Technical Safety Authority of Saskatchewan

NATURAL GAS AND PROPANE INSTALLATION CODE CSA B149.1:25

2026

Saskatchewan Interpretations

Effective April 1, 2026

TSASK CSA B149.1:25 Interpretations

Compliance is mandatory. This document addresses circumstances where inconsistent interpretation has been identified throughout industry and addresses past failures.

Contents

4 General

4.3 Responsibilities of the installer

4.3.9 Activation data

Installers shall supply a record of the properly adjusted manifold pressure for all gas appliances. This is not required for appliances that have a factory set gas pressure or are nonadjustable. All gas appliances shall have the start-up, adjustment, and safety checks performed as directed in the appliance installation manual. This data shall be displayed prominently on the appliance with a permanent marking device in a legible manner or in the start-up sheet accompanying the installation manual that is left on site.

Rationale: *The intent of 4.3.9 is to ensure appliances are properly commissioned in accordance with the manufacturer's installation instructions.*

4.3.10 Activations

The contractor shall provide Gas Inspections 48 hours' notice prior to initiating the activation of gas-fired equipment that is rated 1 000 000 Btu/h and over. The gas inspector, upon notification, shall determine if the activation of the equipment requires the presence of a factory-trained technician, the installer, and/or the gas inspector. Activations in high occupancy buildings shall take place when buildings are relatively unoccupied.

> **Note:** *You may require a permit and inspection from TSASK BPV Inspection Services for some boilers and/or pressure vessels. Contact TSASK for more information.*

4.3.11 Test firing

For equipment that has been deemed as requiring the presence of a gas inspector to activate, any and all permissions to "test fire" this equipment in our absence (prior to commissioning) must be received from Gas Inspections in written form. The permission must include the location, date, and personnel allowed to test fire the appliance, with an expectation that test firing is limited in scope and that the equipment may not be placed into operation until it is activated in the presence of the gas inspector.

Rationale: *The intent of 4.3.10 and 4.3.11 is to provide a policy that ensures high input equipment is safely commissioned and function tested.*

4.5 Suitability of Use

4.5.5.1 Other damages

The inspection of appliances that have been subjected to other damage shall include the mechanical and electrical systems of appliances that have been subjected to smoke, soot, and the effects of fire suppression.

Rationale: *The intent of 4.5.5.1 is to further define and clarify the term "other damage".*

4.9 Hazardous locations

4.9.3 Dugouts and partial basements

An appliance shall not be installed:

a) on an earth floor; or
b) in an area having uncribbed earth walls unless a clearance of 4 ft (1.2 m) can be maintained around the appliance.

Rationale: *The intent of 4.9.3 is to establish and provide a suitable distance between a gas appliance and a sloping dirt wall based on unstable soil conditions commonly found in Saskatchewan.*

4.11 Isolation of safety devices

4.11.1 Car sealed

Where burners are required to operate constantly, then a locked-open, or sealed-open, manual valve to isolate a safety limit control may be installed for servicing, maintenance or testing purposes. This valve may only be unlocked, or unsealed, and closed if the gas-fired equipment under the protection of the safety limit control has continuous manual supervision while the safety limit control is out of service. A documented work procedure submitted and acceptable to Gas Inspections shall be followed during use of each such isolation valve. Under no circumstances are input lines to relief valves to be isolated or have isolation valves installed.

4.11.2 Pressure relief path

In a plant environment, where a relief valve terminates into a common flare header, a locked-open, or sealed-open, full port manual valve may only be used to isolate the operational flare header from the relief valve discharge (for maintenance purposes of the equipment under the protection of the relief valve) when the TSASK Pressure Relief Path (PRP) Stop Valve Control Program is utilized. The requirements for application and the PRP Stop Valve Control program manual are available from TSASK Boiler & Pressure Vessels. Copies must be made available to both TSASK Boiler & Pressure Vessel and to TSASK Gas Inspections for approval.

Rationale: *The intent of 4.11.1 and 4.11.2 is to provide detail and acceptable requirements for servicing safety valves in industrial locations. These code clauses are aligned with TSASK Boiler & Pressure Vessel rules for the same sites.*

4.14 Accessibility

4.14.8 Acceptable design methods

4.14.8.1 Walkways

A walkway shall

a) be raised and securely affixed to the roof;
b) be a minimum of 18 in (610 mm) wide and constructed and supported to handle the anticipated loads without appreciable material deflection;
c) have anti-skid characteristics such as provided with an expanded metal surface. An adhesive anti-skid material applied directly to the roof does not create an acceptable all-weather walkway;
d) have a hand/guard rail starting at the point of access to a distance of 6 ft (1.8 m) from the roof edge along the walkway when the point of access to the roof is within 6 ft (1.8m) of the edge and the roof slope is 3 in 12 or less pitch;
e) have a hand/guard rail continuously along the walkway when the roof exceeds a 3 in 12 pitch;
f) have a hand/guard rail that is constructed in accordance with current Saskatchewan OH&S regulations; and
g) be designed to ensure that the roof structure has the capability to support the additional load associated with the walkway structure;
h) or of an *approved* engineering design.

4.14.8.2 Working platforms

A working platform shall

a) be securely affixed to the roof;
b) be located on all sides of the appliance that requires servicing access;
c) be constructed as the walkway and be a minimum of 30 in (762 mm) in width, with a hand/guardrail constructed as required for the walkway;
d) be installed within 6 in (152 mm) horizontally of the appliance's edge in a way that does not interfere with any part of the appliance that requires removal for servicing purposes; and
e) be designed to ensure that the roof structure has the capability to support the additional load associated with the working platform structure;
f) or of an *approved* engineering design.

4.14.8.3 Access with multiple roof levels

A building with gas appliances installed on roofs with multiple levels shall have

a) a permanent fixed access ladder or suitable step/stairway as part of the continuation of the walkway system where passage is obstructed by a pony wall or parapet higher than 3 ft (914 mm) in height to allow for safe access to gas appliances;
b) the access ladder designed and constructed to meet requirements as specified in the current Saskatchewan OH&S regulations; and
c) the steps/stairways designed and constructed to meet the requirements as specified in the National Building Code of Canada;
d) or of an *approved* engineering design

Rationale: *The intent of 4.14.8 is to provide sufficient and acceptable means of access to appliances on roofs in order to permit maintenance, repair and replacement, based on roof pitch.*

6 Gas piping systems

6.2.23 CSST prohibition

6.2.23.1 Prohibited connection to a swing

CSST shall not be directly connected to a black iron swing joint.

