tank in a rearward, sideways, and vertical direction.
- 6.6.11 The tank manufacturer shall provide tank mounting brackets complete with a resilient material to be installed between the supports or clamping bands and a container such that there is no direct metal-to-metal contact with the container.
- 6.6.12 Tanks shall be installed on a vehicle with the brackets supplied by the tank manufacturer and shall be installed in accordance with the manufacturer's installation instructions.

- 6.6.13 A tank
- (a) on a vehicle shall be so located as to minimize the possibility of damage;
 - (b) that is located at the rear of a truck and that is protected by a substantial bumper shall be deemed to conform with Item (a); and
 - (c) that is mounted within 8 in (200 mm) of the engine or the exhaust system shall be shielded against heat radiation by the use of a metal shield located not less than 1 in (25 mm) from the tank. The metal heat shield shall not be attached to the exhaust system.
- 6.6.14 A tank or any other portion of the fuel system located outside a vehicle shall be installed with as much road clearance as practicable, but never less than the minimum road clearance of the vehicle when loaded to its gross vehicle weight rating. This minimum clearance shall be measured from the bottom of the tank or from the lowest portion of any part of the fuel system when installed, whichever is lower, and shall not be less than the following:
- (a) between the axles
 - (i) 7 in (175 mm) on vehicles with a wheel base of 127 in (3175 mm) or less; or
 - (ii) 9 in (225 mm) on vehicles with a wheel base in excess of 127 in (3175 mm); or
 - (b) behind the rear axle, 8 in (200 mm).
- The tank or any other portion of the fuel system shall be installed above a plane that contacts the bottom of the rear tires and the lowest most rearward part of the vehicle as received from the manufacturer.
- 6.6.15 All valves, connections, and gauging devices on a tank shall be protected to prevent damage due to accidental contact with stationary objects or from loose objects thrown up from the road.
- 6.6.16 A new tank and its means of attachment that are exposed to corrosion or erosion shall be protected by a coating that has a minimum ASTM salt spray rating of 1000 h as established in ASTM B117 and shows no visible signs of corrosion. The test specimen shall be subjected to 42 cycles consisting of 8 h of continuous salt spray followed by 16 h of ambient temperature. The finished coating shall be resistant to abrasion such as that which can occur as a result of gravel or sand, or both, impacting the surface under normal usage.

6.7. Piping, tubing, hose, and fittings

- 6.7.1 Piping shall comply with ASTM A53/A53M or ASTM A106.
- 6.7.2 A **f fitting** used with steel pipe shall be
- (a) either malleable iron or steel and shall comply with ANSI/ASME B16.3; or
 - (b) **certified** to Standard ANSI LC-4/CSA 6.32.
- 6.7.3 Propane vapour phase piping shall be at least Schedule 40
- 6.7.4 Copper tubing used for gas systems shall be Type G, K, or L, and shall meet the requirements of one of the following Standards, as applicable:
- (a) Type G tube shall meet ASTM B837; or
 - (b) Types K and L tube shall meet ASTM B88.
- 6.7.5 Flare nuts shall be forged from UNS C37700 brass and shall not be externally machined.

- 6.7.6 Tubing **fittings** shall be rated for a working pressure of not less than 125 psig (860 kPa)
- 6.7.7 Tubing shall be one of the following:
(a) corrugated stainless steel tubing (CSST);
(b) seamless copper; or
(c) seamless steel.
- 6.7.8 Every **hose** and **hose fitting** shall have a minimum working pressure of 350 psig (2400 kPa) and shall comply with CSA CAN/CGA-8.1 or CSA CAN1-8.3.
- 6.7.9 Seamless steel tubing shall comply with ASTM A179/A179M.
- 6.7.10 Materials not specified in Clause 6.7 may be used if they conform to a nationally recognized standard or to a test report of a nationally recognized certification organization.
- 6.7.11 Corrugated stainless steel tubing (CSST) and associated **fittings** shall comply with ANSI/LC 1/CSA 6.26 or CSA publication CGA Certification Laboratory Requirement LAB-009.
- 6.7.12 Corrugated stainless steel tubing (CSST) shall not be used as a **gas connector**.
- 6.7.13 Piping, tubing, and **hose** shall be of sufficient size to provide a supply of gas to meet the requirements of volume and pressure at the point of use.
- 6.7.14 The piping or tubing system shall be designed to prevent the loss in pressure between the **appliance** and the last-stage **regulator** from exceeding 1 in w.c.
- 6.7.15 A hose connector rated at not less than 350 psig (2500 kPa) shall be provided between
(a) the cylinder valve outlet and the inlet of the regulator when the regulator is rigidly mounted on a support bracket; or
(b) the regulator outlet and the main propane piping or tubing when the regulator is rigidly fixed to the cylinder valve outlet.
- 6.7.16 Propane piping and tubing located beneath a vehicle shall be securely fastened.
- 6.7.17 In the case of propane piping or tubing provided with more than one main supply connection, any supply connection not in use shall be capped or plugged.
- 6.7.18 All propane piping and tubing shall be supported by metal straps or hangers that have been galvanized or received equivalent protection. These supports shall be placed at intervals of not more than 4 ft (1.25 m), except where support is provided by the structure, and shall be anchored within 6 in (150 mm) of each end of the main propane line.
- 6.7.19 Propane piping or tubing shall be so located or protected as to prevent damage.
- 6.7.20 Outdoor piping shall be protected by either painting or coating.
- 6.7.21 Defects in propane piping or tubing shall not be repaired. Inferior or defective material shall be replaced.

