1208.7.6 Bypass Piping. Valved and regulated bypasses shall be permitted to be placed around gas line pressure regulators where continuity of service is imperative. [NFPA 54:5.8.6]

1208.7.7 Identification. Line pressure regulators at multiple regulator installations shall be marked by a metal tag or other permanent means designating the building or the part of the building being supplied. [NFPA 54:5.8.7]

1208.8 Back-Pressure Protection.

1208.8.1 Where to Install. Protective devices shall be installed as close to the utilization appliance as practical, where the design of utilization appliances connected are such that air, oxygen, or standby gases could be forced into the gas supply system. [NFPA 54:5.10.1.1] Gas and air combustion mixers incorporating double diaphragm "zero" or "atmosphere" governors or regulators shall require no further protection, unless connected directly to compressed air or oxygen at pressures of 35kPa (5 psi) or more. [NFPA 54:5.10.1.2]

1208.8.2 Protective Devices. Protective devices shall include but not be limited to the following [NFPA 54:5.10.2]:

(1) Check valves;

(2) Three-way valves (of the type that completely closes one side before starting to open the other side);

(3) Reverse flow indicators controlling positive shutoff valves; and

(4) Normally closed air-actuated positive shutoff pressure regulators.

1208.9 Low-Pressure Protection. A protective device shall be installed between the meter and the gas utilization appliance if the operation of the appliance (i.e., gas compressors) is such that it could produce a vacuum or a dangerous reduction in gas pressure at the meter. Such devices include, but are not limited to, mechanical, diaphragm-operated, or electrically operated low-pressure shutoff valves. [NFPA 54:5.11]

1208.10 Shutoff Valves. Shutoff valves shall be approved and shall be selected giving consideration to pressure drop, service involved, emergency use, and reliability of operation. Shutoff valves of size 25mm (1 in.) and smaller shall be listed.

1208.11 Expansion and Flexibility.

1208.11.1 Design. Piping systems shall be designed to have sufficient flexibility to prevent thermal expansion or contraction from causing excessive stresses in the piping material, excessive bending or loads at joints, or undesirable forces or moments at points of connections to equipment and at anchorage or guide points. Formal calculations or model tests shall be required only where reasonable doubt exists as to the adequate flexibility of the system. [NFPA 54:5.13.1]

Flexibility shall be provided by the use of bends, loops, offsets, or couplings of the slip type. Provision shall be made to absorb thermal changes by the use of expansion joints of the bellows type, or by the use of "ball" or "swivel" joints. Expansion joints of the slip type shall not be used inside buildings or for thermal expansion. Where expansion joints are used, anchors or ties of sufficient strength and rigidity shall be installed to provide for end forces due to fluid pressure and other causes. [NFPA 54:5.13.1.1]

Pipe alignment guides shall be used with expansion joints according to the recommended practice of the joint manufacturer. [NFPA 54:5.13.1.2]

1208.11.2 Special Local Conditions. Where local conditions include earthquake, tornado, unstable ground, or flood hazards; special consideration shall be given to increased strength and flexibility of piping supports and connections. [NFPA 54:5.13.2]

1209.0 Excess Flow Valve.

Where automatic excess flow gas valves are installed, they shall be listed, sized, and installed in accordance with the manufacturer's instructions.

1210.0 Gas Piping Installation.

1210.1 Piping Underground.

1210.1.1 Clearances. Underground gas piping shall be installed with sufficient clearance from any other underground structure to avoid contact therewith, to allow maintenance, and to protect against damage from proximity to other structures. In addition, underground plastic piping shall be installed with sufficient clearance or shall be insulated from any source of heat so as to prevent the heat from impairing the serviceability of the pipe. [NFPA 54:7.1.1]

1210.1.2 Protection Against Damage.

(A) Cover Requirements. Underground piping systems shall be installed with not less than 46cm (18 in.) of cover. Where external damage to the pipe is not likely to result, the cover shall be not less than 30cm (12 in.). When not less than 30cm (12 in.) of cover cannot be provided, the pipe shall be installed in conduit or bridged (shielded). [NFPA 54:7.1.2.1]