Rationale: *The intent of 6.2.23.1 is to ensure a black iron swing joint will perform as intended without causing excessive strain on the CSST pipe and connection.*

6.7 Location

6.7.7 Aggressive environments

Gas piping systems installed in an aggressive environment including, but not limited to, intensive livestock barns, and potash mines, shall not use materials with low tolerance for these conditions. The use of CSST, schedule 10 steel piping, or brass fittings and components, on gas piping systems in these environments is prohibited. Where the source for corrosion is a component of the gas stream, such as sour oilfield or digester gas, low tolerance materials, such as CSST, schedule 10 steel piping, or brass, shall not be allowed in contact with the gas stream.

Rationale: *The intent of 6.7.7 is to align with CSA B.149:25 Clause 6.2.3.1 to prohibit susceptible piping installed in aggressive environments, based on past failures of light wall pipe.*

6.8 Piping practices

6.8.8 Supply header exceeds NPS 2-1/2

6.8.8.1 Prohibition

Job-fabricated welded fittings (for example, branch connections job-fabricated using the stub-in and back-welding method in CSA B149.1:25) are not allowed in any gas piping system. Branch connections on steel gas piping systems shall use a manufactured fitting, such as a tee, weld-o-let, or thread-o-let, meeting the material selection criteria of CSA B149.1:25 Clause 6.2.2.

Rationale: *The intent of 6.8.8.1 is to specify the use of approved fittings in order to align with weld procedures in reference to standards governing their specific application.*

6.11 Appliance connections

6.11.1.1 Rigid cabinet penetration

Except as permitted by TSASK CSA B149.1:25 Interpretations Clause 6.11.1.2, where an appliance is connected to a flexible piping or tubing system, connection to the appliance shall be outside the cabinet and into a tee fitting containing a drip pocket and rigid piping that extends to the appliance gas valve.

6.11.1.2 Flexible cabinet penetration

A flexible piping or tubing system may be used with a protective sleeve to:

a) penetrate the cabinet of a mobile/manufactured home furnace, or
b) penetrate the cabinet of a fireplace.

Rationale: *The intent of 6.11.1.1 and 6.11.1.2 is to align drip pocket requirements of CSA B.149.1:25 Clause 6.13.1 and the CSST manufacturer's installation instructions to prevent physical contact between CSST and an appliance cabinet.*

6.11.7 Appliance connections

Installers must provide an effective swing joint at all rigid piping manifold connections to meters or appliances installed on earth supported floors, or pad-mounted outdoors. When using threaded pipe, the swing joint shall consist of two consecutive threaded 90° elbows installed on a nominally horizontal plane.

When using flexible piping or tubing, the installer shall provide a 5 in (125 mm) to 8 in (200 mm) free motion offset connected to a tee fitting containing a drip pocket and rigid piping that extends to the appliance gas valve. The flexible piping or tubing shall not be anchored in a manner in which movement of the appliance due to soil conditions causes stress on the gas piping or tubing.

Rationale: *Piping swing joints and tubing offsets are required due to ground movement throughout the province. Proper piping swing joint and tubing offset configuration ensures that the piping and tubing system and appliance/meter assembly are permitted to move independently without creating undue pressure or stress on the piping or tubing system.*

6.15 Underground piping and tubing

6.15.2.1 PE pipe connection

Underground polyethylene piping systems shall only be joined below grade by butt fusion, socket fusion, electrofusion, or mechanical fittings certified to CSA B137.4 (such as "Permasert" or "Con-Stab"), except for underground piping systems in active landslide areas (see TSASK CSA B149.1:25 Interpretations Appendix B) in which case all mechanical fittings underground are prohibited.

Rationale: *The intent of 6.15.2.1 is to provide acceptable means of polyethylene connections below grade in active landslide areas. This is due to excessive force being applied to fittings during ground movement.*

6.15.2.2 Steel connection

On steel underground gas piping systems, the use of press fit fittings is allowed if the following steps are followed:

a) a site plan and isometric drawings are supplied in advance to TSASK Gas Inspections; and
b) the installing contractor has supplied TSASK with the certification and company information about who will be applying the exterior coating. The corrosion protection must be listed in the manufacturer's installation instructions.

Rationale: *The intent 6.15.2.2 is to align with CSA 6.32 and CSA B.149.1:25 Clause 6.16.1 to provide permission requirements for the installation and protection of press connect fittings below grade.*

6.15.3.1 Type L tubing connection

Type L coated copper liquid propane tubing having an underground tubing connection shall have a polyethylene shrink wrap sleeve installed to cover any exposed section of tubing and fitting. The sleeve shall be positioned to one side of the connection, exposing the connection during the air test, and installed permanently over the connection after the completion of the air test and before burial.

Rationale: *The intent of 6.15.3.1 is to ensure that the external coated copper tubing protection below grade is continuous.*

6.15.3.2 Copper tubing connection

Acceptable underground copper tubing systems shall only be joined below grade by brazing with a material that has a melting point exceeding 1000°F (525°C).

Rationale: *The intent of 6.15.3.2 is to identify acceptable means of joining copper tubing below grade due to excessive force applied during ground movement within the province.*

6.15.4.1 Rocky terrain

Where, due to rocky terrain, it is impractical to comply with section 6.15.4, piping and tubing systems may be installed in accordance with TSASK CSA 149.1:25 Interpretations Appendix A.

Rationale: *Appendix A outlines requirements on how to safely gas pipe in rocky terrain. Information is not readily available in the national code to ensure a level of safety for these applications.*

6.15.8.1 Swing

A minimum 10 in (250 mm) piping swing joint or tubing offset, measured from center to center, shall be installed at above ground connections to underground piping systems up to and including 2 in NPS. Swing joints are only effective when constructed from threaded pipe or press connect* are installed. Welded fittings do not provide an approved swing joint.

When using threaded or press connect piping and fittings, the swing joint shall consist of two consecutive 90° elbows installed on a nominally horizontal plane.

When the underground material is copper tubing that is piped into an acceptable threaded or press fit swing joint, an offset in the copper tubing is redundant and not necessary. Due to its lower tensile strength, underground CSST will require an above-ground offset before transitioning to a steel piping system.