6.7.22 Propane piping and fittings shall be clear and free from cutting burrs and defects.

6.7.23 A structural member of the vehicle shall not be cut, for the purpose of installing piping, in such a manner as to reduce the strength of the member below the strength required for the purpose for which it was intended.

6.7.24 When not connected to a container, the propane supply inlet shall be capped or plugged by the manufacturer of the vehicle or owner to exclude the entry of foreign matter.

6.7.25 Provision shall be made in the piping to allow for jarring, vibration, or movement of any appliance or equipment.

6.7.26 Hose shall not be used in lieu of piping or tubing but may be used in conjunction with piping or tubing.

6.7.27 When an appliance is removed for servicing or repair, the supply line or branch line to that appliance shall be sealed by means of a cap or plug.

6.7.28 When piping or tubing is run in a sleeve, the sleeve shall be of such material and so installed as to protect the piping or tubing from damage and galvanic action.

6.7.29 When piping or tubing passes through an exterior wall, it shall be sealed watertight and the portion of piping or tubing that runs through the wall shall be sleeved or double wrapped with a waterproof wrap.

6.7.30 Where tubing passes directly through walls, floors ceilings, and partitions, it shall be protected by grommets that fit snugly in both the line and the hole through which the line passes. Grommets shall be securely held in position and prevent abrasion or damage to the line from vibration. Grommets shall be made of rubber, plastic, leather, or a similar material (not metal). They shall extend completely through the member. Silicone, butyl caulk, and similar materials with adhesive qualities may be used as or in addition to grommets if they encircle the tubing and will not become dislodged from the hole.

6.7.31 Accessible means shall be made in the supply line at the furthest point from the fuel supply to conduct load testing.

6.8. Termination of vent and discharge lines from regulators

6.8.1 The discharge from a regulator vent, line relief valve, or hydrostatic relief valve shall terminate outdoors and be located

(a) not less than 3 ft (1 m) horizontally from any building opening that is below the level of such discharge and not beneath any building; and

(b) not less than 10 ft (3 m) in any direction from air openings into a direct-vent appliance, a mechanical air intake, or a source of ignition (including electrical generators).

6.8.2 A regulator vent, line relief valve, or hydrostatic relief valve discharging vertically upwards shall be provided with a loose-fitting rain cap. When discharging downwards, it shall be provided with a protective screen.

~~6.8.3 If the vehicle carries propane tanks or cylinders, then the Regulator Relief Vent terminations~~

shall be vented below the lowest point of the MFSE body so as not to create accumulation.

6.9. Appliances

- 6.9.1 Every gas-fired heating appliance, water heater, or refrigerator installed in a mobile food service truck or trailer vehicle, shall be of the direct-vent appliance type or equivalent, and shall be installed to provide complete separation of the combustion system from the atmosphere inside the vehicle.
- 6.9.2 A combustion air inlet or flue gas outlet of an appliance or any other vehicle opening shall be located at least 3 ft (1 m) from any engine filler spout or liquid-level gauge of the vehicle if the intake, outlet, or opening is located above or at the same level. If any portion of such inlet, outlet, or opening is located below the spout or fixed-liquid-level gauge, the clearance shall be the sum of the vertical distance below the spout or fixed-liquid-level gauge plus 3 ft (1 m).
- 6.9.3 Propane vapour, at a pressure not in excess of 13 in w.c. (3.2 kPa), shall be supplied into the piping or tubing supplying any appliance.
- 6.9.4 Provision shall be made to ensure a supply of combustion air for an appliance, other than an appliance of the direct-vent type.
- 6.9.5 An open door or window may be used as an alternative means of providing combustion or ventilation air to a food service vehicle, provided that the door is interlocked to the propane supply to ensure that the door remains open during appliance operation.
- 6.9.6 A clearance of not less than 16 in (400 mm) shall be provided between a deep fat fryer and an open flame of an adjacent appliance unless a non-combustible divider extending not less than 7 in (175 mm) above the fryer and the open flame of the adjacent appliance is provided.
- 6.9.7 All appliances installed in a self-propelled vehicle or in a trailer or cart shall be mechanically fastened to the vehicle, trailer or cart with a non-combustible restraining device. The retaining device shall prevent movement under normal operating conditions while stationary or in transport including rough roads or fields.

6.10. Special Provisions for Generators and Openings Proximate To Cylinders and Regulators

- 6.10.1. Notwithstanding any other code requirements, the discharge from a regulator vent, line relief valve, or hydrostatic relief valve on a MFSE may be located:
- (a) less than 3 ft (1 m) horizontally from any building opening that is below the level of such discharge and not beneath any building; and
 - (b) less than 10 ft (3 m) in any direction from air openings into a direct-vent appliance, a mechanical air intake, or a source of ignition (which includes Generators);

provided that the following conditions are met:

- (i) its associated cylinder will be isolated from the entrance door of the truck, and/or from the Generator by means of a metal shield extending from just above the top of the cylinder collar down to the cylinder platform and sealed to the wall of the truck,
- (ii) its vents will be piped downward to below the door opening and/or generator

- and directed away from the vehicle, and
- (iii) a label will be attached adjacent to each cylinder which reads:

DANGER
Propane Cylinder Relief Valves Must Be Directed Away From The Vehicle Into Open Air.

Note: Notwithstanding clause 6.4.2, when the “metal shielding” is part of a cabinet or recess, then it must have ventilation holes on the side opposite the entrance door and/or generator. The combined vent area shall not be less than 5 in² (3000 mm²). Also, the vent of the regulator, line relief valve, or hydrostatic relief is to be piped down through the base of the cabinet, terminate under the vehicle, and be directed toward the side of the vehicle.

- 6.10.2 Notwithstanding any other code requirements, a cylinder may be installed outside on a MFSE, with the discharge from the cylinder relief valve less than
- (a) 3 ft (1 m) on a horizontal plane from any MFSE opening when the opening is below the level of the relief valve discharge;
 - (b) 10 ft (3 m) on a horizontal plane from the air intake of any appliance or air-moving equipment; and
 - (c) 10 ft (3 m) on a horizontal plane from any source of ignition (which includes Generators).
- Items (b) and (c) shall not apply to an appliance

provided that the following conditions are met:

- (i) the cylinder will be isolated from the entrance door of the truck, and/or from the Generator by means of a metal shield extending from just above the top of the cylinder collar down to the cylinder platform and sealed to the wall of the truck,
- (ii) its vents will be piped downward to below the door opening and/or generator and directed away from the vehicle, and
- (iii) a label will be attached adjacent to each cylinder which reads:

DANGER
Propane Cylinder Relief Valves Must Be Directed Away From The Vehicle Into Open Air.

Note: Notwithstanding clause 6.4.2, when the “metal shielding” is part of a cabinet or recess, then it must have ventilation holes on the side opposite the entrance door and/or generator. The combined vent area shall not be less than 5 in² (3000 mm²). Also, the vent of the regulator, line relief valve, or hydrostatic relief is to be piped down through the base of the cabinet, terminate under the vehicle, and be directed toward the side of the vehicle.

- 6.10.3 Notwithstanding any other code requirements, a container may be located so that the discharge from the relief valve is less than 3 ft (1 m) horizontally from an opening into a vehicle, including combustion air inlets or flue gas outlets, below the level of such discharge;
- provided that the following conditions are met:

- (i) its associated cylinder will be isolated from the entrance door of the truck, and/or from the Generator by means of a metal shield extending from just above the top of the cylinder collar down to the cylinder platform and sealed to the wall of the truck,
- (ii) its vents will be piped downward to below the door opening and/or generator and

directed away from the vehicle, and
(iii) a label will be attached adjacent to each cylinder which reads:

DANGER
Propane Cylinder Relief Valves Must Be Directed Away From The Vehicle Into Open Air.

Note: Notwithstanding clause 6.4.2, when the “metal shielding” is part of a cabinet or recess, then it must have ventilation holes on the side opposite the entrance door and/or generator. The combined vent area shall not be less than 5 in² (3000 mm²). Also, the vent of the regulator, line relief valve, or hydrostatic relief is to be piped down through the base of the cabinet, terminate under the vehicle, and be directed toward the side of the vehicle.