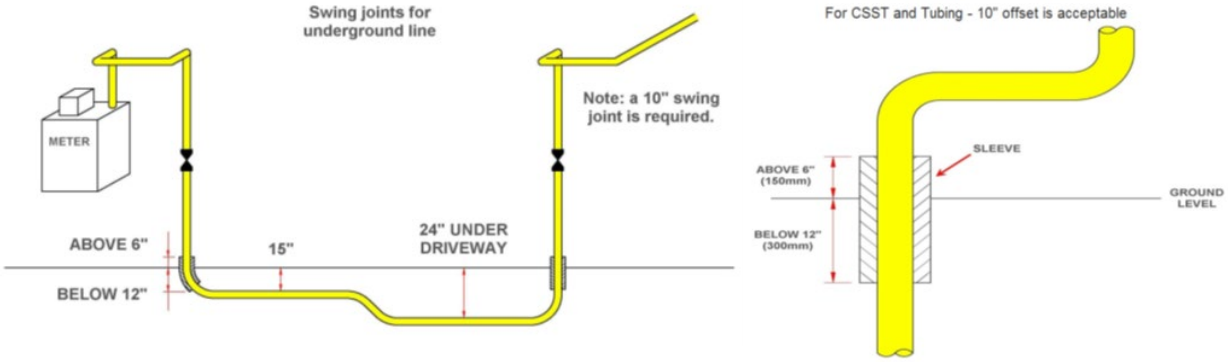
**In accordance with the manufacturer's support.*

Rationale: *Piping swing joints and tubing offsets are required due to ground movement throughout the province. Proper piping swing joint and tubing offset configuration ensures that the piping and tubing system and appliance/meter assembly are permitted to move independently without creating undue pressure or stress on the piping and tubing system.*

6.15.10.1 Grade point sleeve

Where piping or tubing penetrates the grade-level, a sleeve shall be installed a minimum of 6 in (150 mm) above to 12 in (300 mm) below grade-level, to protect the piping or tubing where it penetrates grade-level by permitting free movement of the soil and covering without placing strain on the piping or tubing.

Rationale: *The intent of 6.15.10.1 is to require grade point sleeves on all risers due to the possibility of paving to occur after installation and to provide dimensional detail for those sleeves.*



6.15.14.1 Tracer wire

Non-metallic piping or tubing shall be accompanied by a minimum 14 AWG TWU copper tracing wire. The tracer wire must be taped to the gas line using low conductivity electrician's tape at consistent [max. 16 ft (5 m)] intervals, unless pipe and tracer wire are installed by ploughing. Tracer wire terminations shall be readily accessible.

Rationale: *The intent of 6.15.14.1is to provide detail on tracer wire size and installation.*

6.15.16 Liquid propane

Underground piping or tubing used to conduct liquid propane is restricted to non-residential purposes and subject to these requirements:

a) the installation of underground liquid propane piping shall not commence until approval is granted by the local gas inspector;
b) where a pump is used,
    i) the liquid supply line shall have an automatic shut off valve (located upstream of buried piping) that will close automatically when the pump is shut off; and
    ii) vapour return piping shall comply with liquid requirements except that listed in 6.15.16(b)(i); and
c) piping risers shall be sleeved at least one size larger than the riser and shall extend from the horizontal section of the underground line to 12" (300 mm) above grade to provide for ventilation of the underground line.

Rationale: *The intent of 6.15.16 is to provide detail and permission on the use of underground liquid propane installations in Saskatchewan.*

6.15.17 Landslide areas

Saskatchewan has several active landslides. These are located along the valley walls of rivers and lakes.

When installing a gas service to one of these areas check with the property owner for a copy of the geotechnical report showing where the structure is placed in relation to the fault lines. The gas utility cannot pass across fault lines with their service line. This means the gas meter may be installed some distance from the building. In this case, consult with the district gas inspector to see how the four ounce pressure supply line can be routed. You will need a copy of the geotechnical report in order to have the consultation with the gas inspector.

In some cases, the gas utility will have a copy of the geotechnical report.

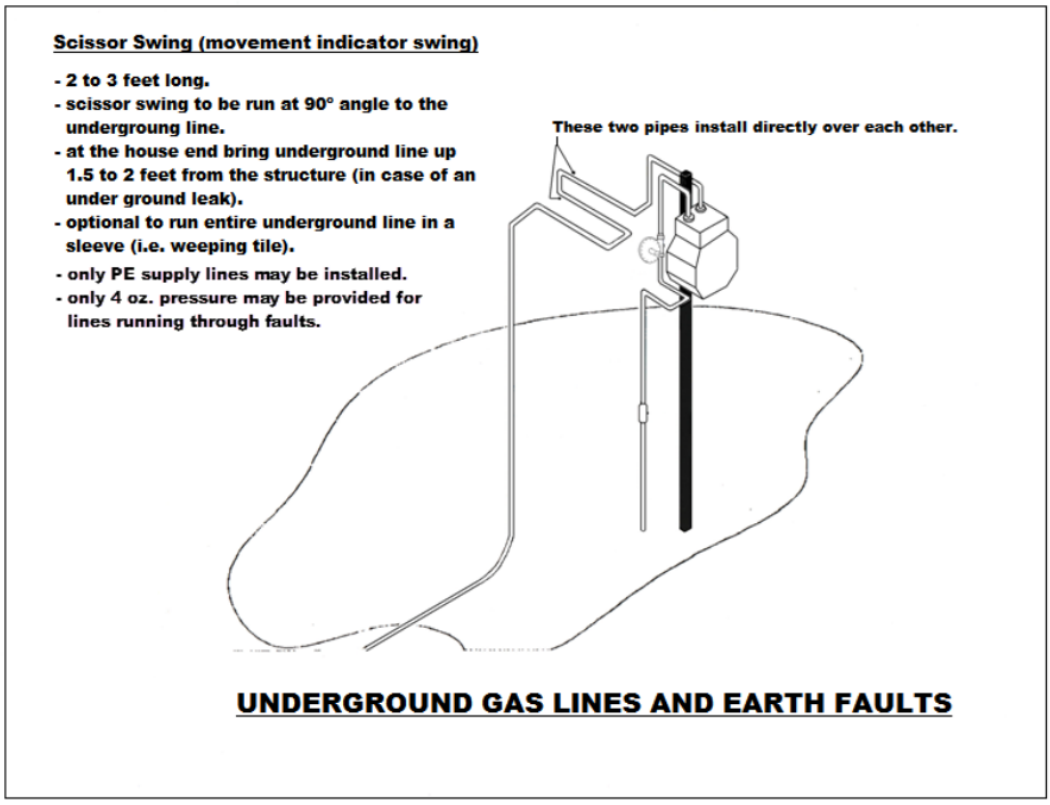
Do not install any underground supply lines that cross fault lines in a landslide area without the district gas inspector's approval.

Refer to Appendix B - Specifications for service lines through fault lines in active landslide areas in Saskatchewan for more details on requirements.

All below ground service line piping shall be polyethylene, minimum diameter 1-1/4 in NPS, joined using butt or socket fusion (including electrofusion) means only. No mechanical joining methods are permitted below ground.

The use of service head adapter risers, such as X-Riser and SurSeal, are permittable in these conditions.

Rationale: *The intent of 6.15.17 is to establish the means by which piping must be installed and configured in landslide areas due to Saskatchewan soil conditions.*



6.17 Identification of piping or tubing

6.17.1.1 Liquid propane

At all types of facilities, all exposed or above-ground liquid propane piping and tubing shall be painted yellow or red and shall be labelled or marked "HIGH PRESSURE LIQUID PROPANE".

Rationale: *The intent of 6.17.1.1 is to identify a consistent means of identification for liquid propane piping.*

6.17.4.1 Permanent identification methods

Acceptable means of permanent identification of the room number, apartment number, or the area of the building served by each piping or tubing system include:

a) an embossed tag with raised lettering on a stainless steel, brass, or aluminum tag; or
b) an engraved tag with engraved lettering on a stainless steel, plastic, or aluminum tag.

6.17.4.2 Fastening tags

All tags shall be fastened using an ultraviolet and corrosion resistant system such as stainless steel wire.

6.17.4.3 Prohibited methods

Unacceptable means of compliance include:

a) “permanent" marker, whether or not used on a tag, wall, or piping;
b) any type of printed or written tag. There is no existing ink product with sufficient durability to UV degradation to be considered acceptable;
c) illegible markings or tags; and
d) plastic cable zip ties.

Rationale: *The intent of 6.17.4.1, 6.17.4.2, and 6.17.4.3 is to establish acceptable means of meter identification that can withstand Saskatchewan design temperatures and conditions.*

6.20 Gas hose and fittings

6.20.3 Installation

When a gas hose is used

l) to connect to mobile/manufactured homes or park model trailers the maximum 10 ft (3 m) in length gas hose connected to the supply utility must terminate to rigid piping at a location outside of where a skirting is currently installed, or where a skirting may be installed in the future;

m) to connect to agricultural or oilfield gas burning equipment, such as a grain dryer or treater, then the hose shall be protected from damage and shall not exceed 30 ft (9.1 m) in length;

n) to convey liquid propane from a storage tank to a grain dryer, it shall be piped with a new certified 30 foot hose or underground copper with flared fittings at the tank and the grain dryer. The connection points shall be service tested with soap or approved leak detector; and

o) for liquid propane, and has previously been in use, it shall be tested while under restraint.

Rationale: *The intent of 6.20.3(l) is to clarify that the connections of a gas hose for a mobile/manufactured home are to occur outdoors.*

The intent of 6.20.3(m), 6.20.3(n), and 6.20.3(o) is to provide requirements for gas hoses used in agricultural, oilfield and liquid propane applications. These requirements address past failures.

6.21 Gas connectors

6.21.3 Corrugated metal gas connector

Except as specified in CSA B149.1:25 Clause 7.23.3, a corrugated metal gas connector certified to CSA/ANSI Z21.24/CSA 6.10 may be used to connect

d) rigid piping to a mobile/manufactured home furnace within the furnace cabinet, or to connect a water heater in a mobile/manufactured home.

Rationale: *The intent of 6.21.3 is to permit the use of a CSA 6.10 connector within a mobile/manufactured home furnace cabinet due to the restrictive location and access.*

6.22 Testing of piping, tubing, hose and fittings

6.22.1.1 Notification

Gas Inspections shall be notified of all underground, commercial, and industrial air tests, as well as residential air tests on loads over 1 000 000 Btu/h.

6.22.2.1 Low pressure testing

All copper and polyethylene piping systems shall be leak tested using air or inert gas (such as nitrogen) as the test medium. All steel piping systems where the test pressure generates a stress below 30% of Specified Minimum Yield Strength (SMYS) of the piping material shall be leak tested using air or inert gas as the test medium. Only under special circumstances will Gas Inspections permit liquid hydrostatic testing of piping systems, (see TSASK CSA B149.1:25 Interpretations Clause 6.22.2.2 regarding applications to Gas Inspections for approval to use a liquid as the test medium).

Example test pressures equating to a stress of 30% Specified Minimum Yield Strength (SMYS) for steel piping systems are given in TSASK CSA B149.1:25 Interpretations Appendix C.

6.22.2.2 High pressure testing

For test pressures exceeding a stress of 30% of Specified Minimum Yield Strength (SMYS):

a) both a leak and a strength test are required following the testing requirements and limitations of CSA Z662;
b) 100% of all welds have successfully passed radiographic inspection; and
c) air, inert gas or liquids are permissible as the leak and strength test medium on natural gas piping, provided the test and purge procedures have been approved by the Chief Gas Inspector. The temperature of liquid freezing must be significantly lower than the potential ambient temperature during the test. Purge procedures must include a liquid removal and disposal plan, and a plan for drying the gas piping system to an acceptable dewpoint of 0°F (-18°C). Liquids are not permissible as a test medium on propane piping systems.

6.22.2.3 Isolation

The pressure test described in CSA B149.1:25 Clause 6.22.2 shall be conducted on the entire gas piping system including all piping (including drops) to each appliance. The gas piping system shall be isolated from all appliance connections and isolated from all connections to live gas piping systems, utilizing positive pressure terminations, in the form of blinds, caps or plugs located at each tie-in point. Valves do not provide a positive pressure termination, and all valves in the gas piping system shall be in their fully open position during this pressure test.

6.22.7 Dormant piping

Where the fuel supply has been shut off to a building or equipment for a period exceeding one year, prior to reactivation the contractor shall:

a) air test the entire piping or tubing system downstream of the isolation point;
b) ensure that the appliances and venting system are safe for continued use; and
c) submit a gas permit and the appropriate fee.

6.22.8 For increase in operating pressure

Where the operating pressure of the gas piping system is being increased, the entire gas piping system affected by the change in operating pressure must be retested in compliance with CSA B149.1:25 Clause 6.22, including situations where the new pressure test duplicates the parameters of the original pressure test.

6.22.9 Piping verification

On all installations of a piping or tubing system, the installer shall complete a piping verification tag and hang the tag on the gas line in an accessible location proximal to the work performed. Piping verification tags may be those purchased from Gas Inspections or may be of the gas contractor's company design provided that the same information is provided at minimum.