7. Portable Carts (with Self-Contained Propane Supply Systems)

- 7.1. A food service cart having more than two wheels shall have means to lock the cart in a stationary position.
- 7.2. Integral retention means shall be provided on a food service cart to limit the movement of the propane gas cylinder. With the cylinder installed per the manufacturer’s Instructions, lateral movement shall not exceed 1 in (25.4 mm) at the retention means, and the cylinder or any portion thereof shall not become dislodged from its retention means when a lateral force equal to the full weight of the cylinder is applied in any direction at the center of the vertical height of the cylinder. This test shall be conducted with the installed cylinder empty and full.
- 7.3. If the means is for attachment to the protective collar of the cylinder, it shall not interfere with the operation of the cylinder valve. Any movement shall not transmit strain to rigid tubing or pipe connections.
- 7.4. Retention means shall not depend on openings in either the cylinder’s protective collar or foot ring unless the appliance manufacturer specifies the following information:
 - (a) the cylinder manufacturer(s) identity (symbol, trade name, etc.) as marked on the cylinder;
 - (b) the marked cylinder water capacity or LPG capacity (in pounds) as stated by the cylinder manufacturer(s); and
 - (c) cylinder(s) that are to be approved for use with the appliance shall be provided by the appliance manufacturer for test.
- 7.5. Mounting and retention means shall incorporate adequate adjustments to accommodate the size cylinder specified by the manufacturer.
- 7.6. A food service cart for connection to a self-contained LP-gas supply system shall be equipped with a pressure regulator. The regulator shall comply with the Standard for Pressure Regulating Valves for LP Gas, ANSI/UL 144, as a part of the self-contained LP-gas supply system.
- 7.7. The regulator shall be installed in such a location that it will not attain a temperature above 130°F (54.4°C).

- 7.8. The regulator shall incorporate a pressure relief valve or overpressure device.
- 7.9. A food service cart with input ratings exceeding 100,000 Btu/h shall be equipped with a two-stage regulator.
- 7.10. The inlet of the pressure regulator for connection to a self-contained propane system shall be fitted for attachment to one of the following:
- a. a CGA No. 791 Cylinder Connection Device and complying with the Standard for Cylinder Connection Devices, ANSI Z21.81 • CSA 6.25 or the Standard for Adapters and Cylinder Connection Devices for Portable LP-Gas Cylinder Assemblies, UL 2061;
 - b. a CGA No. 810 Cylinder Connection Device and complying with the Standard for Cylinder Connection Devices, ANSI Z21.81 • CSA 6.25, or the Standard for Adapters and Cylinder Connection Devices for Portable LP-Gas Cylinder Assemblies, UL 2061; or
 - c. a CGA No. 600 Cylinder Connection Device complying with 1.6.8, and incorporating a filter on the inlet connection with minimum filtering of 80 micron size.
- 7.11. Except for a No. 600 Connection, connection devices shall:
- a. not permit the flow of gas until a positive gas seal has been achieved;
 - b. have a thermal shut-off device complying with the Standard for Cylinder Connection Devices, ANSI Z21.81 • CSA 6.25, or the Standard for Adapters and Cylinder Connection Devices for Portable LP-Gas Cylinder Assemblies, UL 2061; and
 - c. have an excess flow device complying with the Standard for Cylinder Connection Devices, ANSI Z21.81 • CSA 6.25, or the Standard for Adapters and Cylinder Connection Devices for Portable LP-Gas Cylinder Assemblies, UL 2061.
- 7.12. For appliances with a manufacturer's rated input of 80,000 Btu/hr (23 448 W) and below (with a 5 percent plus or minus tolerance), Class I excess flow device shall be used. For appliances with a manufacturer's rated input higher than 80,000 Btu/hr (23 448 W) (with a 5 percent plus or minus tolerance), Class II device may be used.
- 7.13. The by-pass flow rate after the device activates will be no greater than 10 scf/hr (0.28 m³/hr).
- 7.14. A cylinder connection device shall have its primary seal attached to the cylinder portion of the device.
- 7.15. The appliance side portion of a cylinder connection device shall not be capable of attachment to the cylinder portion of a Compressed Gas Association No. 510 Connection.
- 7.16. On food service carts for connection to a self-contained gas supply, provision shall be made between the supply cylinder regulator outlet and the main gas burner valve, by means of a flexible connection for expansion, contraction, jarring and vibration. Aluminum tubing shall not be used for this purpose.

7.17. Flexible connections, including hose, shall be as short as practicable, suitable for the

purpose and the temperature to which exposed.

- 7.18. A food service cart shall be provided with a gas hose assembly complying with the current Standard, Elastomeric Composite Hose and Couplings for Conducting Propane and Natural Gas, CAN/CGA-8.1 or with the current Standard, Thermoplastic Hose and Hose Couplings for Conducting Propane and Natural Gas, CAN1-8.3.
- 7.19. Gas hose assemblies shall be of such length or otherwise restrained so that the regulator cannot drop to the ground when disconnected from the cylinder valve.
- 7.20. Provision shall be made so the hose cannot come into contact with surfaces whose temperatures are in excess of 140°F (60°C) when the gas appliances are in operation.
- 7.21. A cylinder valve's temperature shall not exceed 130°F (54.5°C).
- 7.22. The enclosure for the propane gas cylinder shall isolate the cylinder from the burner compartment to provide (1) shielding from radiation, (2) a flame barrier, and (3) protection from foreign material, such as hot drippings.
- 7.23. There shall be a minimum clearance of 2 in (50.8 mm) between the floor of the propane gas cylinder enclosure and the ground.
- 7.24. The design of a food service cart shall be such that (1) the propane gas cylinder can be connected, disconnected and the connections inspected and tested outside the cylinder enclosure; and (2) those connections which could be disturbed when installing the cylinder in the enclosure can be leak tested inside the enclosure.

8. Generators

- 8.1. For MFSE which have a self-contained generator, a vapour tight separation between the generator and cooking appliance area is required. A door with a complete seal will suffice to meet this requirement.

9. Clearance To Combustible Construction

If the individual appliance bears a recognized certification mark, the clearances to combustibles shall be verified. If the appliance does not bear a recognized mark, the temperature on adjacent combustible material shall be measured and shall not exceed:

- (a) 50°C (90°F) rise above ambient for any surface in contact or underneath the appliance; or
- (b) 65°C (117°F) rise for all other surfaces.

10. Danger Labels

The following danger labels shall be affixed to all MFSE, be readily visible and located adjacent to the propane container with the following wording:

DANGER

- Cooking appliances shall not be used for space heating
- When the propane appliance is not in use or the vehicle is stored, shut off the supply of propane to the appliance (at the propane tank)

BEFORE TURNING ON PROPANE:

- Make certain all propane connections are tight, all appliance valves have been turned off and any unconnected outlets are capped
- If an open door is used for ventilation/combustion air, ensure the door is open before turning on propane

AFTER TURNING ON THE PROPANE

- Light all pilots of appliances to be used
- Each connection, including those at appliances, regulators, and cylinders, shall be leak tested initially and periodically with soapy water by the operator. Never use a lighted match or other flame when checking for leaks
- Do not leave a system turned on or containers connected until the system has been proven to be leak (propane) tight
- When the containers are disconnected, the propane supply line shall be capped or plugged

For all Self-Propelled MFSE, the following additional danger label shall be affixed at the vehicle's fueling point and at the propane container with the following wording:

DANGER

- All pilot lights, appliances and their igniters shall be turned off during refueling of the motor fuel tanks and/or propane containers. Failure to comply can result in death or serious injury.

The word "DANGER" shall be a minimum of ¼-inch (6.4 mm) in height. All other words on the label shall be a minimum 1/8-inch (3.2 mm) in height.

For Carts with Self-Contained Propane Supply System the following additional statement shall appear on the label.

- For Outdoor Use Only. If Stored Indoors, Detach and Leave Cylinder Outdoors.

11. General Rating Plate

In addition to the appliance rating plate(s), each MFSE shall contain a general rating plate identifying all fuel burning equipment. The TSSA approval sticker will be attached to this rating plate, please include a 2" x 2" space. The following information shall be included:

- a. Appliance(s) Manufacturer's or vendor's name
- b. Appliance type(s) and identification number
- c. Vehicle Identification (V.I.N or License Plate Number)
- d. Electrical specifications
- e. Type of fuel(s)
- f. Maximum input rating in Btuh (Each Appliance)
- g. Inlet pressure at the point of connection
- h. Maximum and minimum burner manifold fuel pressure
- i. Clearances to combustibles (inches), if not on the appliance rating plate.

12. Resources

- CSA-1.8 – "Food Service Equipment"
- CSA-1.6 – "Outdoor Cooking Gas Appliances"
- CSA-B149.1-20 – "Natural Gas and Propane Installation Code"
- CSA-B149.2-20 – "Propane and Storage Handling Code"
- CSA-B149.3-20 – "Code for the field approval of Fuel Burning Appliances and Equipment"