Rationale: *The intent of 6.22.1.1, 6.22.2.1, 6.22.2.2, 6.22.2.3, 6.22.7, 6.22.8, and 6.22.9 is to provide clarification related to piping test procedures. These requirements address past failures.*

6.22.10 Liquid propane testing

The maximum operating pressure defined in the notes to Table 6.3 for liquid and vapour propane piping and tubing shall be used for material selection purposes. All liquid piping and tubing shall be tested according to the following procedure:

a) test pressure shall be 250 psig (1725 kPa);
b) testing medium shall be dry air, nitrogen, or other inert gas;
c) the testing apparatus shall include 2 calibrated test gauges [in accordance with CSA B149.1:25 Clause 6.22.2(b)] and shall be protected from overpressure using a certified and calibrated relief valve set at a start-to-discharge pressure of no more than 275 psig (1896 kPa);
d) test duration shall be 180 minutes;
e) underground piping and tubing shall be backfilled for restraint before the test is started, with all underground piping or tubing connections left exposed for the duration of the test; and
f) the test shall include all hydrostatic relief valves which are part of the propane piping and tubing system under the test.

Rationale: *The requirements listed in 6.22.10 are to provide test procedure clarification on liquid propane piping, to ensure sufficient testing parameters and installer safety.*

6.22.11 Hydrostatic testing approval

Requests for hydrostatic piping testing shall be submitted with persuasive justification, complete testing procedures, and complete drying procedures for approval. Testing may or may not be approved.

The drying procedure shall include the following:

a) drying medium;
b) drying time; and
c) wet testing (litmus paper or other means).

Rationale: *The intent 6.22.11 is to provide test procedure clarification on hydrostatic testing of piping to ensure sufficient testing parameters and installer safety.*

7 Installations of specific types of appliances

7.1 Boilers

7.1.4 Venting material

ULC 636 PVC shall not be used as venting material for (Category IV) condensing boilers.

Rationale: *The intent of 7.1.4 is to provide a minimum Category IV boiler vent temperature rating of 90 degrees C to accommodate hydronic system alterations resulting in elevated flue temperatures.*

7.1.5.1 Isolation of safety control

Boiler safety controls shall not be located or piped in such a way as to be isolated from the boiler by manual valves, check valves, or automatic valves.

Rationale: *The intent of 7.1.5.1 is to align with CSA B214 to ensure that safety components are not compromised by isolation valves and devices.*

7.1.5.2 Limit controls

All boilers shall have two limit controls. One shall act as an operating control, and one shall act as a high limit safety control.

Rationale: *The intent of 7.1.5.2 ensures boiler operation safety in accordance with the requirements of CSA B214.*

7.1.5.4 Low Water Cut-off (LWCO) Requirements

7.1.5.4.1 LWCO conditions

When the boiler is located above the lowest point in the heating system, a safety control to protect against low water conditions must be present as part of the certified appliance or must otherwise be installed. See TSASK CSA B149.1:25 Interpretations Clause 7.1.5.5.2.

7.1.5.4.2 LWCO installation

Where used, low water cut-off (LWCO) safety devices shall be installed and piped in the same manner as required by the Boiler and Pressure Vessels Act to allow for inspection and testing.

Rationale: *The intent of 7.1.5.4 is to ensure a boiler cannot operate in a low water condition.*

7.1.5.5 Installation and operation

7.1.5.5.1 No flow

Boilers designed to have burner operation with no flow conditions present shall be installed as per the manufacturer's installation instructions and any other requirements set forth by any national or local codes and jurisdictions.

7.1.5.5.2 Requiring flow

A coil or fin-tube boiler requiring forced circulation to prevent overheating of the coils or tubes shall be equipped with a flow-sensing device installed integral to the unit or within the outlet piping, and the sole function of the device shall be to shut off the fuel supply when the circulating flow drops below the minimum flow rate required to prevent overheating. Where a flow sensing device is used, a separate low water cut-off (LWCO) device per TSASK CSA B149.1:25 Interpretations Clause 7.1.5.4.1 is not required.

7.1.5.5.3 Return temperature control

Boilers sensitive to low return water temperatures shall be installed and controlled in such a way as to maintain the minimum return water temperature during normal operation. Owners and/or operators shall be instructed of any requirements regarding minimum return water temperature.

7.1.5.5.4 Temperature/pressure monitoring

Unless internally equipped, boiler installations shall include a minimum of two thermometers or temperature sensors located to accurately sense the water temperature inside (or leaving) the boiler and the return water temperature entering the boiler. Installations shall have a minimum of one pressure gauge located to accurately sense boiler pressure.

Rationale: *The intent of 7.1.5.5 is to ensure a boiler cannot operate in a low flow condition and maintains a minimal return inlet temperature in accordance with CSA B214.*

7.2 Generators, compressor/pressure boosters, engines, and turbines

7.2.1.9 Installation protection

CSA B149.1:25 Clause 7.2.1.9(e) *"is interlocked to shut off the appliance"* is not mandatory in Saskatchewan. See TSASK CSA B149.1:25 Interpretations Appendix F for gas detection concentration unit conversions.

Rationale: *The intent of exempting CSA B149.1:25 Clause 7.2.1.9(e) interlock requirement is due to the danger of shutting down an emergency use generator actively providing power to critical operation equipment.*

7.2.1.10 Hoses

An engine shall be equipped with a gas hose certified to CAN/CSA-8.1, CAN/CSA-8.3, ULC C536, or CGA CR96, not exceeding 6 ft (2 m) in length. Where the safety shut-off valve or valves are not supplied with and mounted to the engine or engine package by the manufacturer, the gas hose shall be installed downstream of the safety shut-off valve or valves. The valve train upstream of the gas hose shall be mounted, anchored, and supported in such a manner as to minimize damage to the valve train from vibration.

Rationale: *The intent of 7.2.1.10 is to ensure that, when required, additional safety shut-off valves are configured to offer protection to downstream gas hoses.*

7.2.4.1 Certification

An engine or turbine shall be certified to ANSI/CAN UL/ULC2200 or comply with CSA B149.3.

In Saskatchewan the requirements of CSA B149.1:25 Clause 7.2.4.1 are not required when the engine is used in agricultural and oilfield industries.

In addition to the requirements of the CSA B149.1:25 Natural gas and propane installation code, an engine up to 500 HP (372kW) in size shall:

a) be certified;
b) comply with CSA B149.3:25 Clause 17.3; or
c) comply with CSA B149.1:25 Annex N.

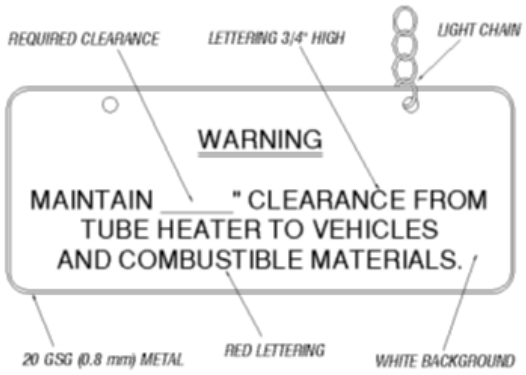
Rationale: *The intent of 7.2.4.1 is to clarify certification requirements associated with engines and turbines in low occupancy agricultural and oilfield applications.*

7.23 Infrared heaters

7.23.8 Clearance sign requirements

A clearance sign shall be installed with all infrared heater installations. The clearance sign may be as supplied by the heater manufacturer. In the event that a clearance sign is not supplied with the heater, or is missing, a clearance sign shall be installed following these minimum requirements:

a) the sign shall be not less than .020 GSG (0.8 mm) metal;
b) the sign shall be prominently displayed and attached with light metal chain to the bottom edge of the reflective shield; and
c) the sign paint shall be heat resistant. Lettering shall be a minimum ¾ in (19 mm) high, red on white background, and shall contain the following information:



Rationale: *The intent of 7.23.8 is to provide dimensional detail on clearance sign requirements and to ensure the equipment user maintains clearance to combustibles.*

7.27 Water heaters

7.27.8 Requirements for use with combination space heating systems

7.27.8.1 Certification

Only water heaters certified for use in a combination space heating system shall be used. Water heaters shall not be used in a space heating only application.

7.27.8.2 Connection

Side or bottom connections on water heaters shall not be used in combination space heating system applications unless specifically allowed in the manufacturer's instructions.

7.27.8.3 Circulator

A combination space heating system shall have a timed circulator rated for potable water use to fully circulate the water on the space-heating loop back to the water heater every 24 hours.

7.27.8.4 Heat exchanger

A heat exchanger that is rated for potable water use shall be used to transfer heat between the potable water and the heating fluid when a non-potable heating fluid is used in the space heating system.

7.27.8.5 Requirements

When a heat exchanger is used, the following requirements shall apply:

a) a device shall be installed to automatically maintain the operating pressure of the hydronic heating (secondary) loop lower than that of the potable water (primary) loop;
b) the gas contractor shall affix a prominent and permanent label to the pressure relief valve in the hydronic heating loop advising that the heat exchanger shall be examined in the event of a pressure relief valve discharge;
c) isolation valves shall be installed on the piping inlets and outlets of the heat exchanger;
d) a timed circulator rated for potable water use shall be installed to fully circulate the water on the potable water loop back to the water heater every 24 hours;
e) when temperatures greater than 140°F (60°C) are required in the space heating loop, a thermostatic mixing valve shall be installed to ensure that the potable water does not exceed 140°F (60°C); and
f) the hydronic heating loop shall require the following additional components:
    i) a pressure relief valve capable of protecting the lowest rated component of the system;
    ii) an expansion tank that is;
        I) rated for use in a hydronic system for the maximum system temperature and pressure, and
        II) set to the system fill pressure;
    iii) a back-flow prevention device if potable feed water piping is attached;
    iv) a pressure gauge;
    v) temperature gauges located on the supply and on the return;
    vi) a circulator; and
    vii) an air eliminator.

Rationale: *The intent of 7.27.8 is to align combination space heating requirements between B214 and manufacturer installation instructions to minimize risks commonly encountered in combination heating systems.*

7.27.9 Mobile/manufactured homes

All water heaters installed or replaced in mobile/manufactured homes shall conform to the following specifications:

a) water heaters shall be certified for installation in a mobile/manufactured home per CSA B149.1:25 Clause 4.8.1, unless the wheels, axels, and towing hitch have been removed per CSA B149.1:25 Clause 4.8.2, then CSA B149.1:25 Clause 4.8.3 applies;
b) when installed, storage water heaters shall be secured to the floor at two legs, and the top of the heater is to be secured with a bracket from a wall. Specified clearances are to be maintained;
c) for draft hooded or power vented water heaters, the water heater shall be installed in an enclosure which provides complete separation of the heater from the air within the home;
d) access to the heater may be either from outside the home or inside the home providing the door is tight fitting;
e) for draft hooded water heaters, the heater enclosure shall be provided with a minimum of two screened openings to outdoors, each with a minimum area of 7 in square [3 in (75 mm) in diameter];
    i) the upper opening is to be taken through the ceiling or within 18 in (450 mm) of the ceiling, ensuring it is above the relief opening of the draft hood;
    ii) the lower opening is to be taken through the floor or through an outside wall not exceeding 6 in (150 mm) above the floor;
f) power vented water heaters require a combustion air opening to the outdoors per TSASK CSA B149.1:25 Interpretations Clause 7.27.9(e)(ii); and
g) direct vented (sealed combustion) water heaters are permissible where CSA B149.1:25 Clause 4.8.3 applies.

Rationale: *The intent of 7.27.9 is to ensure compliance with requirements from other applicable codes. These requirements are specific to mobile/manufactured homes and maintain the certification of the dwelling unit.*

8 Venting systems and air supply for appliances

8.9 Appliance venting

8.9.6.1 Installation of ULC 636

When installing ULC 636 pipe and fittings from a manufacturer that requires a primer to be used at a specified ambient temperature, the certified primer shall be used, regardless of the ambient temperature.

Rationale: *The intent of 8.9.6.1 is to ensure primer is used on ULC 636 PVC/CPVC venting as manufacturers assembly temperatures and conditions fall outside of the parameters of Saskatchewan's design temperatures.*

8.10 Methods of venting appliances

8.10.3.1 Sidewall venting

All unit heaters being installed with sidewall venting in a *residential building* must use certified Category III venting material (typically stainless steel). Type BH vents are certified for Category III venting. Category III venting is a positive pressure, non-condensing application.

Rationale: *The intent of 8.10.3.1 is to align with CSA 2.6 requiring listed venting material to be installed when sidewall venting unit heaters in a residential building.*

8.10.4.1 BH venting selection

BH venting material shall be capable of the highest temperature flue gases that may be produced by the appliance that it is venting. This includes the highest elevated temperature flue gases produced by any user-accessible setting or configuration of the appliance.

Rationale: *The intent of 8.10.4.1 is to ensure appliance venting is not subjected to temperatures above their listed rating if user-accessible settings are manipulated.*

8.12 Chimneys

8.12.1.1 Clarifications

The following clarifications shall be followed for chimneys and vents:

a) chimneys:
   i) prefabricated Type A chimneys shall not be installed to vent gas fired appliances with a stack temperature less than 470º F (245°C); and
   ii) when connected to a gas appliance, masonry, concrete, brick and tile chimneys shall be lined with an approved metal chimney liner. A lined chimney shall be provided with an accessible inspection opening. An inspection opening shall be of such construction that it will remain tightly closed when not in use to prevent the entrance of air into the chimney at that point;

b) existing tile lined masonry chimneys in sound condition:
   i) when replacing only the water heater in a common vent application, no change is required;
   ii) when replacing a central heating appliance, or when altering the Btu/h load on the venting system, install a metal liner in accordance with TSASK CSA B149.1:25 Interpretations Clause 8.12.1.1(f) or a type B gas vent; and
   iii) when serving only a water heater, install a metal liner in accordance with TSASK CSA B149.1:25 Interpretations Clause 8.12.1.1(f) or a type B gas vent;

c) masonry chimneys with an existing metal liner in sound condition:
   i) if properly sized, interior located masonry chimneys may be used to vent:
      I) draft hood equipped appliances; or
      II) fan assisted appliances;

d) exterior masonry chimneys:
   i) when removing the largest (or major) Category I gas appliance vented into an exterior masonry chimney, the masonry chimney may not continue to be used unless it is lined with a properly sized B vent, L vent or an approved liner;

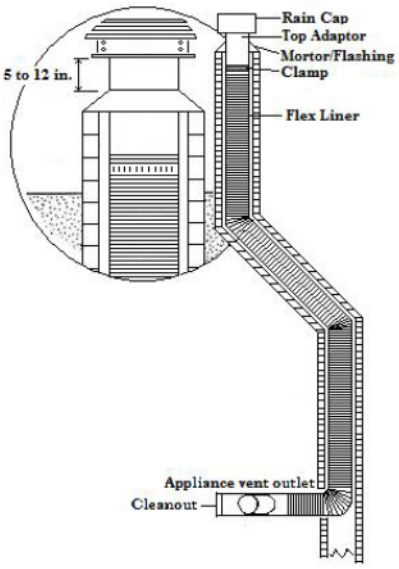
e) existing Type A factory built metal chimneys and other insulated metal chimneys:
   i) when replacing only the water heater in a common vent application, no change is required if the current chimney is in a sound condition;
   ii) when replacing a central heating appliance, or when altering the Btu/h load on the venting system, install a metal liner in accordance with TSASK CSA B149.1:25 Interpretations Clause 8.12.1.1(f) or a Type B gas vent;
   iii) when serving only a water heater, install a metal liner in accordance with TSASK CSA B149.1:25 Interpretations Clause 8.12.1.1(f) or a Type B gas vent;

iv) if oversized (water heater only), reduce in size in accordance with code requirements and use a certified B vent or approved chimney liner. When the water heater only is in an oversized Type A chimney and the water heater is replaced, the chimney shall be sized as per the vent tables in CSA B149.1:25 Annex C; and
v) when an existing Type A chimney is found to be unsound or defective (collapsing), it shall be replaced with a Type B vent and sized as per the vent tables in CSA B149.1:25 Annex C.

Note: *Replacement components of Type A metal chimneys are no longer approved in Saskatchewan. Chimneys with defects must be replaced with a certified Type B gas vent.*

f) chimney liners and vent connectors:
   i) aluminum flexible chimney liners and flexible vent connectors shall be certified for the application of intended use;
   ii) for downsizing an existing Class A chimney in sound condition or a B Vent in sound condition, a flexible liner certified for use in a factory-built chimney, a solid liner, or a B Vent may be used. The existing Class A chimney does not need to be reduced in height;
   iii) when a solid aluminum vent pipe is used to line or downsize a masonry chimney, a Class A chimney, or a Type B gas vent, or as vent connectors the following wall thicknesses shall be used:
      I) 3 in (75 mm) to 12 in (300 mm) must be minimum .025 inches (0.64 mm, or 22 gauge); and
      II) 13 in (325 mm) to 20 in (500 mm) must be minimum .032 inches (0.81 mm, or 20 gauge);
   iv) shop fabricated aluminum square liner is permissible where required;
   v) all liners shall be installed with the crimped end down. All joints in liners are to be fastened with stainless steel screws or aluminum or stainless-steel rivets;
   vi) liners that exceed the specifications in the venting tables are subject to good engineering practices;
   vii) aluminum venting and liners may only be used for gas-fired appliances producing flue gas temperatures of more than 275°F (135°C) but not more than 470°F (245°C); and
   viii) where the manufacturer's appliance installation instruction calls for heavier or thicker vents or vent connectors, the manufacturer's instructions shall be followed.

Rationale: *The intent of 8.12.1.1 is to provide a basis for vent and chimney installations of Category 1 appliances. These requirements mitigate past failures of venting systems experienced within the province.*



8.12.10.1 Chimney liner cap

Where a vent cap is installed as part of a lining system, adequate space must be provided between the flashing and vent cap to prevent a buildup of ice which could block the flow of products of combustion. Clearance between flashing and vent cap shall be between 5 in (125 mm) and 12 in (300 mm).

Rationale: *The intent of 8.12.10.1 is to provide acceptable distances of vent cap separation if not specified by the venting manufacturer.*

8.13 Vent and chimney sizing

8.13.4 DP column

All residential vents or chimneys shall be sized using the "DP" column in the tables in Annex C of CSA B149.1:25.

Rationale: *The intent of 8.13.4 is to provide a consistent means of Category 1 vent sizing used in a residential application based on building depressurization of 0.02 in wc.*

8.14 Vent and chimney termination

8.14.8 Vent termination limitations

A vent shall not terminate

h) underneath a veranda, porch, or deck unless
   iii) the 1 ft (300 mm) minimum clearance to the underside of the veranda, porch, or deck shall be measured from the top of the vent to the bottom of the joists;
i) through a sidewall above a pedestrian doorway;
j) less than 4 ft (1.2 m) beneath a ventilated soffit unless specified as per the manufacturer's instructions. For unvented soffits follow manufacturer's installation instructions.

8.14.14 Property clearance

A vent from a Category IV appliance:

a) shall not pass through an exterior wall and terminate adjacent to the exterior wall unless there is a minimum unobstructed distance of 4 ft (1.2 m) or greater from the foundation to the property line of the adjacent lot;
b) that terminates into a side yard which measures not less than 4 ft (1.2 m), and not greater than 8 ft (2.4 m), from the foundation wall to the property line of the adjacent lot, shall have a means of redirecting the vent plume with a certified fitting such as a tee, a 90 degree elbow or a termination acceptable to the Authority Having Jurisdiction, installed in accordance with the manufacturer's installation instructions; and
c) that terminates into a side yard which measures greater than 8 ft (2.4 m), from the foundation wall to the property line of the adjacent lot will not require redirection.

Note: *The above requirements do not apply to locations where adjoining properties are public spaces such as roadways, alleyways, walkways or parks where structures would not normally be erected. All installations are subject to CSA B149.1:25 Clause 8.14.8(a) and TSASK CSA B149.1:25 Interpretations Clause 8.14.15.*

8.14.15 Ice and frost

In all appliance installations the vent shall not be installed so that ice and frost can accumulate and have the potential to cause damage to property.

Rationale: *The intent of 8.14.8, 8.14.14, and 8.14.15 is to provide dimensional detail of vent terminations to prevent frost and ice accumulations on adjacent surfaces.*

Appendix A - Installation of piping or tubing in rocky areas

Where, due to rocky terrain, it is impractical to comply with section 6.15.4 (a), piping or tubing systems may be installed in accordance with this Appendix, the manufacturer's instructions and the Authority Having Jurisdiction.

1) When piping or tubing cannot be buried a minimum of 15 in due to rocky terrain, Type L polyethylene-coated copper tubing, or polyethylene (PE) piping, sleeved using high-density polyethylene tubing that contains a minimum 2% UV resistance by weight, may be used in accordance with this document and the manufacturer's instructions.
2) Tubing shall be installed without joints unless the required distance is beyond 100 ft. Tubing shall be joined or connected in accordance with CSA B149.1:25 Clause 6.15.3 and the sleeve shall be connected in accordance with the manufacturer's instructions.
3) Measures shall be taken to ensure that the pipe or tubing is protected from damage from vehicles, snow machines etc. (see CSA B149.1:25 Clause 6.16.3)
4) Where ground cover is not possible,
    a) above ground sections of the tubing sleeve shall be anchored to the contour of a secure rock surface at minimum 10 ft intervals. The sleeve shall be banded every 3 feet with a high visibility yellow tape; or
    b) piping shall follow the contour of the terrain without unsupported sections of pipe or tubing occurring above grade.
5) The PVC tubing sleeve is to be sealed at each end to prevent the entrance of dirt and moisture.
6) A trench for underground sections of the tubing shall be in compliance with CSA B149.1:25 Clause 6.15.5. The backfill material shall be free of sharp objects, stones larger than 38 mm, or any other material that may damage the piping or tubing.
7) Permanent markers (yellow with black writing) shall be placed along the piping/tubing system every 10 ft warning that the piping/tubing is part of a natural gas or propane system; and when installed on rock, the signs shall be anchored to the rock.
8) Permanent markers (yellow with black writing) are to be placed at the natural gas meter or propane container, and building, or outdoor appliance, warning of a shallow underground propane/natural gas piping or tubing system.

9) The markers referred to in 7) and 8) shall be of a height above the anticipated snow level for the area.
10) The polyethylene (PE) material being used as protective sleeves shall conform with the standard CGSB 41-GP-25M and shall contain a minimum 2% content of carbon black additive, which gives the product essentially a 50 year life cycle for resistance to UV rays from the sun.
11) A plan review application to Gas Inspections must be completed and approved prior to installation.

Appendix B - Landslide reference

Specifications for service lines that run through fault lines in active landslide areas in Saskatchewan (as applied to new services and existing service locations).

1) All service line designs through fault lines in active landslide areas in Saskatchewan require consultation with the local gas inspector on site to review all matters related to a safe design given specific local terrain considerations. Only after consultation and an approved design is documented shall construction commence.
2) The permitted operating pressure is 7 in wc (4 oz/inch²) only.
3) All below ground service line piping shall be polyethylene (PE), minimum diameter 1-1/4 in, joined using butt or socket fusion (including electrofusion) means only. No mechanical joining methods are permitted below ground.
4) Use anodeless risers for all risers. Tracer wire is to be terminated above ground at all risers.
5) A means of leak migration control shall be installed by either:
   a) lining the bottom of the entire service line trench using a "pea gravel" bedding with a minimum 6 in depth for the width of the trench. ("Pea gravel" shall consist of small, rounded stones as used in concrete surfaces); or
   b) installing the service line in a continuous polyethylene (PE) sleeve from riser to riser. Sleeves shall be kept to the smallest diameter practical to permit insertion of the carrier pipe. The allowable joining methods for PE sleeves are the same as those for the carrier pipe, as noted in item 3) above.
6) Piping risers shall be sleeved using non-metallic piping with a diameter the smallest size practical and shall extend from the horizontal section of the

underground line to 12 in (300 mm) above grade to provide for ventilation of the underground line.

7) Approved flexible connections shall be installed to connect from meter to riser, or from riser to riser, or from riser to service. These flexible connections may consist of either one of the following two designs:
   a) the scissor swing as detailed in the TSASK CSA B149.1:25 Interpretation Clause 6.15.19; or
   b) a stainless steel braided reinforced gas hose, certified CSA 8.1 Type II or Type III, with a minimum diameter of 1-1/4 in and with a minimum length of 4 ft.
8) At the time of installation, scissor swing installations shall be installed such that all sections of the scissor swing are either vertical, or level, as appropriate. At the time of installation, hose flexible connections shall be installed such that the hose end connections are level with each other, and as close as practicable to each other, with the hose slack (droop) above grade contact. The initial spacing between hose end connections shall be measured and recorded with a permanent (UV resistant) marking or tag fastened to the hose.
9) The minimum number of flexible connections on a service line shall be two with:
   a) the first flexible connection required at the meter stand prior to the underground riser; and
   b) the second flexible connection is as close as practical to the fault line and downstream of the fault line. Consideration shall be given to locating the second flexible connection on the service riser when and where warranted by distance and other local terrain considerations.
10) The service line crossing of the fault line may be buried if the fault line appears passive with little or no signs of recent or impending movement. Consideration shall be given to crossing the fault line above ground where the fault line appears active with recognizable signs of recent or impending movement. The determination of above or below ground crossing of the fault line shall be made during the design on site consultation with the gas inspector.
11) When the second flexible connection [either design as noted in item 7) above] is installed at a remote riser to riser location adjacent to the fault line and between the meter and the service riser, then the service riser requires termination to a normal (vertical movement only) riser at a minimum. In severe cases of active movement, a third flexible connection [item 7)] may be deemed necessary by the gas inspector.
12) Consideration shall be given to removing the operator handle on the dealer valve and/or isolation valves located at the meter due to its public and remote location. In all cases, a ¼ turn shut-off valve is required at the service riser.